

# BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH

## CHOICE BASED CREDIT SYSTEM

### DEPARTMENT OF PHYSICS

#### B.Sc Physics syllabus

#### Semester I:

| Part     | Sub Code | Sub Name                                     | Hrs       | Credit    | Exam Hrs | Int. Mark | Ext. Mark | Total      |
|----------|----------|----------------------------------------------|-----------|-----------|----------|-----------|-----------|------------|
| Part I   | BAL10X   | Tamil */ Hindi /French                       | 5         | 4         | 3        | 25        | 75        | 100        |
| Part II  | BEH101   | English                                      | 5         | 4         | 3        | 25        | 75        | 100        |
| Part III | BPS101   | Core – I -Properties Of Matter And Acoustics | 5         | 4         | 3        | 25        | 75        | 100        |
|          | BPS102   | Core II-Heat and Thermodynamics              | 5         | 4         | 3        | 25        | 75        | 100        |
|          | BPS1L1   | Physics practical I                          | 4         | 2         | 3        | 40        | 60        | 100        |
|          | BPS103   | First Allied – Mathematics I                 | 5         | 4         | 3        | 25        | 75        | 100        |
|          |          | Seminar / Group Discussion                   | 1         |           |          |           |           |            |
|          |          | <b>Total</b>                                 | <b>30</b> | <b>22</b> |          |           |           | <b>600</b> |

#### Semester II:

| Part     | Sub Code | Sub Name                     | Hrs | Credit | Exam Hrs | Int. Mark | Ext. Mark | Total |
|----------|----------|------------------------------|-----|--------|----------|-----------|-----------|-------|
| Part I   | BAL20X   | Tamil / Hindi /French        | 4   | 3      | 3        | 25        | 75        | 100   |
| Part II  | BEH201   | English                      | 4   | 3      | 3        | 25        | 75        | 100   |
| Part III | BPS201   | Core – III-Mechanics         | 5   | 4      | 3        | 25        | 75        | 100   |
|          | BPS202   | Core IV- Optics              | 4   | 4      | 3        | 25        | 75        | 100   |
|          | BPS2L1   | Core Lab II                  | 4   | 2      | 3        | 40        | 60        | 100   |
|          | BPS203   | First Allied –Mathematics II | 5   | 4      | 3        | 25        | 75        | 100   |
| Part IV  | BCI204   | Environmental Studies        | 2   | 2      | 3        | 25        | 75        | 100   |
|          | BBC206   | Value Education              | 2   | 2      | 3        | 25        | 75        | 100   |

|  |  |              |           |           |  |  |  |            |
|--|--|--------------|-----------|-----------|--|--|--|------------|
|  |  | <b>Total</b> | <b>30</b> | <b>24</b> |  |  |  | <b>800</b> |
|--|--|--------------|-----------|-----------|--|--|--|------------|

### Semester III:

| Part     | Sub Code      | Sub Name                                                                                                                                                                                                                                | Hrs       | Credit    | Exam Hrs | Int. Mark | Ext. Mark | Total      |
|----------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|----------|-----------|-----------|------------|
| Part I   | BAL30X        | Tamil / Hindi /French                                                                                                                                                                                                                   | 5         | 4         | 3        | 25        | 75        | 100        |
| Part II  | BEH301        | English                                                                                                                                                                                                                                 | 5         | 4         | 3        | 25        | 75        | 100        |
| Part III | <b>BPS301</b> | <b>Core – V- Electricity and Magnetism</b>                                                                                                                                                                                              | <b>5</b>  | <b>4</b>  | <b>3</b> | <b>25</b> | <b>75</b> | <b>100</b> |
|          | <b>BPS3L1</b> | <b>Core Lab III</b>                                                                                                                                                                                                                     | <b>4</b>  | <b>2</b>  | <b>3</b> | <b>40</b> | <b>60</b> | <b>100</b> |
|          | BPS302        | Second Allied –Chemistry I                                                                                                                                                                                                              | 5         | 4         | 3        | 25        | 75        | 100        |
|          | BPS3L2        | Second Allied - Chemistry Lab I                                                                                                                                                                                                         | 4         | 2         | 3        | 25        | 75        | 100        |
| Part IV  | BPS3E1        | Non Major Elective I – for those who studied Tamil under Part I<br>a) Basic Tamil for other language students<br>b) Special Tamil for those who studied Tamil upto 10 <sup>th</sup> +2 but opt for other languages in degree programme. | 2         | 2         | 3        | 25        | 75        | 100        |
|          |               | <b>Total</b>                                                                                                                                                                                                                            | <b>30</b> | <b>22</b> |          |           |           | <b>700</b> |

### Semester IV:

| Part     | Sub Code      | Sub Name                                                                                    | Hrs      | Credit   | Exam Hrs | Int. Mark | Ext. Mark | Total      |
|----------|---------------|---------------------------------------------------------------------------------------------|----------|----------|----------|-----------|-----------|------------|
| Part I   | BAL40X        | Tamil / Hindi /French                                                                       | 4        | 3        | 3        | 25        | 75        | 100        |
| Part II  | BEH401        | English                                                                                     | 4        | 3        | 3        | 25        | 75        | 100        |
| Part III | <b>BPS401</b> | <b>Core – VI- Atomic and Nuclear Physics</b>                                                | <b>5</b> | <b>4</b> | <b>3</b> | <b>25</b> | <b>75</b> | <b>100</b> |
|          | <b>BPS4L1</b> | <b>Core Lab– IV</b>                                                                         | <b>4</b> | <b>2</b> | <b>3</b> | <b>40</b> | <b>60</b> | <b>100</b> |
|          | BPS402        | Second Allied – Chemistry II                                                                | 5        | 4        | 3        | 25        | 75        | 100        |
|          | BPS4L2        | Second Allied - Chemistry Lab II                                                            | 4        | 2        | 3        | 25        | 75        | 100        |
| Part IV  | BPS4E2        | Non Major Elective I – for those who studied Tamil under Part I<br>c) Basic Tamil for other | 2        | 2        | 3        | 25        | 75        | 100        |

|  |        |                                                                                                                                             |           |           |   |    |    |            |
|--|--------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|---|----|----|------------|
|  |        | language students<br>d) Special Tamil for those who studied Tamil upto 10 <sup>th</sup> +2 but opt for other languages in degree programme. |           |           |   |    |    |            |
|  | BPS4E3 | Skill Based Elective I                                                                                                                      | 2         | 2         | 3 | 25 | 75 | 100        |
|  |        | <b>Total</b>                                                                                                                                | <b>30</b> | <b>22</b> |   |    |    | <b>800</b> |

### Semester V:

| Part     | Sub Code | Sub Name                                    | Hrs       | Credit    | Exam Hrs | Int. Mark | Ext. Mark | Total      |
|----------|----------|---------------------------------------------|-----------|-----------|----------|-----------|-----------|------------|
| Part III | BPS501   | Core – VII Quantum Mechanics and Relativity | 5         | 4         | 3        | 25        | 75        | 100        |
|          | BPS502   | Core – VIII- Basic Electronics              | 5         | 4         | 3        | 25        | 75        | 100        |
|          | BPS503   | Core – IX- -Crystal Physics                 | 4         | 4         | 3        | 25        | 75        | 100        |
|          | BPS5E4   | Major Elective – I Materials Science        | 4         | 4         | 3        | 25        | 75        | 100        |
|          | BPS5L1   | Core Lab V – Physics lab                    | 4         | 3         | 3        | 40        | 60        | 100        |
|          | BPS5L2   | Core Lab VI – Electronics I                 | 4         | 3         | 3        | 40        | 60        | 100        |
| Part IV  | BPS5E5   | Skill Based Elective – II                   | 2         | 2         | 3        | 25        | 75        | 100        |
|          | BPS5E6   | Skill Based Elective – III                  | 2         | 2         | 3        | 25        | 75        | 100        |
|          |          | <b>Total</b>                                | <b>30</b> | <b>26</b> |          |           |           | <b>800</b> |

### Semester VI:

| Part     | Sub Code | Sub Name                                              | Hrs | Credit | Exam Hrs | Int. Mark | Ext. Mark | Total |
|----------|----------|-------------------------------------------------------|-----|--------|----------|-----------|-----------|-------|
|          | BPS601   | Core – X- Digital Electronics                         | 5   | 4      | 3        | 25        | 75        | 100   |
| Part III | BPS602   | Core – XI –Solid state Physics                        | 5   | 4      | 3        | 25        | 75        | 100   |
|          | BPS6L1   | Core Lab VII - Electronics II                         | 6   | 3      | 3        | 40        | 60        | 100   |
|          | BPS6P1   | Project                                               | 10  | 8      |          |           |           | 200   |
|          | BPS6E7   | Major Elective – II- Nano Science and Nano Technology | 4   | 4      | 3        | 25        | 75        | 100   |

|         |        |                    |           |            |  |  |  |             |
|---------|--------|--------------------|-----------|------------|--|--|--|-------------|
| Part IV | BPS6V1 | Extension Activity |           | 1          |  |  |  |             |
|         |        | <b>Total</b>       | <b>30</b> | <b>24</b>  |  |  |  | <b>600</b>  |
|         |        | <b>GRAND TOTAL</b> |           | <b>140</b> |  |  |  | <b>4300</b> |

**Note :**

|                                                    | <b>Internal Marks</b> | <b>External Marks</b> |
|----------------------------------------------------|-----------------------|-----------------------|
| 1. <b>Theory</b>                                   | <b>25</b>             | <b>75</b>             |
| 2. <b>Practical</b>                                | <b>40</b>             | <b>60</b>             |
| 3. *** Examination at the end of the next semester |                       |                       |

**LIST OF SKILL BASED ELECTIVES (Choose any three courses – one in semester IV & two in semester V):**

| S.NO | Sub Code | Sub Name                         | L | T | P | C |
|------|----------|----------------------------------|---|---|---|---|
| 1    | BBA011   | BPO Management                   | 1 | 0 | 2 | 2 |
| 2    | BBE002   | Desk Top Publishing              | 1 | 0 | 2 | 2 |
| 3    | BCA001   | Computer Application             | 1 | 0 | 2 | 2 |
| 4    | BCA002   | Graphical and Web Design         | 1 | 0 | 2 | 2 |
| 5    | BCA003   | Multimedia                       | 1 | 0 | 2 | 2 |
| 6    | BCA004   | Networking and Maintenance       | 1 | 0 | 2 | 2 |
| 7    | BCA006   | Web Designing                    | 1 | 0 | 2 | 2 |
| 8    | BSC001   | Animation                        | 1 | 0 | 2 | 2 |
| 9    | BSC002   | Computer Hardware and Networking | 1 | 0 | 2 | 2 |
| 10   | BSC003   | Computer Programming             | 1 | 0 | 2 | 2 |
| 11   | BSC004   | Computer Technology              | 1 | 0 | 2 | 2 |

|                                                                                                                             |                                                      |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|--------------------------------------------------------------------------|--------------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|------|--|
| BAL101                                                                                                                      |                                                      | TAMIL – I                                                                |                          |                    |                        |                    | L                       | T                  | P         | C                                            |      |  |
|                                                                                                                             |                                                      | Total Contact Hours – 45                                                 |                          |                    |                        |                    | 3                       | 0                  | 0         | 3                                            |      |  |
|                                                                                                                             |                                                      | Prerequisite course – +2 Level Tamil                                     |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             |                                                      | Course Coordinator Name& Department :முனைவர்.ம.சித்ராகண்ணு & தமிழ்த்துறை |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| COURSE OBJECTIVES :- இருபதாம் நூற்றாண்டு இலக்கியம் மற்றும் மொழி வரலாற்றை அறியச் செய்தல்                                     |                                                      |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| COURSE OUTCOMES (COs)                                                                                                       |                                                      |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO1                                                                                                                         | இருபதாம் நூற்றாண்டு கவிதைஇலக்கியத்தைப் பற்றி அறிவர்  |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO2                                                                                                                         | இருபதாம் நூற்றாண்டுகட்டுரைஇலக்கியத்தைப் பற்றி அறிவர் |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO3                                                                                                                         | இருபதாம் நூற்றாண்டுசிறுகதைஇலக்கியத்தைப் பற்றி அறிவர் |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO4                                                                                                                         | இக்கால இலக்கிய வரலாறுபற்றி அறிவர்                    |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO5                                                                                                                         | மொழி வரலாறு – செம்மொழிபற்றி அறிவர்                   |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO6                                                                                                                         | தற்கால இலக்கியத்தில் ஆழ்ந்த அறிவைப் பெறுவர்          |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                      |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| 1                                                                                                                           | COs/Pos                                              | PO1                                                                      | PO2                      | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                         | PSO3 |  |
| 2                                                                                                                           | CO1                                                  | H                                                                        | M                        |                    |                        |                    |                         |                    | H         | M                                            | M    |  |
|                                                                                                                             | CO2                                                  | H                                                                        | M                        |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO3                                                  | H                                                                        | M                        |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO4                                                  | H                                                                        | M                        |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO5                                                  | H                                                                        | M                        |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO6                                                  | H                                                                        | M                        |                    |                        |                    |                         |                    |           |                                              |      |  |
| 3                                                                                                                           | Category                                             | Humanities & Social Studies (HS)                                         | Basic Sciences (BS)      | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |      |  |
|                                                                                                                             |                                                      | ✓                                                                        |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| 4                                                                                                                           | Approval                                             |                                                                          | Academic Council Meeting |                    |                        |                    |                         |                    |           |                                              |      |  |

**அலகு -1 இருபதாம் நூற்றாண்டு கவிதைகள் 9**

1. பாரதியார் -யாமறிந்த மொழிகளிலே 2. பாரதிதாசன்-நீங்களே சொல்லுங்கள்!
3. கண்ணதாசன் -அழகை 4. பெருஞ்சித்திரனார்- தமிழா நீ எங்கே?
5. தமிழ் ஒளி - (I) வள்ளைப்பாட்டு (II) பட்டமரம்
6. அப்துல் ரகுமான் - கல்லின் காயம்

**அலகு -2 உரைநடை (I) 4 கட்டுரைகள் 9**

1. மனிதனும் அழகும் - திரு.வி.க. 2. வீட்டிற்கோர் புத்தகசாலை-அறிஞர் அண்ணா
3. பொறியியல் தமிழ் - நா. மால் முருகன்
4. தேசியமறை திருக்குறள் - வ.சுப.மாணிக்கம்

**அலகு -3 உரைநடை (II) சிறுகதை - 4 கதைகள் 9**

1. நட்சத்திரக் குழந்தைகள் - பி.எஸ்.இராமையா 2. விடியுமா-கு.ப.ராசகோபாலன்
3. குருபீடம் - ஜெயகாந்தன் 4. கடவுளும் கந்தசாமிப் பிள்ளையும்-புதுமைப்பித்தன்

**அலகு -4 இக்கால இலக்கிய வரலாறு 9**

1. இருபதாம் நூற்றாண்டு கவிதை இலக்கிய வரலாறு
2. இருபதாம் நூற்றாண்டு உரைநடை இலக்கிய வரலாறு
3. இருபதாம் நூற்றாண்டு சிறுகதை இலக்கிய வரலாறு

**அலகு -5 மொழி வரலாறு 9**

1. தமிழ்மொழி வரலாறு 2. உலகச் செம்மொழிகளின் வரலாறு
3. தமிழுக்கும் உலகச் செம்மொழிகளுக்குமான உறவு வரலாறு

**பாடநூல்**

1. இருபதாம் நூற்றாண்டு கவிதை, உரைநடை, சிறுகதை (அலகு-3) பாரத் பல்கலைக்கழக வெளியிடு

**பார்வை நூல்கள்**

1. சு. ஆனந்தன், "தமிழ் இலக்கிய வரலாறு", பாரி நிலையம், 2012
2. ஞானப்பிரகாசர், "தமிழ் அமைப்புற்றவரலாறு", வியாபார ஐக்கிய சங்கம், 2012
3. ஞா.தேவநேயன், "தமிழ் வரலாறு", பூம்புகார் பதிப்பகம், 2009
4. ஞா.தேவநேயன், "முதல் தாய்மொழி", பூம்புகார் பதிப்பகம், 2008
5. ஞா.தேவநேயன், "சுட்டு விளக்கம்", பூம்புகார் பதிப்பகம், 2006

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|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|----------|
| <b>BEH101</b>                                                                                                                                          | <b>ENGLISH I</b>                                                      |                                  |                     |                    |                        |                    |                         | <b>L</b>           | <b>T</b>  | <b>P</b>                                     | <b>C</b> |
|                                                                                                                                                        | Total Contact Hours – 60                                              |                                  |                     |                    |                        |                    |                         | 4                  | 0         | 0                                            | 4        |
|                                                                                                                                                        | Prerequisite course – + 2 level English                               |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
|                                                                                                                                                        | Course Coordinator Name & Dept: Mrs. SHEEBA - English                 |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| <b>COURSE OBJECTIVES:-</b> :- To use English effectively for study purpose and enable the learner to communicate appropriately in real life situation. |                                                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| <b>COURSE OUTCOMES (COs)</b>                                                                                                                           |                                                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| CO1                                                                                                                                                    | Remember and recall the words according to the given context.         |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| CO2                                                                                                                                                    | Understand the necessity of grammar in Communication                  |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| CO3                                                                                                                                                    | Apply the plots and themes discussed                                  |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| CO4                                                                                                                                                    | Analyze the various characters involved                               |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| CO5                                                                                                                                                    | Evaluate the characters and summarizes the prescribed literature      |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| CO6                                                                                                                                                    | Create essays by evaluating the literary techniques and devices used. |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                               |                                                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| 1                                                                                                                                                      | COs/Pos                                                               | PO 1                             | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PS O1     | PSO2                                         | PS O3    |
| 2                                                                                                                                                      | CO1                                                                   | H                                | L                   |                    |                        |                    |                         |                    | H         |                                              |          |
|                                                                                                                                                        | CO2                                                                   | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |          |
|                                                                                                                                                        | CO3                                                                   | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |          |
|                                                                                                                                                        | CO4                                                                   | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |          |
|                                                                                                                                                        | CO5                                                                   | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |          |
|                                                                                                                                                        | CO6                                                                   | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |          |
| 3                                                                                                                                                      | Category                                                              | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |          |
|                                                                                                                                                        |                                                                       | ✓                                |                     |                    |                        |                    |                         |                    |           |                                              |          |
| 4                                                                                                                                                      | <b>Approval</b>                                                       | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                              |          |

**UNIT I –POETRY** **12**

Lucy Gray William Wordsworth – Author biography – Summary – Critical Analysis - Ulysses Alfred Lord Tennyson– Author biography – Summary – Critical Analysis - The Road Not Taken – Robert Frost – Author biography – Summary – Critical Analysis

**UNIT II – ONE ACT PLAYS** **12**

The Unicorn in the Garden – James Thurber – Author biography – Summary – Critical Analysis - The Avenger – Anton Chekov – Author biography – Summary – Critical Analysis - The Gift of the Magi - O.Henry – Author biography – Summary – Critical Analysis

**UNIT III- SHORT STORIES** **12**

The Boy Comes Home - A.A.Milne – Author biography – Summary – Critical Analysis - The Referee - W.H.Andrews and Geoffrey Dearmer – Author biography – Summary – Critical Analysis

**UNIT IV –PROSE B** **12**

Six Thinking Hats - Edward de Bono– Author biography – Summary – Critical Analysis - My Early Days Abdul Kalam – Author biography – Summary – Critical Analysis- I Have a Dream Martin Luther King– Author biography – Summary – Critical Analysis.

**UNIT V – GRAMMAR** **12**

Introduction to Basics of Communication Definitions, Types Listening Speaking Reading Writing

**TEXT BOOKS:**

1. Six Thinking Hats by Edward de Bono, Little Brown and Company, 1985
2. My Early Days by Abdul Kalam, October 7, 2013

**REFERENCE BOOKS:**

1. English for Communication by Board of Editors, Emerald
2. Roche Marc, “Advanced English Writing Skills: Master class for English Language, Roche Publishing ESL, 2019
3. Strings of Gold (Part- II) Edited by Prof. Jasbir Jain (MacMillan), 2007

|                                                                                                                             |                                                                                           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|---------------------------------------------|------|
| <b>BPS101</b>                                                                                                               | <b>CORE 1- PROPERTIES OF MATTER AND ACOUSTICS</b>                                         |                                  |                     |                    |                        |                    |                         | L                  | T         | P                                           | C    |
|                                                                                                                             | Total contact Hours-60                                                                    |                                  |                     |                    |                        |                    |                         | 5                  | 0         | 0                                           | 4    |
|                                                                                                                             | Prerequisite- Science / Mathematics Studied in Higher Secondary Studies                   |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
|                                                                                                                             | Course Designed by-Department of Physics                                                  |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| <b>COURSE OBJECTIVES:-</b>                                                                                                  |                                                                                           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| To understand the properties of matter for liquid , solids, gases and study of ultra sound                                  |                                                                                           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| <b>COURSE OUTCOMES (COs)</b>                                                                                                |                                                                                           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO1                                                                                                                         | Remembering the basics of stress, strain, elastic constant, surface tension and viscosity |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO2                                                                                                                         | To learn the oscillation of time period using beam and microscope                         |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO3                                                                                                                         | Evaluate the raising of capillary in different types of experiments                       |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO4                                                                                                                         | Understand the flow of water and kerosene using viscosity of liquid and co-efficient      |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO5                                                                                                                         | Observe the sound topics include intensity of noise pollution and decibel using frequency |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO6                                                                                                                         | Understand the production and application of ultrasonic sound                             |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                                                           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| 1                                                                                                                           | COs/Pos                                                                                   | PO1                              | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PS O1     | PSO2                                        | PSO3 |
| 2                                                                                                                           | CO1                                                                                       | H                                | M                   | L                  | L                      | L                  | L                       | M                  | H         |                                             |      |
|                                                                                                                             | CO2                                                                                       | M                                | H                   | L                  | M                      | M                  | L                       | M                  |           |                                             |      |
|                                                                                                                             | CO3                                                                                       | H                                | M                   | M                  | H                      | M                  | M                       | H                  |           |                                             |      |
|                                                                                                                             | CO4                                                                                       | H                                | H                   | H                  | M                      | M                  | M                       | H                  |           |                                             |      |
|                                                                                                                             | CO5                                                                                       | M                                | H                   | M                  | L                      | H                  | M                       | M                  |           |                                             |      |
|                                                                                                                             | CO6                                                                                       | H                                | H                   | H                  | L                      | H                  | M                       | H                  |           |                                             |      |
| 3                                                                                                                           | Category                                                                                  | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship(PR) |      |
|                                                                                                                             |                                                                                           |                                  |                     |                    | ✓                      |                    |                         |                    |           |                                             |      |
| 4                                                                                                                           | Approval                                                                                  | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                             |      |

## **BPS101 - PROPERTIES OF MATTER AND ACOUSTICS**

### **Unit 1 ELASTICITY**

**12**

Elasticity- Hooke's Law – three elastic moduli and Poisson's ratio- Relation between elastic constants and Poisson's ratio- Energy stored- Twisting couple on a cylinder- Torsional pendulum (with and without weights)- Bending of beams- Bending moment- Cantilever loading- Transverse vibrations of cantilever-Non- uniform and uniform bending of a beam-Koenig's method

### **Unit 2. VISCOSITY AND LOW PRESSURE**

**12**

Poiseuille's flow- Newton's law- Stoke's fall- Rotation viscometer- Ostwald viscometer- Meyer's formula for viscosity of gas- Rankine's method- Effect of temperature and pressure on viscosity- Air pump- Rotary oil pump-Mercury diffusion pump- McLeod gauge-Pirani gauge- Knudsen Gauge.

### **Unit 3. SURFACE TENSION**

**12**

Molecular interpretation- surface energy- Pressure difference across a curved surface- Excess pressure in liquid drops and air bubbles-Molecular forces- Shape of liquid meniscus in capillary tube-Angle of contact- Capillary rise and energy consideration- Variation of surface tension with temperature – Angle of contact and surface tension of mercury - Jaeger's method- Quincke's drop

### **Unit 4. WAVES AND OSCILLATIONS**

**12**

Longitudinal and transverse waves- Equation of Wave motion- Plane progressive wave- speed of transverse wave on a string- Energy in wave motion- Superposition of waves- Interference, reflection and transmission of wave- Standing waves normal modes of a string- Resonance-Sound Waves in gases- Organ pipes- Beats- Doppler effect.

### **Unit 5. ULTRASONICS AND ACOUSTICS**

**12**

Ultrasonics - Piezo-electric effect-Piezo-electric generator- Magnetostriction effect- Magnetostriction oscillator-Detection and application of ultrasonics – Acoustics- Reverberation time and its measurement- Sabine's formula-Absorption coefficient and its determination- Condition for good acoustical design of an auditorium- Noise and its measurement- Noise reduction- sound insulation

### **TEXT BOOKS:**

1. D.S Mathur- Elements Of Properties Of Matter: S.Chand And Co
2. Brij Lal And N. Subrahmanyam- Properties Of Matter :- S.Chand And Co (2003)
3. N.Subrahmanyam And Brij Lal- A Text Book Of Sound: Vikas Publishing House (Second Revised Edition- 1995)

### **BOOKS FOR REFERENCE:**

1. H.R Gulati- Fundamental Of General Properties Of Matter- R.Chand And Co- Fifth Edition (1977)
2. N.K Bajaj- The Physics Of Waves And Oscillations- Tata Mcgraw-Hill (1988)
3. A.P French- Vibration And Waves- Mit Introductory Physics- Arnold-Heinmann India (1973)
4. Satya Prakash And Akash Saluja- Oscillations And Waves- Pragati Prakashan (2002)



## BPS102 – HEAT AND THERMODYNAMICS

### UNIT I - INTRODUCTION TO HEAT

12

Basic Definitions – Newton's law of cooling – Specific heat of a liquid Calendar and Barne's continuous flow method – Two specific heats of a gas – Specific heat of a gas by Jolly's differential steam calorimeter – Regnault's method – Dulong and Petit's law – Einstein's theory of specific heat - Debye's theory of specific heat - variation of specific heat and atomic heat with temperature.

### UNIT II - TRANSMISSION OF HEAT

12

Conduction – Coefficient of the thermal conductivity – Rectilinear flow of heat along a metal bar - Radial flow of heat - Spherical shell method – thermal conductivity of rubber – Lee's disc method to find thermal conductivity of bad conductor. Conduction – Radiation – Black body – Wein's Law – Raleigh Law and its significance – Jean's Law – Stefan's law – Experimental Determination of Stefan's constant – Mathematical derivation of Stefan's law.

### UNIT III - KINETIC THEORY OF GASES

12

Maxwell's law of distribution of molecular velocities – Experimental verification of molecular velocities – Equilibrium speed distribution of velocities - Mean free path of gaseous molecules – Transport phenomena – Diffusion of gases – Viscosity and thermal conduction of gases – Vander walls equation of state – Determination of van der Walls constant – Comparison of vander Walls equation with Andrews experiment - Relation between Vander Wall's constant and critical constants.

### UNIT IV - LAWS OF THERMODYNAMICS

12

First law of thermodynamics – Isothermal and Adiabatic process – Gas equation during an adiabatic process – Work done in an adiabatic expansion of gas – Equation of an adiabatic curve – Isothermal processes – Determination of  $\gamma$  by Clement and Desorme's method – Second law of thermodynamics – Concept of Carnot's engine- Working efficiency of Carnot's engine – Carnot's refrigerator – Carnot's Theorem and its significance.

### UNIT V - CONCEPT OF ENTROPY

12

Third law of thermodynamics - Concept of Entropy - Temperature - entropy diagram – entropy of perfect gas - Entropy Change in a reversible process and in an irreversible process – Entropy of a perfect gas – increase of entropy in any irreversible process – Thermo dynamic functions – Maxwell's thermodynamics relations and applications – Theory of Joule Kelvin effect - Claussius and Clapeyron equation - Specific Heat Relation.

### TEXT BOOKS

1. Brijlal, N. Subrahmanyam and P. S. Hemne, Heat, Thermodynamics and Statistical Physics, Revised Edition, S. Chand and Company, 2010.
2. Richard H Dittman and Zemansky MW, Heat and Thermodynamics, 3Special Edition, McGraw Hill, 2008.

### REFERENCES

1. Michael J. Moran, Howard N. Shapiro, Daisie D. Boettner and Margaret Bailey, Fundamentals of Engineering Thermodynamics, John Wiley and Sons, 2011.
2. D.S. Mathur, Heat and Thermodynamics, S. Chand and Company, 2006.
3. Kittel C and Kroemer H, Thermal Physics, W. H. Free man, New York, 1980.
4. Stephen Blundell and Katherine M. Blundell, Concepts in Thermal Physics, Oxford University Press, 2006.
5. Anandamoy Manna, Heat and Thermodynamics, Dorling Kindersely Pvt Ltd, 2011.



## **BPS1L1- PHYSICS PRACTICAL I**

**Objective:-**It is aimed at exposing the under graduate students to the technique of handling simple measuring instruments and also make them measure certain mechanical and thermal properties of matter.

- 1) Young's modulus - Non-uniform bending (Pin and microscope).
- 2) Rigidity modulus of a wire -Torsional Pendulum(without mass)
- 3) Rigidity modulus of a wire -Torsional Pendulum(with mass)
- 4) Compound bar pendulum-  $g$  and  $K$
- 5) Surface tension and interfacial surface tension by drop weight method
- 6) Sonometer- frequency of a tuning fork
- 7) Potentiometer- Calibration of low range voltmeter
- 8) Coefficient of viscosity of a liquid by Poiseuille's flow (using burette)

|                                                                                                                                                          |                                                                         |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------------------|--------------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|------|
| BPS103                                                                                                                                                   | FIRST ALLIED MATHEMATICS - I                                            |                                  |                          |                    |                        |                    | L                       | T                  | P         | C                                            |      |
|                                                                                                                                                          | Total Contact Hours – 45                                                |                                  |                          |                    |                        |                    | 4                       | 1                  | 0         | 4                                            |      |
|                                                                                                                                                          | Prerequisite course – Mathematics Studied in Higher Secondary studies   |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                          | Course Coordinator Name & Department :- Dr.P.Sumathi & Mathematics      |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OBJECTIVES :-                                                                                                                                     |                                                                         |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| Knowledge and understanding are fundamental to studying mathematics and form the base from which to explore concepts and develop problem-solving skills. |                                                                         |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OUTCOMES (COs)                                                                                                                                    |                                                                         |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO1                                                                                                                                                      | Understand about the importance of algebraic functions                  |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO2                                                                                                                                                      | To explain about the theory of equation in mathematical derivation      |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO3                                                                                                                                                      | Study about the importance of the matrices                              |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO4                                                                                                                                                      | To explain detail about the Trigonometric functions                     |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO5                                                                                                                                                      | Study about the differential calculus using various concepts            |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO6                                                                                                                                                      | State and explain to the student to understand all concepts thoroughly. |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low                              |                                                                         |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| 1                                                                                                                                                        | COs/<br>Pos                                                             | PO1                              | PO2                      | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                         | PSO3 |
| 2                                                                                                                                                        | CO1                                                                     | H                                | H                        |                    |                        |                    |                         |                    | H         |                                              |      |
|                                                                                                                                                          | CO2                                                                     | H                                | H                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                          | CO3                                                                     | H                                | M                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                          | CO4                                                                     | H                                | M                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                          | CO5                                                                     | M                                | M                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                          | CO6                                                                     | H                                | H                        |                    |                        |                    |                         |                    |           |                                              |      |
| 3                                                                                                                                                        | Category                                                                | Humanities & Social Studies (HS) | Basic Sciences (BS)      | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |      |
|                                                                                                                                                          |                                                                         |                                  |                          |                    | ✓                      |                    |                         |                    |           |                                              |      |
| 4                                                                                                                                                        | Appr oval                                                               |                                  | Academic Council Meeting |                    |                        |                    |                         |                    |           |                                              |      |

### UNIT-I : ALGEBRA

12

Partial Fractions, Binomial, Exponential and logarithmic Series (without Proof) - Summation -Simple problems

### UNIT-II : THEORY OF EQUATIONS

12

Polynomial Equations with real Coefficients - Irrational roots - Complex roots, Transformation of equation by increasing or decreasing roots by a constant - Reciprocal equations - Newton's method to find a root approximately - Simple problems.

### UNIT-III: MATRICES

12

Symmetric - Skew-Symmetric - Orthogonal and Unitary matrices - Rank of a matrix - Consistency of equations -

Eigen roots and Eigen vectors – Cayley Hamilton theorem (without proof)-Verification and computation of inverse matrix.

#### **UNIT-IV: TRIGONOMETRY**

**12**

Expansions of  $\sin n\theta$ ,  $\cos n\theta$ ,  $\sin n\theta$ ,  $\cos n\theta$ ,  $\tan n\theta$  - Expansions of  $\sin \theta$ ,  $\cos \theta$ ,  $\tan \theta$  in terms of  $\theta$  - Hyperbolic and inverse hyperbolic functions - Logarithms of complex numbers.

#### **UNIT-V: DIFFERENTIAL CALCULUS**

**12**

Derivatives.n-th derivatives - Leibnitz theorem (without proof) and applications – Jacobians - Concepts of polar co-ordinates-Curvature and radius of curvature in Cartesian co-ordinates.

#### **TEXT BOOKS**

1. P.Duraipandian and S.Udayabaskaran, “Allied Mathematics, Vol. I & II”, Muhil Publishers, Chennai.(1997)
2. 1. P.Balasubramanian and K.G.Subramanian, , “Ancillary Mathematics. Vol. I & II”. Tata McGraw Hill, New Delhi. 1997
3. S.P.Rajagopalan and R.Sattanathan, “Allied Mathematics .Vol. I & II”, Vikas Publications, New Delhi. 2005
4. P.R.Vittal, “Allied Mathematics”, Margham Publications, Chennai. 2003

#### **Books for Reference:**

1. S. Narayanan and T.K. Manickavasagam Pillai – Ancillary Mathematics, S. Viswanathan Printers, 1986, Chennai.
2. Allied Mathematics by Dr. A. Singaravelu.

## SEMESTER II

|                                                                                                                             |                                                                        |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|----------------------------------|--------------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|------|--|
| BAL201                                                                                                                      | TAMIL – II                                                             |                                  |                          |                    |                        | L                  | T                       | P                  | C         |                                              |      |  |
|                                                                                                                             | Total Contact Hours – 45                                               |                                  |                          |                    |                        | 3                  | 0                       | 0                  | 3         |                                              |      |  |
|                                                                                                                             | Prerequisite course – TAMIL – I                                        |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | Course Coordinator Name& Department :முனைவர்.ம.சித்ராகண்ணு&தமிழ்த்துறை |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| COURSE OBJECTIVES :- சிற்றிலக்கியம் மற்றும் சமய இலக்கியத்தை அறியச்செய்தல்                                                   |                                                                        |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| COURSE OUTCOMES (COs)                                                                                                       |                                                                        |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO1                                                                                                                         | சிற்றிலக்கியமான தூது, பள்ளு , குறவஞ்சி பற்றி அறிந்துகொள்வர்            |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO2                                                                                                                         | சைவ சமயஇலக்கியம்பற்றி அறிந்துகொள்வர்                                   |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO3                                                                                                                         | வைணவ சமயஇலக்கியம்பற்றி அறிந்துகொள்வர்                                  |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO4                                                                                                                         | பௌத்த, இசுலாம், கிறித்துவ சமயஇலக்கியம்பற்றி அறிந்துகொள்வர்             |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO5                                                                                                                         | சிற்றிலக்கியம் மற்றும் சமய இலக்கிய வரலாறுபற்றி அறிந்துகொள்வர்          |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO6                                                                                                                         | சிற்றிலக்கியம் மற்றும்சமய இலக்கியம் பற்றிய தெளிவான அறிவைப் பெறுவர்     |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                                        |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| 1                                                                                                                           | COs/Pos                                                                | PO1                              | PO2                      | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                         | PSO3 |  |
| 2                                                                                                                           | CO1                                                                    | H                                | M                        |                    |                        |                    |                         |                    | H         | M                                            | M    |  |
|                                                                                                                             | CO2                                                                    | H                                | M                        |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO3                                                                    | H                                | M                        |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO4                                                                    | H                                | M                        |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO5                                                                    | H                                | M                        |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO6                                                                    | H                                | M                        |                    |                        |                    |                         |                    |           |                                              |      |  |
| 3                                                                                                                           | Category                                                               | Humanities & Social Studies (HS) | Basic Sciences (BS)      | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |      |  |
|                                                                                                                             |                                                                        | ✓                                |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| 4                                                                                                                           | Approval                                                               |                                  | Academic Council Meeting |                    |                        |                    |                         |                    |           |                                              |      |  |

|                                                |                  |   |
|------------------------------------------------|------------------|---|
| <b>அலகு1</b>                                   |                  | 9 |
| அழகர்கிள்ளைவிடுதாது                            | - 1 - 20         |   |
| முக்கூடற்பள்ளு - நாட்டுவளம்                    | - 21,22,25,26,35 |   |
| திருக்குற்றாலக்குறவஞ்சி- குறத்திமலைவளம்கூறுதல் | - 1 - 5          |   |

|                                                     |          |   |
|-----------------------------------------------------|----------|---|
| <b>அலகு2</b>                                        |          | 9 |
| அற்புதத்திருவந்தாதி                                 | - 1 - 5  |   |
| திருஞானசம்பந்தர் - தேவாரம் - திருவெண்காட்டுப்பதிகம் | - 1 - 10 |   |
| மாணிக்கவாசகர் -திருவாசகம் - திருச்சாழல்             | - 1 - 10 |   |

|                                  |          |   |
|----------------------------------|----------|---|
| <b>அலகு3</b>                     |          | 9 |
| பெரியாழ்வார் - முதல்திருமொழி     | - 1 - 10 |   |
| ஆண்டாள் - திருப்பாவை -           | - 1 - 10 |   |
| தொண்டரடிப்பொடிஆழ்வார் - திருமாலை | - 1 - 5  |   |

|                                         |          |   |
|-----------------------------------------|----------|---|
| <b>அலகு4</b>                            |          | 9 |
| ஆசியஜோதி - கருணைக்கடல் - அறவுரைகூறுதல்  | - 1 - 10 |   |
| பராபரக்கண்ணி - குணங்குடிமஸ்தான்சாகிபு   | - 1 - 20 |   |
| இயேசுகாவியம் - பாடுகளின்பாதை- கண்ணதாசன் |          |   |

|                                      |  |   |
|--------------------------------------|--|---|
| <b>அலகு5</b>                         |  | 9 |
| சிறீநிலக்கியவரலாறு ,சமயஇலக்கியவரலாறு |  |   |

#### பாட நூல்கள்

1. கதிர்முருகு, "அழகர்கிள்ளைவிடுதாது", சாரதாபதிப்பகம், 2011
2. சோ.கந்தசாமி"பன்னிருதிருமுறை", உலகத்தமிழாராய்ச்சிநிறுவனம், 2008
3. கண்ணதாசன், "இயேசுகாவியம்", கண்ணதாசன்பதிப்பகம், 2014

#### பார்வைநூல்கள்

1. கதிர்முருகு, "முக்கூடற்பள்ளுமூலமும்உரையும்", சாரதாபதிப்பகம், 2017
2. புலியூர்க்கேசிகன், "திருக்குற்றாலக்குறவஞ்சி", செண்பகாபதிப்பகம், 2010
3. தமிழமுதன், "அற்புதத்திருவந்தாதி", பாரிநிலையம், 2011
4. த.கோவேந்தன், "நாலாயிரத்திவ்யப்பிரபந்தம்உரை", சாரதாபதிப்பகம், 2015
5. கமலாமுருகன், "ஆசியஜோதிமூலமும்உரையும்", சாரதாபதிப்பகம், 2012
6. கமலாமுருகன், "பராபரக்கண்ணிமூலமும்உரையும்", சாரதாபதிப்பகம், 2013
7. சு.ஆனந்தன், "தமிழ்இலக்கியவரலாறு", பாரிநிலையம், 2018

|                                                                                                                                            |                                                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                              |       |
|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|-------|
| BEH201                                                                                                                                     | ENGLISH II                                                            |                                  |                     |                    |                        |                    | L                       | T                  | P         | C                                            |       |
|                                                                                                                                            | Total Contact Hours – 60                                              |                                  |                     |                    |                        |                    | 4                       | 0                  | 0         | 4                                            |       |
|                                                                                                                                            | Prerequisite course – + 2 level English                               |                                  |                     |                    |                        |                    |                         |                    |           |                                              |       |
|                                                                                                                                            | Course Coordinator Name & Dept.: Mr.S.KUMARESAN - English             |                                  |                     |                    |                        |                    |                         |                    |           |                                              |       |
| COURSE OBJECTIVES:- To have a better understanding of the English language skills and its implementation it in day to day life activities. |                                                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                              |       |
| COURSE OUTCOMES (COs)                                                                                                                      |                                                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                              |       |
| CO1                                                                                                                                        | Remember and recall the concepts of English language                  |                                  |                     |                    |                        |                    |                         |                    |           |                                              |       |
| CO2                                                                                                                                        | Understand the necessity of grammar in Communication                  |                                  |                     |                    |                        |                    |                         |                    |           |                                              |       |
| CO3                                                                                                                                        | Apply the plots and themes discussed                                  |                                  |                     |                    |                        |                    |                         |                    |           |                                              |       |
| CO4                                                                                                                                        | Analyze the various characters involved                               |                                  |                     |                    |                        |                    |                         |                    |           |                                              |       |
| CO5                                                                                                                                        | Evaluate the characters and summarize the prescribed literature       |                                  |                     |                    |                        |                    |                         |                    |           |                                              |       |
| CO6                                                                                                                                        | Create essays by evaluating the literary techniques and devices used. |                                  |                     |                    |                        |                    |                         |                    |           |                                              |       |
| Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                   |                                                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                              |       |
| 1                                                                                                                                          | COs/Pos                                                               | PO 1                             | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                         | PS O3 |
| 2                                                                                                                                          | CO1                                                                   | H                                | L                   |                    |                        |                    |                         |                    | H         |                                              |       |
|                                                                                                                                            | CO2                                                                   | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |       |
|                                                                                                                                            | CO3                                                                   | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |       |
|                                                                                                                                            | CO4                                                                   | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |       |
|                                                                                                                                            | CO5                                                                   | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |       |
|                                                                                                                                            | CO6                                                                   | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |       |
| 3                                                                                                                                          | Category                                                              | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |       |
|                                                                                                                                            |                                                                       | ✓                                |                     |                    |                        |                    |                         |                    |           |                                              |       |
| 4                                                                                                                                          | Approval                                                              | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                              |       |

## UNIT 1: PROSE

12

The Refugee – K.A. Abbas – Author biography – Summary – Critical Analysis.- The Lion and the Lamb – Leonard Clark – Author biography – Summary – Critical Analysis.

## UNIT 2: POEMS

12

1. The Solitary Reaper – William Wordsworth – Author biography – Summary – Critical Analysis.- Gift – Alice Walker – Author biography – Summary – Critical Analysis.

## UNIT 3: SHORT STORIES

12

The Fortune-Teller – Karel Capek – Author biography – Summary – Critical Analysis - The Postmaster – Rabindranath Tagore – Author biography – Summary – Critical Analysis.

## UNIT 4: ONE-ACT PLAYS

12

The Death Trap – Saki (H.H. Munro) – Author biography – Summary – Critical Analysis -. The Dear Departed: A Comedy in One-Act – Stanley Houghton – Author biography – Summary – Critical Analysis.

## UNIT 5: COMMUNICATIVE GRAMMAR

12

Seeking and giving information – statements and questions 2. Being informal – phrasal verbs 3. Expressing ability, possibility, etc – Modals and other devices

### TEXT BOOKS:

1. The Death Trap by Saki, The Novels and Plays of Saki, 2001
2. Pooja Khanna, “English Communication”, S.CHAND Publishing, 2016
3. Rabindranath Tagore, “The Postmaster”, Penguin India, 2000

### REFERENCE BOOKS:

1. K.A.Abbas Suresh Kohli, “An Evening in Calcutta”, HarperCollins, 2015
2. Stanley Houghton, “Five one act plays”, Alpha Edition, 2019
3. Edited Prof. Jasbir Jain, “Strings of Gold (Part- II)”, MacMillan, 2016

|                                                                                                                             |                                                                                  |                                  |                     |                    |                        |                    |                         |                    |      |                                             |      |   |
|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|------|---------------------------------------------|------|---|
| BPS201                                                                                                                      | CORE 5 - MECHANICS                                                               |                                  |                     |                    |                        |                    |                         |                    | L    | T                                           | P    | C |
|                                                                                                                             | Total contact Hours-60                                                           |                                  |                     |                    |                        |                    |                         |                    | 5    | 0                                           | 0    | 4 |
|                                                                                                                             | Prerequisite- Science / Mathematics Studied in Higher Secondary Studies          |                                  |                     |                    |                        |                    |                         |                    |      |                                             |      |   |
|                                                                                                                             | Course Coordinator Name & Department:- Dr E. Thirumal &Department of Physics     |                                  |                     |                    |                        |                    |                         |                    |      |                                             |      |   |
| COURSE OBJECTIVES:-<br>To understand the Mechanics, dynamics, solid, pressure, energy and machine.                          |                                                                                  |                                  |                     |                    |                        |                    |                         |                    |      |                                             |      |   |
| COURSE OUTCOMES (COs)                                                                                                       |                                                                                  |                                  |                     |                    |                        |                    |                         |                    |      |                                             |      |   |
| CO1                                                                                                                         | Understand the basics of mass, velocity, particle and pendulum.                  |                                  |                     |                    |                        |                    |                         |                    |      |                                             |      |   |
| CO2                                                                                                                         | Analyze the hydrodynamics and hydrostatics                                       |                                  |                     |                    |                        |                    |                         |                    |      |                                             |      |   |
| CO3                                                                                                                         | Evaluate the Atwood machine, D’Alembert principle                                |                                  |                     |                    |                        |                    |                         |                    |      |                                             |      |   |
| CO4                                                                                                                         | Understand the concepts of dissipative force and simple pendulum.                |                                  |                     |                    |                        |                    |                         |                    |      |                                             |      |   |
| CO5                                                                                                                         | Develop the knowledge about Hamiltonian function and central force field.        |                                  |                     |                    |                        |                    |                         |                    |      |                                             |      |   |
| CO6                                                                                                                         | Knowledge of theory and practical concepts different types of mechanical systems |                                  |                     |                    |                        |                    |                         |                    |      |                                             |      |   |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                                                  |                                  |                     |                    |                        |                    |                         |                    |      |                                             |      |   |
| 1                                                                                                                           | COs/Pos                                                                          | PO1                              | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1 | PSO2                                        | PSO3 |   |
| 2                                                                                                                           | CO1                                                                              | H                                | M                   | L                  | L                      | L                  | L                       | M                  | H    |                                             |      |   |
|                                                                                                                             | CO2                                                                              | M                                | H                   | L                  | M                      | M                  | L                       | M                  |      |                                             |      |   |
|                                                                                                                             | CO3                                                                              | H                                | M                   | M                  | H                      | M                  | M                       | H                  |      |                                             |      |   |
|                                                                                                                             | CO4                                                                              | H                                | H                   | H                  | M                      | M                  | M                       | H                  |      |                                             |      |   |
|                                                                                                                             | CO5                                                                              | M                                | H                   | M                  | L                      | H                  | M                       | M                  |      |                                             |      |   |
|                                                                                                                             | CO6                                                                              | H                                | H                   | H                  | L                      | H                  | M                       | H                  |      |                                             |      |   |
| 3                                                                                                                           | Category                                                                         | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) |      | Project/Term Paper/ Seminar/ Internship(PR) |      |   |
|                                                                                                                             |                                                                                  |                                  |                     |                    | ✓                      |                    |                         |                    |      |                                             |      |   |
| 4                                                                                                                           | Approval                                                                         | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |      |                                             |      |   |

## **BPS201 – MECHANICS**

### **UNIT I- DYNAMICS**

**12**

Rigid body - moment of inertia - radius of gyration - moment of inertia of a solid cylinder, cylindrical shell, solid sphere, spherical shell, hollow sphere with external and internal radii - Compound pendulum - theory - equivalent simple pendulum - reversibility of centers of suspension and oscillation - **determination of g and K - Kater's pendulum**

### **UNIT II- STATICS AND HYDROSTATICS**

**12**

Centre of gravity - centre of gravity of a solid and hollow tetrahedron, solid and hollow hemisphere, solid cone centre of pressure - centre of pressure of a vertical rectangular lamina - vertical triangular lamina

Laws of floatation - meta centre - meta centric height of a ship - **atmospheric pressure and its variation with altitude.**

### **UNIT III- ROCKETS AND SATELLITES**

**12**

Rockets and Satellites - basic principles of rocket motion - rocket equation, thrust and acceleration - escape velocity - multistage rockets - liquid, solid and cryogenic - propellant rockets - space shuttle -

orbital velocity - launching of a satellite, types of satellite orbits - theory of Geosynchronous satellites - trajectory adjustments - launch site tracking, radio telemetry, **block diagram of satellite and earth space probes - exploration of solar systems.**

### **UNIT IV- CLASSICAL MECHANICS I**

**12**

Lagrangian formulation of classical mechanics - Mechanics for a system of particles - Generalised co-ordinates - transformation equations - configuration space - Principle of virtual work - D'Alembert's principle - Lagrange's equation - Applications of Lagrange's equation - **Simple pendulum - Atwood's machine - Bead sliding on a uniformly rotating wire**

### **UNIT V- CLASSICAL MECHANICS II**

**12**

Hamiltonian formulation of classical mechanics - phase space - **Hamiltonian function - Hamilton's canonical equations of motion -** Applications of Hamilton's equations of motion - Simple pendulum - Compound pendulum - linear harmonic oscillator.

### **Books for study:**

1. Mechanics and mathematical methods by R Murugesan, S Chand & Co. Pvt. Ltd., New Delhi, 1990
2. Elements of mechanics by Gupta
3. Dynamics by Naranamurthi, National Publishing company, Chennai.
4. Classical Mechanics by Gupta Kumar and Sharma,
5. Classical Mechanics by B D Gupta and Sathya Prakash, Kedar Nath Ram Nath & Co.,

### **Books for Reference:**

1. Mechanics by D S Mathur
2. Classical Mechanics by Goldstein, Narosa

|                                                                                                                                                |                                                                                      |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|---------------------------------------------|------|
| BPS202                                                                                                                                         | CORE 5 - OPTICS                                                                      |                                  |                     |                    |                        |                    |                         | L                  | T         | P                                           | C    |
|                                                                                                                                                | Total contact Hours-60                                                               |                                  |                     |                    |                        |                    |                         | 4                  | 0         | 0                                           | 4    |
|                                                                                                                                                | Prerequisite- Science / Mathematics Studied in Higher Secondary Studies              |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
|                                                                                                                                                | Course Coordinator Name & Department:- Dr E. Thirumal &Department of Physics         |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| COURSE OBJECTIVES:-<br>To understand the interference, diffraction, polarization of light using different optical tools and their applications |                                                                                      |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| COURSE OUTCOMES (COs)                                                                                                                          |                                                                                      |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO1                                                                                                                                            | Understand the geometrical optics using prism, lenses and optical tools etc.,        |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO2                                                                                                                                            | Analyze the Airwedge and Michelson's interferometer                                  |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO3                                                                                                                                            | Understand the diffraction, grating, telescope and microscope and their applications |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO4                                                                                                                                            | Understand the polarizer, analayzer and optical activities                           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO5                                                                                                                                            | Knowledge of Laser-ruby laser, He-Ne laser                                           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO6                                                                                                                                            | Knowledge of theory and practical concepts different types of optical systems        |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                    |                                                                                      |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| 1                                                                                                                                              | COs/Pos                                                                              | PO1                              | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PS O1     | PSO2                                        | PSO3 |
| 2                                                                                                                                              | CO1                                                                                  | H                                | M                   | L                  | L                      | L                  | L                       | M                  | H         |                                             |      |
|                                                                                                                                                | CO2                                                                                  | M                                | H                   | L                  | M                      | M                  | L                       | M                  |           |                                             |      |
|                                                                                                                                                | CO3                                                                                  | H                                | M                   | M                  | H                      | M                  | M                       | H                  |           |                                             |      |
|                                                                                                                                                | CO4                                                                                  | H                                | H                   | H                  | M                      | M                  | M                       | H                  |           |                                             |      |
|                                                                                                                                                | CO5                                                                                  | M                                | H                   | M                  | L                      | H                  | M                       | M                  |           |                                             |      |
|                                                                                                                                                | CO6                                                                                  | H                                | H                   | H                  | L                      | H                  | M                       | H                  |           |                                             |      |
| 3                                                                                                                                              | Category                                                                             | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship(PR) |      |
|                                                                                                                                                |                                                                                      |                                  |                     |                    | ✓                      |                    |                         |                    |           |                                             |      |
| 4                                                                                                                                              | Approval                                                                             | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                             |      |

## BPS202 -- OPTICS

### Unit 1- Geometrical Optics

12

Matrix method in ray optics - Effect of translation, refraction - Thick and thin lens formulae - Unit planes - Nodal planes - System of two thin lenses - Lens - defects of images - aberrations - Spherical aberrations of a single surface - Astigmatism - Curvature of field - Distortion - Abbe's sine condition - Chromatic aberrations - Huygen's eyepiece - Ramsden's eyepiece - Dispersive power of a prism - Cauchy's formula - Combination of prisms to produce dispersion without deviation - deviation without dispersion.

### Unit 2 -Interference

12

Fresnel's biprism, Fresnel's mirrors and Lloyd's single mirror experiments - Achromatic fringes - Interference in thin films (from reflected and transmitted light) - Fringes in wedge shaped films - Reflective and antireflective coatings - Michelson's interferometer - Determination of wavelength and refractive index - Fabry Perrot etalon (qualitative) .

### Unit 3 -Diffraction

12

Rectilinear propagation of light - Zone plate - Fresnel diffraction - Diffraction at circular aperture, circular disc and a straight edge - Fraunhofer diffraction - Diffraction at a single and double slit - Missing orders in double slit - Theory of diffraction grating - Determination of wavelength - Dispersive power - Rayleigh's criterion and resolving power of a prism, grating, telescope and microscope .

### Unit 4 - Polarization

12

Plane of polarization - Polarization by reflection - Brewster's law - Pile of plates- Polarization by refraction - Malu's law - Double refraction - Nicol prism - Huygen's explanation of double refraction - Elliptically and circularly polarized light - Quarter and half wave plates - Production and detection of plane, elliptically and circularly polarized light - Optical activity - Fresnel's theory - Specific rotation - Laurent's half shade polarimeter.

### Unit 5 - Laser and fiber optics

12

Communication - Non-linear optics - Basic ideas - second harmonic generation - Laser - Population inversion - metastable state - laser action - components of a laser - Nd - YAG laser - He - Ne laser - CO<sub>2</sub> laser - application of laser in industry and medicine - Fibre optics - Principle of transmission of light through optical fiber - numerical aperture - acceptance angle - types of fiber - single mode fiber - multi mode fiber - step index fiber - graded index fiber - application of fiber - sensors of fiber optic.

### TEXT BOOKS:-

1. Optics, Ajoy Ghatak, Tata McGraw Hill Co. (12th edition) (For Matrix methods)
2. Fundamental of Optics, Jenkins and White, McGraw Hill (for Aberrations, Optical Instruments and Quantum Optics)
3. A Text Book of Optics, Subrahmanyam and Brijlal, S. Chand and Co. (22nd edition) (for wave Optics)
4. Optics by Khanna D.R. & Gulati H.R., Chand & Co., Pvt. Ltd., New Delhi.

### BOOKS FOR REFERENCE:-

1. Optical Physics, S.G. Lipson, H. Lipson and D. S. Tannhauser (3rd edition) Cambridge University Press
2. Optics, Miles V. Klein and Thomas E. Furtak (2nd edition) John Wiley & Sons
3. Text Book of Optics - Chakraborty, CBS publications.

### WEBSITE REFERENCES FOR OPTICS

<http://sky.net.co/physics/optica.html>

<http://www.sparknotes.com/physics/optics/geom/>



## **BPS2L1 -GENERAL LAB II**

- 1) Young's modulus - Uniform bending (Pin and microscope)
- 2) Thermal conductivity of good conductor- Forbe's method.
- 3) Thermal conductivity of bad conductor- Lee's disc
- 4) Method of Mixtures- Latent Heat of vaporisation of Steam.
- 5) Specific heat capacity of a solid – Method of mixtures (Barton's correction)
- 6) Air wedge- Thickness of thin wire.
- 7) velocity of sound and compressibility of liquid by ultrasonic interferometer
- 8) Potentiometer – Internal Resistance
- 9) Determination of Acceptance angle in an Optical Fiber

### **TEXT BOOKS:-**

1. C.C Ouseph, G.Rangarajan- A Text Book of Practical Physics- S. Viswanathan Publisher-Part I ( 1990)
2. C.C Ouseph, C.Rangarajan, R.Balakrishnan- A Text Book of Practical Physics- S.Viswanathan Publisher-Part II ( 1996)

### **BOOKS FOR REFERENCE:-**

1. S.L Gupta and V.Kumar- Practical Physics- Pragati Prakashan – 25th Edition (2002)

|                                                                                                                             |                                                                          |                                  |                          |                    |                        |                    |                         |                    |             |                                              |             |
|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------------------------|--------------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-------------|----------------------------------------------|-------------|
| BPS203                                                                                                                      | <b>FIRST ALLIED MATHEMATICS –II</b>                                      |                                  |                          |                    |                        |                    | <b>L</b>                | <b>T</b>           | <b>P</b>    | <b>C</b>                                     |             |
|                                                                                                                             | <b>Total Contact Hours – 45</b>                                          |                                  |                          |                    |                        |                    | 4                       | 1                  | 0           | 4                                            |             |
|                                                                                                                             | Prerequisite course – Mathematics Studied in Higher Secondary studies    |                                  |                          |                    |                        |                    |                         |                    |             |                                              |             |
|                                                                                                                             | Course Coordinator Name & Department :- Dr.P.Sumathi & Mathematics       |                                  |                          |                    |                        |                    |                         |                    |             |                                              |             |
| <b>COURSE OBJECTIVES :-</b><br>To identify methods appropriate for solving problems. Apply methods to specific problems.    |                                                                          |                                  |                          |                    |                        |                    |                         |                    |             |                                              |             |
| <b>COURSE OUTCOMES (COs)</b>                                                                                                |                                                                          |                                  |                          |                    |                        |                    |                         |                    |             |                                              |             |
| CO1                                                                                                                         | Understand about the relation and functions                              |                                  |                          |                    |                        |                    |                         |                    |             |                                              |             |
| CO2                                                                                                                         | To explain about the logic connectivity of the mathematical functions    |                                  |                          |                    |                        |                    |                         |                    |             |                                              |             |
| CO3                                                                                                                         | Study about the importance of vector analysis                            |                                  |                          |                    |                        |                    |                         |                    |             |                                              |             |
| CO4                                                                                                                         | To explain detail about the steps involved in the differential equations |                                  |                          |                    |                        |                    |                         |                    |             |                                              |             |
| CO5                                                                                                                         | Study about the differentiation                                          |                                  |                          |                    |                        |                    |                         |                    |             |                                              |             |
| CO6                                                                                                                         | State and explain to the student to understand all concepts thoroughly.  |                                  |                          |                    |                        |                    |                         |                    |             |                                              |             |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low |                                                                          |                                  |                          |                    |                        |                    |                         |                    |             |                                              |             |
| 1                                                                                                                           | <b>COs/Pos</b>                                                           | <b>PO1</b>                       | <b>PO2</b>               | <b>PO3</b>         | <b>PO4</b>             | <b>PO5</b>         | <b>PO6</b>              | <b>PO7</b>         | <b>PSO1</b> | <b>PSO2</b>                                  | <b>PSO3</b> |
| 2                                                                                                                           | CO1                                                                      | H                                | H                        |                    |                        |                    |                         |                    | H           |                                              |             |
|                                                                                                                             | CO2                                                                      | H                                | H                        |                    |                        |                    |                         |                    |             |                                              |             |
|                                                                                                                             | CO3                                                                      | H                                | M                        |                    |                        |                    |                         |                    |             |                                              |             |
|                                                                                                                             | CO4                                                                      | H                                | M                        |                    |                        |                    |                         |                    |             |                                              |             |
|                                                                                                                             | CO5                                                                      | M                                | M                        |                    |                        |                    |                         |                    |             |                                              |             |
|                                                                                                                             | CO6                                                                      | H                                | H                        |                    |                        |                    |                         |                    |             |                                              |             |
| 3                                                                                                                           | Category                                                                 | Humanities & Social Studies (HS) | Basic Sciences (BS)      | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other   | Project/Term Paper/ Seminar/ Internship (PR) |             |
|                                                                                                                             |                                                                          |                                  |                          |                    | ✓                      |                    |                         |                    |             |                                              |             |
| 4                                                                                                                           | Approval                                                                 |                                  | Academic Council Meeting |                    |                        |                    |                         |                    |             |                                              |             |

## **UNIT I - SETS, RELATIONS AND FUNCTIONS**

**12**

Sets- Sets- representation of sets- Types of sets- Operation on sets- Venn diagram. Relation- Types of relation- Equivalence relation. Function- types of functions- Composite of two functions- Composite of three functions.

## **UNIT II - MATHEMATICAL CONNECTIVES LOGIC**

**12**

Statements- Connectives- Conjunction- Disjunction- Negation- Tautology contradiction- Logical equivalence- tautological implications- arguments- validity of arguments – Normal forms – Principal disjunctive normal form - Principle conjunctive normal form.

## **UNIT III - VECTOR ANALYSIS**

**12**

Scalar and Vector fields - Gradient, Divergence and Curl - Equations of motion in the vector notation - equations of motion (components) in Cartesian coordinates and spherical polar coordinates - equation of motion in the polar coordinates.

## **UNIT IV - - DIFFERENTIAL EQUATION**

**12**

Differential Equation - Second order Differential Equation with constant coefficient. Problem based on R.H.S:  $e^{ax}$ ,  $x^n$ ,  $\sin ax$ ,  $\cos ax$ .

## **UNIT V - DIFFERENTIATION**

**12**

Simple problems only – Maxima and minima of functions of single variable – Radius of curvature (Cartesian co-ordinate) – Partial differentiation – Euler's theorem.

## **TEXT BOOKS**

1. Veerarajan. T, "Discrete Mathematics", 7 th Edition, Tata McGraw hill, 2006.[Unit I & II]
2. [KayalalPachaiyappa](#) & [P.Duraipandian](#) , "Vector Analysis", S.Chand Publishing, 2014.
3. Smith &Bradley "Calculus", 4th Edition, PHI 2007. [Unit IV – V]

## **Books for Reference:**

1. S. Narayanan and T.K. Manickavasagam Pillai – Ancillary Mathematics, S. Viswanathan Printers, 1986, Chennai.
2. Allied Mathematics by Dr. A. Singaravelu.

|                                                                                                                                                                                            |                                                                                                                  |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------------------|--------------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|------|
| BCI204                                                                                                                                                                                     | Environmental Sciences                                                                                           |                                  |                          |                    | L                      | T                  | P                       | C                  |           |                                              |      |
|                                                                                                                                                                                            | Total Contact Hours – 30                                                                                         |                                  |                          |                    | 2                      | 0                  | 0                       | 2                  |           |                                              |      |
|                                                                                                                                                                                            | Prerequisite course –Higher Secondary studies                                                                    |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                                            | Course Coordinator Name & Department:- – Dr. G. Gurumoorthy / Chemistry                                          |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OBJECTIVES :-                                                                                                                                                                       |                                                                                                                  |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| To make the students learn about the science from the basic and understood all theoretical background with all concepts thoroughly to protect the habitat of biotic and abiotic ecosystem. |                                                                                                                  |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OUTCOMES (COs)                                                                                                                                                                      |                                                                                                                  |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO1                                                                                                                                                                                        | Remember the fundamental concept of environmental impact and importance of natural Resources                     |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO2                                                                                                                                                                                        | Understand about the Ecosystem, Biodiversity and its conservation                                                |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO3                                                                                                                                                                                        | Understand the various environmental pollution, effects and prevention.                                          |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO4                                                                                                                                                                                        | Apply the environmental legislations and environmental production act.                                           |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO5                                                                                                                                                                                        | Apply the human rights, value education, environment and human health: women and child welfare, public awareness |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO6                                                                                                                                                                                        | Analyze the local area, local polluted site and local simple ecosystem.                                          |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                                                |                                                                                                                  |                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
| 1                                                                                                                                                                                          | COs/Pos                                                                                                          | PO1                              | PO2                      | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                         | PSO3 |
| 2                                                                                                                                                                                          | CO1                                                                                                              | H                                | L                        | H                  |                        |                    | H                       |                    | H         |                                              |      |
|                                                                                                                                                                                            | CO2                                                                                                              | H                                | L                        | H                  |                        |                    | H                       |                    |           |                                              |      |
|                                                                                                                                                                                            | CO3                                                                                                              | H                                | L                        | H                  |                        |                    | H                       |                    |           |                                              |      |
|                                                                                                                                                                                            | CO4                                                                                                              | H                                | L                        | H                  |                        |                    | H                       |                    |           |                                              |      |
|                                                                                                                                                                                            | CO5                                                                                                              | H                                | L                        | H                  |                        |                    | H                       |                    |           |                                              |      |
|                                                                                                                                                                                            | CO6                                                                                                              | H                                | L                        | H                  |                        |                    | H                       |                    |           |                                              |      |
| 3                                                                                                                                                                                          | Category                                                                                                         | Humanities & Social Studies (HS) | Basic Sciences (BS)      | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |      |
|                                                                                                                                                                                            |                                                                                                                  | ✓                                |                          |                    |                        |                    |                         |                    |           |                                              |      |
| 4                                                                                                                                                                                          | Approval                                                                                                         |                                  | Academic Council Meeting |                    |                        |                    |                         |                    |           |                                              |      |

### Unit – I: Introduction to Environmental Sciences: Natural Resources:

6

Environmental sciences – relevance – significance – public awareness – forest resources – water resources – mineral resources – food resources – conflicts over resource sharing – exploitation – land use pattern – environmental impact – fertilizer – pesticide Problems - case studies.

### Unit – II: Exosystem, Biodiversity and its conservation:

6

Ecosystem – concept – structure and function – producers, consumers and decomposers –food chain – food web – ecological pyramids – energy flow – forest, grassland, desert and aquatic ecosystem – definition – genetic, species and ecosystem diversity – biodiversity – definition – genetic, species and ecosystem diversity – values and uses of

biodiversity – biodiversity at global, national (india) and local levels – hotspots, threats to biodiversity –conservation of biodiversity – insitu and ex-situ.

### **Unit – III: Environmental Pollution and Management**

**6**

Environmental pollution – causes – effects and control measures of air, water , marine, soil, solid waste. Thermal, nuclear pollution and disaster management – floods, earth quake, cyclone and land slides, role of individuals in prevention of pollution – pollution case studies.

### **Unit – IV: Social issues – Human population:**

**6**

Urban issues – energy – water conservation – environmental ethics – global warming – resettlement and rehabilitation issues – environmental legislations – environmental protection act. 1986 – air, water, wildlife and forest B.C.A.: syllabus (CBCS) conservation act - population growth and explosion – human rights and value education – environmental health – HIV/AIDS – role of it in environment and human health – women and child welfare – public awareness – case studies.

### **Unit – V: Field Work:**

Visit to a local area / local polluted site / local simple ecosystem – report submission.

### **Text book:**

1. K. Kumarasamy, A. Alagappa Moses and M. Vesanthy, 2004, Environmental Studies, Bharathidasan University Pub, 1, Trichy.
2. Rajamannar, 2004, Environmental Studies, EVR College Pub, Trichy.
3. S. Kalavathy, (ED.) 2004, Environmental Studies, Bishop Heber College Pub., Trichy.

### **Reference book:**

1. Rajamannar, 2004, Environmental Studies, EVR College Pub, Trichy.
2. S. Kalavathy, (ED.) 2004, Environmental Studies, Bishop Heber College Pub. Trichy.
3. G. TylerMiller, Scott Spoolman, 2018, Environmental science, 16<sup>th</sup> edition.

**Course Coordinator**

**HOD**

|                                                                                                                                                                                                                                                                                                                                                               |                                                                                                         |                                           |                     |                    |                        |                    |                         |                    |           |                                             |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|---------------------------------------------|------|
| BBC206                                                                                                                                                                                                                                                                                                                                                        | VALUE EDUCATION                                                                                         |                                           |                     |                    |                        |                    | L                       | T                  | P         | C                                           |      |
|                                                                                                                                                                                                                                                                                                                                                               | Total Contact Hours – 30                                                                                |                                           |                     |                    |                        |                    | 2                       | 0                  | 0         | 2                                           |      |
|                                                                                                                                                                                                                                                                                                                                                               | Prerequisite course – Higher Secondary level                                                            |                                           |                     |                    |                        |                    |                         |                    |           |                                             |      |
|                                                                                                                                                                                                                                                                                                                                                               | Course Coordinator Name & Department:- Ms. G. Vinothini, Commerce                                       |                                           |                     |                    |                        |                    |                         |                    |           |                                             |      |
| COURSE OBJECTIVES:- <ul style="list-style-type: none"><li>To enable the students to understand the Social values.</li><li>To provide knowledge on the features for life.</li><li>To acquire the knowledge on Human rights.</li><li>To impart the knowledge on Environment and Ecological balance.</li><li>To educate the knowledge on Social evils.</li></ul> |                                                                                                         |                                           |                     |                    |                        |                    |                         |                    |           |                                             |      |
| COURSE OUTCOMES (COs)                                                                                                                                                                                                                                                                                                                                         |                                                                                                         |                                           |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO1                                                                                                                                                                                                                                                                                                                                                           | List out the Formation and Essential Elements of Contract.                                              |                                           |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO2                                                                                                                                                                                                                                                                                                                                                           | Determine the Self esteem, duties and responsibilities of individuals, Social values                    |                                           |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO3                                                                                                                                                                                                                                                                                                                                                           | Apply to create peace and non violence and Dr. APJ Abdul Kalam’s ten points for Enlightened citizenship |                                           |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO4                                                                                                                                                                                                                                                                                                                                                           | Determine the Environment and Ecological balance                                                        |                                           |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO5                                                                                                                                                                                                                                                                                                                                                           | Measure the Knowledge on Environmental conservations and enrichment                                     |                                           |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO6                                                                                                                                                                                                                                                                                                                                                           | Formulate the awareness on Corruption, crime, terrorism, Alcoholism, Drug addiction, Dowry              |                                           |                     |                    |                        |                    |                         |                    |           |                                             |      |
| Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                                                                                                                                                                                                                      |                                                                                                         |                                           |                     |                    |                        |                    |                         |                    |           |                                             |      |
| 1                                                                                                                                                                                                                                                                                                                                                             | COs/Pos                                                                                                 | PO1                                       | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                        | PSO3 |
| 2                                                                                                                                                                                                                                                                                                                                                             | CO1                                                                                                     | H                                         | H                   | H                  | L                      | M                  | H                       | M                  | H         |                                             |      |
|                                                                                                                                                                                                                                                                                                                                                               | CO2                                                                                                     | H                                         | M                   | H                  | M                      | L                  | H                       | H                  |           |                                             |      |
|                                                                                                                                                                                                                                                                                                                                                               | CO3                                                                                                     | H                                         | L                   | M                  | M                      | H                  | H                       | L                  |           |                                             |      |
|                                                                                                                                                                                                                                                                                                                                                               | CO4                                                                                                     | M                                         | H                   | H                  | H                      | H                  | L                       | H                  |           |                                             |      |
|                                                                                                                                                                                                                                                                                                                                                               | CO5                                                                                                     | H                                         | M                   | H                  | M                      | M                  | L                       | H                  |           |                                             |      |
|                                                                                                                                                                                                                                                                                                                                                               | CO6                                                                                                     | M                                         | M                   | H                  | H                      | H                  | H                       | L                  |           |                                             |      |
| 3                                                                                                                                                                                                                                                                                                                                                             | Category                                                                                                | Humanities & Social Studies (HS)          | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship(PR) |      |
|                                                                                                                                                                                                                                                                                                                                                               |                                                                                                         | ✓                                         |                     |                    |                        |                    |                         |                    |           |                                             |      |
| 4                                                                                                                                                                                                                                                                                                                                                             | Approval                                                                                                | 47 <sup>th</sup> Academic Council Meeting |                     |                    |                        |                    |                         |                    |           |                                             |      |

**UNIT I** **6**  
Value education: Definition- relevance to present day – concept of human values – self introspection – Self esteem- duties and responsibilities of individuals- Social values- role of media in value building.

**UNIT II** **6**  
Salient features for life: Truth, commitment,, honesty and integrity, forgiveness and love, empathy and ability to sacrifice, care, unity and inclusiveness, Team work- positive creative thinking.

**UNIT III** **6**  
Human rights: Universal declaration of Human rights- human rights violation – National integration – peace and non violence – Dr. APJ Abdul Kalam’s ten points for enlightened citizenship

**UNIT IV** **6**  
Environment and Ecological balance: Interdependent of all being – living and non living – the binding of man and nature – Environmental conservations and enrichment.

**UNIT V** **6**  
Social evils : Corruption – cyber crime, terrorism, Alcoholism, Drug addiction, Dowry – Domestic violence – untouchability – female infanticide – atrocities against women – How to tackle them.

**TEXT BOOK**

1. N. Arumugam, S. Mohana, Lr. Palkani- value based education- Saras Publication, 2009
2. DN Ghose, Value Education- dominant publishers, 2005
3. M.G. Chitakra, Education and Human values, A.P.H Publishing Corporation. New Delhi

**REFERENCE BOOKS**

- 1) For Life, for the future: Reserves and Remains – UNESCO Publications.
- 2) Values, A Vedanta kesari presentations, Sri Ramakrishna Math, Chennai

**Course Coordinator**

**HOD**

### SEMESTER – III

|                                                                                                                             |                                                               |                                                                         |                          |                    |                        |                    |                         |                    |           |                                              |      |
|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------------------|--------------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|------|
| BAL301                                                                                                                      |                                                               | TAMIL – III                                                             |                          |                    |                        |                    | L                       | T                  | P         | C                                            |      |
|                                                                                                                             |                                                               | Total Contact Hours – 45                                                |                          |                    |                        |                    | 3                       | 0                  | 0         | 3                                            |      |
|                                                                                                                             |                                                               | Prerequisite course – TAMIL –II                                         |                          |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                             |                                                               | Course Coordinator Name& Department :முனைவர்.ம.சித்ராகண்ணு &தமிழ்த்துறை |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OBJECTIVES :- காப்பியஇலக்கியம்மற்றும்நீதிஇலக்கியத்தைஅறியச் செய்தல்                                                   |                                                               |                                                                         |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OUTCOMES (COs)                                                                                                       |                                                               |                                                                         |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO1                                                                                                                         | ஐம்பெரும் காப்பியங்களைபற்றி அறிவர்                            |                                                                         |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO2                                                                                                                         | பிற்கால காப்பியங்களைபற்றி அறிவர்                              |                                                                         |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO3                                                                                                                         | முக்கால நீதி இலக்கியங்களைபற்றி அறிவர்                         |                                                                         |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO4                                                                                                                         | பிற்கால நீதி இலக்கியங்களைபற்றி அறிவர்                         |                                                                         |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO5                                                                                                                         | காப்பிய மற்றும் நீதி இலக்கிய வரலாற்றைபற்றி அறிவர்             |                                                                         |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO6                                                                                                                         | காப்பியம் மற்றும் நீதி இலக்கியங்களில் தெளிவான அறிவைப் பெறுவர் |                                                                         |                          |                    |                        |                    |                         |                    |           |                                              |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                               |                                                                         |                          |                    |                        |                    |                         |                    |           |                                              |      |
| 1                                                                                                                           | COs/Pos                                                       | PO1                                                                     | PO2                      | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                         | PSO3 |
| 2                                                                                                                           | CO1                                                           | H                                                                       | M                        |                    |                        |                    |                         |                    | H         | M                                            | M    |
|                                                                                                                             | CO2                                                           | H                                                                       | M                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                             | CO3                                                           | H                                                                       | M                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                             | CO4                                                           | H                                                                       | M                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                             | CO5                                                           | H                                                                       | M                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                             | CO6                                                           | H                                                                       | M                        |                    |                        |                    |                         |                    |           |                                              |      |
| 3                                                                                                                           | Category                                                      | Humanities & Social Studies (HS)                                        | Basic Sciences (BS)      | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |      |
|                                                                                                                             |                                                               | ✓                                                                       |                          |                    |                        |                    |                         |                    |           |                                              |      |
| 4                                                                                                                           | Approval                                                      |                                                                         | Academic Council Meeting |                    |                        |                    |                         |                    |           |                                              |      |

அலகு 1

9

சிலப்பதிகாரம்-இளங்கோவடிகள்- அடைக்கலக்காதை - 115-148, 201-219

மணிமேகலை- சீத்தலைச்சாத்தனார்-ஆபுத்திரன்திறம் அறிவித்தகாதை-1 - 115

சீவகசிந்தாமணி- திருத்தக்கத் தேவர்- குணமாலையார் இலம்பகம்- 851 - 860

அலகு 2

9

கம்பராமாயணம்- கம்பர்- அயோத்திய காண்டம்- கங்கைப்படலம் - 10

தேம்பாவணி- வீரமாமுனிவர்- நாட்டுப்படலம்

- 10

சீறாப்புராணம்-உமறுப்புலவர்--மானுக்குப்பிணைநின்றபடலம்- 1- 10

|               |                  |                |          |        |
|---------------|------------------|----------------|----------|--------|
| <b>அலகு3</b>  |                  |                |          | 9      |
| திருக்குறள்   | - திருவள்ளுவர்   | - கல்வி        | - 1 - 10 |        |
| நாலடியார்     | - பொருட்பால்     | - நட்பாராய்தல் | - 1 - 10 |        |
| இனியவைநாற்பது | - பூதஞ்சேந்தனார் |                |          | 1 – 10 |

|                   |             |                        |                 |   |
|-------------------|-------------|------------------------|-----------------|---|
| <b>அலகு4</b>      |             |                        |                 | 9 |
| மூதுரை-அவ்வையார்- | 1- 10       | நன்னெறி- சிவப்பிரகாசர் | - 8,12,18,24,39 |   |
| புதியஆத்திசூடி    | - பாரதியார் | - 1- 25                |                 |   |

|                                          |  |  |  |   |
|------------------------------------------|--|--|--|---|
| <b>அலகு5</b>                             |  |  |  | 9 |
| காப்பியஇலக்கியவரலாறு , நீதிஇலக்கியவரலாறு |  |  |  |   |

#### பாட நூல்கள்

1. ந.மு.வேங்கடசாமிநாட்டார், "சிலப்பதிகாரம்", ராமையாபதிப்பகம், 2010
2. வீரமாமுனிவர், "தேம்பாவணிமூலமும்உரையும்", சாரதாபதிப்பகம், 2014
3. கலைஞர்மு.கருணாநிதி, "திருக்குறள்கலைஞர்உரை", திருமகள்நிலையம், 2010

#### பார்வைநூல்கள்:

1. புலியூர்க்கேசிகன், "மணிமேகலைமூலமும்உரையும்", சாரதாபதிப்பகம், 2017
2. ஆசிரியர்குழு, "சீவகசிந்தாமணிமூலமும்உரையும்", சாரதாபதிப்பகம், 2015
3. சு.ஆனந்தன், "தமிழ்இலக்கியவரலாறு", பாரிநிலையம், 2018
4. பத்மதேவன், "நாலடியார்மூலமும்உரையும்", கற்பகம்புத்தகாலயம், 2010
5. கதிர்முருகு, "நன்னெறிமூலமும்உரையும்", சாரதாபதிப்பகம், 2016
6. அ.சீனிவாசன், "பாரதியின்புதியஆத்திச்சூடி: ஒருவிளக்கவுரை", 1999

|                                                                                                                          |                                                                                               |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|----------|
| <b>BEH301</b>                                                                                                            | <b>ENGLISH- III</b>                                                                           |                                  |                     |                    |                        |                    |                         | <b>L</b>           | <b>T</b>  | <b>P</b>                                     | <b>C</b> |
|                                                                                                                          | Total Contact Hours – 60                                                                      |                                  |                     |                    |                        |                    |                         | 4                  | 0         | 0                                            | 4        |
|                                                                                                                          | Prerequisite course – + 2 level English                                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
|                                                                                                                          | Course Coordinator Name & Dept: Mrs. B.JANUA SHERLY – English                                 |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| <b>COURSE OBJECTIVES:-</b> To enhance the reading, writing, listening and speaking of the English language skills..      |                                                                                               |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| <b>COURSE OUTCOMES (COs)</b>                                                                                             |                                                                                               |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| CO1                                                                                                                      | Remember and recollect the value of LSRW skills.                                              |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| CO2                                                                                                                      | Understand the competence of the four modes of language skills.                               |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| CO3                                                                                                                      | Apply the grammatical concepts and the correct usage of the English language.                 |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| CO4                                                                                                                      | Analyze their personality traits and develop interpersonal skills for a better career in life |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| CO5                                                                                                                      | Evaluate the knowledge and write resume official letters and reports                          |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| CO6                                                                                                                      | Create and develop their ability as critical thinkers and readers.                            |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                                                               |                                  |                     |                    |                        |                    |                         |                    |           |                                              |          |
| 1                                                                                                                        | COs/Pos                                                                                       | PO 1                             | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PS O1     | PSO2                                         | PS O3    |
| 2                                                                                                                        | CO1                                                                                           | H                                | L                   |                    |                        |                    |                         |                    | H         |                                              |          |
|                                                                                                                          | CO2                                                                                           | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |          |
|                                                                                                                          | CO3                                                                                           | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |          |
|                                                                                                                          | CO4                                                                                           | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |          |
|                                                                                                                          | CO5                                                                                           | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |          |
|                                                                                                                          | CO6                                                                                           | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |          |
| 3                                                                                                                        | Category                                                                                      | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |          |
|                                                                                                                          |                                                                                               | ✓                                |                     |                    |                        |                    |                         |                    |           |                                              |          |
| 4                                                                                                                        | <b>Approval</b>                                                                               | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                              |          |

## **UNIT 1 - LISTENING SKILLS**

**12**

Types of Listening (Theory / Definition) - Tips for Effective Listening -Academic Listening (Lectures ) - Listening to Radio and Television

## **UNIT 2 - TELEPHONE SKILLS**

**12**

Basics of Telephone communication -How to handle calls- telephone manners -Leaving a message -Making requests -Greeting and Leave Taking over phone (etiquette) - Handling the situations especially trouble shooting Teleconference - handling Tele interviews for Call Centers

## **UNIT 3 - WRITING SKILLS**

**12**

Standard Business letter - Report writing- Email drafting and Etiquettes - Preparing Agenda and writing minutes for meetings - Making notes on Business conversations

## **UNIT 4 - CAREER SKILLS**

**12**

Applying for job -Cover letters -Resume and Effective Profiling - Interviews - Group discussions

## **UNIT 5 – PERSONAL SKILLS**

**12**

Empathy (Understanding third person’s point of view) -Intrapersonal skills -Interpersonal skills- Problem solving

### **TEXT BOOKS:**

1. Improve Your IELTS Listening and Speaking Skill by Barry Cusack, 2007
2. Roche Marc, “Advanced English Writing Skills: Master class for English Language, Roche Publishing ESL, 2019

### **REFERENCE BOOKS:**

1. Frederick H. Wentz, “A Workbook to Develop Skills For Employment”, Create space Independent Pub,2012
2. S. P. Dhanavel, “English and Soft Skills”, Orient Black Swan, First edition, 2010
3. English for Communication by Board of Editors, Emerald

|                                                                                                                                                           |                                                                                           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|---------------------------------------------|------|
| BPS301                                                                                                                                                    | CORE 7 - ELECTRICITY AND MAGNETISM                                                        |                                  |                     |                    |                        |                    |                         | L                  | T         | P                                           | C    |
|                                                                                                                                                           | Total contact Hours-60                                                                    |                                  |                     |                    |                        |                    |                         | 5                  | 0         | 0                                           | 4    |
|                                                                                                                                                           | Prerequisite- Science / Mathematics Studied in Higher Secondary Studies                   |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
|                                                                                                                                                           | Course Coordinator Name & Department:- Dr E. Thirumal / Physics                           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| COURSE OBJECTIVES:-                                                                                                                                       |                                                                                           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| To understand the concepts of Electrical and magnetic properties and study about various laws, circuits and analysis of different techniques applications |                                                                                           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| COURSE OUTCOMES (COs)                                                                                                                                     |                                                                                           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO1                                                                                                                                                       | Remembering Faradays law and thermoelectric effects                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO2                                                                                                                                                       | Understand the different combinations of electronic components and their circuit analysis |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO3                                                                                                                                                       | Apply suitable ideas of magnetic effects on Helmholtz galvanometer                        |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO4                                                                                                                                                       | Analyze the different types of induction coils                                            |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO5                                                                                                                                                       | Evaluate the problems of electromagnetic circuits                                         |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO6                                                                                                                                                       | To know about Maxwell's equations and electromagnetic wave propagation in various medium  |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                               |                                                                                           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| 1                                                                                                                                                         | COs/Pos                                                                                   | PO1                              | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PS O1     | PSO2                                        | PSO3 |
| 2                                                                                                                                                         | CO1                                                                                       | H                                | M                   | L                  | L                      | L                  | L                       | M                  | H         |                                             |      |
|                                                                                                                                                           | CO2                                                                                       | M                                | H                   | L                  | M                      | M                  | L                       | M                  |           |                                             |      |
|                                                                                                                                                           | CO3                                                                                       | H                                | M                   | M                  | H                      | M                  | M                       | H                  |           |                                             |      |
|                                                                                                                                                           | CO4                                                                                       | H                                | H                   | H                  | M                      | M                  | M                       | H                  |           |                                             |      |
|                                                                                                                                                           | CO5                                                                                       | M                                | H                   | M                  | L                      | H                  | M                       | M                  |           |                                             |      |
|                                                                                                                                                           | CO6                                                                                       | H                                | H                   | H                  | L                      | H                  | M                       | H                  |           |                                             |      |
| 3                                                                                                                                                         | Category                                                                                  | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship(PR) |      |
|                                                                                                                                                           |                                                                                           |                                  |                     |                    | ✓                      |                    |                         |                    |           |                                             |      |
| 4                                                                                                                                                         | Approval                                                                                  | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                             |      |

## BPS301 - ELECTRICITY & MAGNETISM

### Objectives:

1. To give the students a firm understanding of the basics of Electricity and Magnetism.
2. To introduce the application of Electricity and Magnetism

### Unit 1 – ELECTROSTATICS

12

Coulomb's inverse square law - permittivity - electric intensity - Gauss's theorem and its applications - electric potential and potential energy - electric dipole - potential and intensity due to a dipole - torque on the dipole by electric field CONDENSERS - Farad - capacitance of a spherical, parallel and cylindrical condenser - effect of dielectrics - energy expression - **change in energy of parallel plate capacitor - loss of energy on sharing of charges.**

### Unit 2 - CURRENT ELECTRICITY

12

Kirchoff's laws - EMF and internal resistance of a cell - Carey Foster's bridge Potentiometer and its uses THERMO ELECTRICITY - Seebeck and Peltier effect - thermo emf- laws of thermoelectricity - Peltier coefficient -determination of thermo emf - Thomson effect and Thomson coefficient - application of thermodynamics - thermo electric power and thermo electric diagrams - CHEMICAL EFFECT - Faraday's laws - conductivity of an electrolyte - Kohlraush bridge - **theories of electrolytic conduction -Daniel and Lechlanche cells - Lead- acid accumulator - Gibbs-Helmholtz equation.**

### Unit 3- MAGNETIC EFFECT OF AN ELECTRIC CURRENT

12

Biot - Savart's rule - application to straight conductor, circular coil and solenoid - Tangent galvanometer - Helmholtz galvanometer - Ampere's circuital law - **FORCE ON CURRENT CARRYING CONDUCTOR- Fleming Left hand rule** - force between two infinitely long conductors - Ampere - force on a charge - Lorentz force - theory of moving coil galvanometer and damping correction ELECTROMAGNETIC INDUCTION- Faraday and Lenz laws - Self induction - Self inductance of solenoid - Mutual induction - Mutual inductance of a solenoid inductor - Coefficient of coupling - earth inductor.

### Unit 4 - TRANSIENT CURRENT

12

Growth and decay in an inductive circuit - growth and decay in a capacitive circuit -determination of high resistance by leakage - growth, and decay of charge in an LCR circuit. **ALTERNATING CURRENT - EMF induced in coil rotating in a magnetic field** – peak, average and rms value of a.c - phasor diagrams - series and parallel resonant circuits - power factor - choke coil – transformers - three phase a.c - dynamos -motors.

### Unit 5- MAGNETISM

12

Deflection magnetometer - vibration magnetometer - its uses - Magnetism - Dia, Para and Ferro - Susceptibility and permeability - Langevin theory of Diaand Para magnetism - **Domain theory for Ferro magnetism - hysteresis. EM WAVES IN FREE SPACE** - Maxwell equations - Transverse nature of em waves - Velocity in free space - Poynting vector.

### TEXT BOOKS:-

1. Electricity and Magnetism: Brijlal & Subrahmanyam Ratan Prakashan Mandir Publishers -1995.
2. Fundamentals of Electricity and Magnetism: R.G.Mendiratta and B.K.Sawhney East - West Press ( 1976)

### BOOKS FOR REFERENCE:-

1. Advanced level physics, Nelkon and Parker Annold Publishers (sixth edition)
2. Classical Electricity and Magnetism; Panofsky and Phillips, India Book House (2000)
3. Electricity and Magnetism, A.S. Mahajan and A.A. Rangwala, Tata McGraw-Hill (1989)
4. Feynman lectures on physics, volume 2 Narosa Publishing House (1992)
5. Foundation of Electromagnetic theory, Reitz (Milford) and Christy, Narosa Book Distributors (1992)
6. Introduction to electro dynamics, David J. Griffith Prentice - Hall of India (1984)
7. Physics through Experiments Vol. II, EMF constant and Varying, B Sarat et al, Vikas Publications, New Delhi (1978)
8. Physics volume 11, David Halliday, Robert Resnick John Wiley and Sons (4th edition 1994)

|                                                                                                                             |                                                                              |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|---------------------------------------------|------|
| BPS3L1                                                                                                                      | CORE 6 - GENERAL LAB III                                                     |                                  |                     |                    |                        |                    |                         | L                  | T         | P                                           | C    |
|                                                                                                                             | Total contact Hours-30                                                       |                                  |                     |                    |                        |                    |                         | 0                  | 0         | 4                                           | 2    |
|                                                                                                                             | Prerequisite- Science / Mathematics Studied in Higher Secondary Studies      |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
|                                                                                                                             | Course Coordinator Name & Department:- Dr E. Thirumal &Department of Physics |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| COURSE OBJECTIVES:-<br>To learn the practical knowledge and interpretation of various experiments aspects                   |                                                                              |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| COURSE OUTCOMES (COs)                                                                                                       |                                                                              |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO1                                                                                                                         | Applying theoretical knowledge in practical experiments                      |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO2                                                                                                                         | Developing technical skills to collect data and analyze the results          |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO3                                                                                                                         | Understand the internal properties of given material                         |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO4                                                                                                                         | To resolve the equations, data's and graphs with real-timeexperiments        |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO5                                                                                                                         | To gain the knowledge of instrumentation techniques                          |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO6                                                                                                                         | To acquire fundamental laws and concepts of physics                          |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                                              |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| 1                                                                                                                           | COs/Pos                                                                      | PO1                              | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PS O1     | PSO2                                        | PSO3 |
| 2                                                                                                                           | CO1                                                                          | H                                | M                   | L                  | L                      | L                  | L                       | M                  | H         |                                             |      |
|                                                                                                                             | CO2                                                                          | M                                | H                   | L                  | M                      | M                  | L                       | M                  |           |                                             |      |
|                                                                                                                             | CO3                                                                          | H                                | M                   | M                  | H                      | M                  | M                       | H                  |           |                                             |      |
|                                                                                                                             | CO4                                                                          | H                                | H                   | H                  | M                      | M                  | M                       | H                  |           |                                             |      |
|                                                                                                                             | CO5                                                                          | M                                | H                   | M                  | L                      | H                  | M                       | M                  |           |                                             |      |
|                                                                                                                             | CO6                                                                          | H                                | H                   | H                  | L                      | H                  | M                       | H                  |           |                                             |      |
| 3                                                                                                                           | Category                                                                     | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship(PR) |      |
|                                                                                                                             |                                                                              |                                  |                     |                    | ✓                      |                    |                         |                    |           |                                             |      |
| 4                                                                                                                           | Approval                                                                     | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                             |      |

### **BPS3L1 - GENERAL LAB III**

**Objective :** It is aimed at exposing the under graduate students to the technique of handling simple measuring instruments and also make them measure certain mechanical and thermal properties of matter

- 1) Young's modulus – uniform bending (Scale and Telescope)
- 2) Bifilar pendulum- Moment of inertia.
- 3) Searle's viscometer- Viscosity of highly viscous liquid.
- 4) Specific heat capacity of cooling - Method of mixtures (Barton's correction)
- 5) Deflection and Vibration magnetometer (m and Bh)
- 6) Spectrometer – Refractive index of a solid prism
- 7) Spectrometer – Grating – normal incidence
- 8) Capillary Rise- Surface Tension of liquid
- 9) Carey Foster's Bridge – Resistance and Specific resistance

#### **TEXT BOOKS:-**

- 1) C.C OUSEPH, G.RANGARAJAN- A TEXT BOOK OF PRACTICAL PHYSICS- S. VISWANATHAN PUBLISHER- PART I ( 1990)
- 2) C.C OUSEPH, C.RANGARAJAN, R. BALAKRISHNAN- A TEXT BOOK OF PRACTICAL PHYSICS- S. VISWANATHAN PUBLISHER-PART II (1996)

#### **BOOKS FOR REFERENCE:-**

- 1) S.L GUPTA AND V.KUMAR- PRACTICAL PHYSICS- PRAGATI PRAKASHAN- 25TH EDITION ( 2002).

|                                                                                                                                                                      |                                                                                             |                                   |                          |                    |                        |                    |                         |                    |           |                                              |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------|--------------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|------|
| BCI302                                                                                                                                                               | ALLIED CHEMISTRY- I                                                                         |                                   |                          |                    | L                      | T                  | P                       | C                  |           |                                              |      |
|                                                                                                                                                                      | Total Contact Hours – 45                                                                    |                                   |                          |                    | 3                      | 1                  | 0                       | 3                  |           |                                              |      |
|                                                                                                                                                                      | Prerequisite course – Chemistry / Physics / Mathematics Studied in Higher Secondary studies |                                   |                          |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | Course Coordinator Name & Department:- – Dr. P.Paulraj / Chemistry                          |                                   |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OBJECTIVES:-To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly. |                                                                                             |                                   |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OUTCOMES (COs)                                                                                                                                                |                                                                                             |                                   |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO1                                                                                                                                                                  | Gain the knowledge about the properties and uses of Fuels and Fertilizer                    |                                   |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO2                                                                                                                                                                  | Understand about the theoretical concepts of polymer and its uses                           |                                   |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO3                                                                                                                                                                  | Apply its properties and uses of Conventional energy sources                                |                                   |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO4                                                                                                                                                                  | Analyze the detail about the state of matters and its importance                            |                                   |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO5                                                                                                                                                                  | Evaluate the importance of chemical kinetics                                                |                                   |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO6                                                                                                                                                                  | Create the real time applications of Chemistry in day today life.                           |                                   |                          |                    |                        |                    |                         |                    |           |                                              |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                          |                                                                                             |                                   |                          |                    |                        |                    |                         |                    |           |                                              |      |
| 1                                                                                                                                                                    | COs/Pos                                                                                     | PO1                               | PO2                      | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                         | PSO3 |
| 2                                                                                                                                                                    | CO1                                                                                         | H                                 | L                        |                    |                        |                    |                         |                    | H         |                                              |      |
|                                                                                                                                                                      | CO2                                                                                         | H                                 | L                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | CO3                                                                                         | H                                 | L                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | CO4                                                                                         | H                                 | L                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | CO5                                                                                         | H                                 | L                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | CO6                                                                                         | H                                 | L                        |                    |                        |                    |                         |                    |           |                                              |      |
| 3                                                                                                                                                                    | Category                                                                                    | Humanities & Social Studies (HSS) | Basic Sciences (BS)      | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |      |
|                                                                                                                                                                      |                                                                                             |                                   |                          |                    | ✓                      |                    |                         |                    |           |                                              |      |
| 4                                                                                                                                                                    | Approval                                                                                    |                                   | Academic Council Meeting |                    |                        |                    |                         |                    |           |                                              |      |

**UNIT – I****9**

Atomic radii, ionic radii, ionization energy or ionization potential - electron affinity - electronegativity. Fuel gases – water gas - producer gas - LPG gas – gobargas - natural gas. Fertilizers – NPK and mixed fertilizers- micronutrients and their role in plant life – bio fertilizers. Soap and detergents – an elementary idea about preparation and manufacture – cleaning action of soap and detergents. Atomic weight - molecular weight – molarity – molality - equivalent weight - normality - mole fraction - common ion effect.

**UNIT – II****9**

Polymers –definition- polymerization – types – addition and condensation polymerization – Plastics - classification – preparation, properties and uses of PVC, Teflon, nylon-6,6- PET. Rubber- vulcanization of rubber - synthetic rubbers – butyl rubber - SBR - composites – definition - types polymer matrix composites –FRP.

**UNIT – III****9**

Petroleum products and Polynuclear aromatic hydrocarbons - Coal tar –distillation products – petroleum fractionation – cracking – synthetic petrol – Fischer tropesch synthesis – octane number – cetane number– flash point – fire point – aniline point- anti-knocking agents. Benzene – resonance and resonance energy - effect of substituents in benzene – electrophile, nucleophile. Naphthalene – anthracene and phenanthrene structures only.

**UNIT – IV****9**

Solid state, Energetics and Phase rule - Typical crystal lattices – unit cell - elements of symmetry - Bragg's equation – Weiss indices - Miller indices, simple, body centered and face centered cubes. Review of first law of thermodynamics – state and path functions – need for the second law – Carnot's cycle and thermodynamic scale of temperature – spontaneous and non spontaneous processes – entropy. Phase, component, degrees of freedom, phase rule definition - one component system – water.

**UNIT – V****9**

Chemical equilibrium and Chemical kinetics - Criteria of homogeneous and heterogeneous equilibria - decomposition of HI,  $\text{CaCO}_3$  and  $\text{PCl}_5$ . Order of reactions and their determinations ( first order and second order only ) activation energy - effect of temperature on reaction rate..Catalysis – typesand mechanism of catalytic reactions, industrial applications.

**TEXT BOOKS:**

1. Principles of Inorganic Chemistry, B.R.Puri, L.R.Sharma, ShobanLalNagin Chand & Co.
2. Text Book of Inorganic Chemistry, P.L.Soni, Mohan Katyal, Sultan Chand & Sons.
3. Industrial Chemistry, B.K.Sharma, Goel Publishing House.
4. A Textbook of Environmental Chemistry and Pollution Control, S.S. Dara, S.Chand& Co Ltd.

**REFERENCES :**

1. Text Book of Organic Chemistry, P.L.Soni, H.M.Chawla, Sultan Chand & Sons.
2. Text Book of Physical Chemistry, P.L.Soni, O.P.Dharmara, U.N. Dash, Sultan Chand & Sons.
3. Principles of Physical Chemistry, B.R.Puri, L.R.Sharma, M.S.Pathania, ShobanLal Nagin Chand & Co.
4. A Textbook of Environmental Chemistry and Pollution Control, S.S. Dara, S.Chand & Co Ltd.

|                                                                                                                                                                      |                                                                                             |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------|--------------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|------|
| BCI3L2                                                                                                                                                               | ALLIED CHEMISTRY LAB - I                                                                    |                             |                          |                    | L                      | T                  | P                       | C                  |           |                                              |      |
|                                                                                                                                                                      | Total Contact Hours - 48                                                                    |                             |                          |                    | 0                      | 0                  | 4                       | 2                  |           |                                              |      |
|                                                                                                                                                                      | Prerequisite course – Chemistry / Physics / Mathematics Studied in Higher Secondary studies |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | Course Coordinator Name & Department:- – Mrs. K. Kalpana / Chemistry                        |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OBJECTIVES:-To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly. |                                                                                             |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OUTCOMES (COs)                                                                                                                                                |                                                                                             |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO1                                                                                                                                                                  | Gain the knowledge about the basic of volumetric analysis                                   |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO2                                                                                                                                                                  | Understand about the theoretical concepts of chemistry Practicals                           |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO3                                                                                                                                                                  | Apply and know about its importance in Industrial Process                                   |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO4                                                                                                                                                                  | Analyze the detail about practical importance to be aware of the concepts from the basis.   |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO5                                                                                                                                                                  | Evaluate the importance of handling and precision of experimental skills                    |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO6                                                                                                                                                                  | Create the real time applications of Chemistry in day today life.                           |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                          |                                                                                             |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| 1                                                                                                                                                                    | COs/Pos                                                                                     | PO1                         | PO2                      | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                         | PSO3 |
| 2                                                                                                                                                                    | CO1                                                                                         | H                           | L                        |                    |                        |                    |                         |                    | H         |                                              |      |
|                                                                                                                                                                      | CO2                                                                                         | H                           | L                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | CO3                                                                                         | H                           | L                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | CO4                                                                                         | H                           | L                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | CO5                                                                                         | H                           | L                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | CO6                                                                                         | H                           | L                        |                    |                        |                    |                         |                    |           |                                              |      |
| 3                                                                                                                                                                    | Category                                                                                    | Humanities & Social Studies | Basic Sciences (BS)      | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |      |
|                                                                                                                                                                      |                                                                                             |                             |                          |                    | ✓                      |                    |                         |                    |           |                                              |      |
| 4                                                                                                                                                                    | Approval                                                                                    |                             | Academic Council Meeting |                    |                        |                    |                         |                    |           |                                              |      |

## **VOLUMETRIC ANALYSIS**

### **ACIDIMETRY AND ALKALIMETRY**

1. Strong acid Versus Strong Base
2. Weak acid Versus Strong base.
3. Determination of hardness of water
4. Estimation of HCl – standard oxalic acid.

### **IODOMETRY**

1. Estimation of copper using thiosulphate
2. Estimation of  $K_2Cr_2O_7$
3. Estimation of  $KMnO_4$  using thiosulphate

### **PERMANGANOMETRY**

1. Estimation of ferrous sulphate – Standard FAS.
2. Estimation of oxalic acid – Standard oxalic acid.

### **TEXT BOOKS:**

1. Vogel, A.I. A Textbook of Quantitative Inorganic Analysis, ELBS. 1978
2. Ahluwalia, V.K. & Aggarwal, R. Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis, University Press (2000).
3. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co.: New Delhi (2011).
4. Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. Experiments in Physical Chemistry 8th Ed.; McGraw-Hill: New York (2003).

### **REFERENCE BOOKS:**

1. Halpern, A. M. & McBane, G. C. Experimental Physical Chemistry 3rd Ed.; W.H. Freeman & Co.: New York (2003).
2. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
3. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic Chemistry, 5th Ed., Pearson (2012)
4. Ahluwalia, V.K. & Dhingra, S. Comprehensive Practical Organic Chemistry: Qualitative Analysis, University Press (2000).

|                                                                                                                             |                                                           |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|--------------------------------------------------------------|--------------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|------|
| BAL002                                                                                                                      |                                                           | BASIC TAMIL – I                                              |                          |                    |                        |                    | L                       | T                  | P         | C                                            |      |
|                                                                                                                             |                                                           | Total Contact Hours – 45                                     |                          |                    |                        |                    | 3                       | 0                  | 0         | 3                                            |      |
|                                                                                                                             |                                                           | Prerequisite course – +2 Level Tamil                         |                          |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                             |                                                           | Course Coordinator Name & Department :- ஸ்ரீதேவி&தமிழ்த்துறை |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OBJECTIVES :- தமிழ்மொழியின்அடிப்படைக்கூறுகள்பற்றிஅறியச்செய்தல்                                                       |                                                           |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OUTCOMES (COs)                                                                                                       |                                                           |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO1                                                                                                                         | தமிழ் எழுத்துக்களை அறிவர்                                 |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO2                                                                                                                         | தமிழ் எழுத்துக்களில் உள்ள வேறுபாடுகளைஅறிவர்               |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO3                                                                                                                         | சொல்லமைப்புபற்றிஅறிவர்                                    |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO4                                                                                                                         | சொற்களை உருவாக்கும்அறிவைப்பெறுவர்                         |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO5                                                                                                                         | சொற்களை தொடராக மாற்றும்திறனைப்பெறுவர்                     |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO6                                                                                                                         | எழுத்துக்கள், சொற்கள், தொடர்கள்பற்றிதெளிவானஅறிவைப்பெறுவர் |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                           |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |
| 1                                                                                                                           | COs/Pos                                                   | PO1                                                          | PO2                      | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                         | PSO3 |
| 2                                                                                                                           | CO1                                                       | M                                                            | H                        |                    |                        |                    |                         |                    | M         | H                                            | M    |
|                                                                                                                             | CO2                                                       | M                                                            | H                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                             | CO3                                                       | M                                                            | H                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                             | CO4                                                       | M                                                            | H                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                             | CO5                                                       | M                                                            | H                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                             | CO6                                                       | M                                                            | H                        |                    |                        |                    |                         |                    |           |                                              |      |
| 3                                                                                                                           | Category                                                  | Humanities & Social Studies (HS)                             | Basic Sciences (BS)      | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |      |
|                                                                                                                             |                                                           |                                                              |                          |                    |                        |                    | ✓                       |                    |           |                                              |      |
| 4                                                                                                                           | Approval                                                  |                                                              | Academic Council Meeting |                    |                        |                    |                         |                    |           |                                              |      |

#### அலகு – 1

9

தமிழ் எழுத்து அறிமுகம் - உயிரெழுத்து - மெய்யெழுத்து - பெயர், முறை , வடிவம், ஒலி அளவு (மாத்திரை) - சுட்டு வினா எழுத்துக்கள் - எழுத்துக்களை கண்டறியும் பயிற்சி

#### அலகு – 2

12

உயிர்மெய் எழுத்துக்கள் - எண்ணிக்கை, பெயர், முறை , வடிவம், ஒலி அளவு (மாத்திரை) - எழுத்துக்களை அகரவரிசைப்படுத்துதல் - எழுத்து வேறுபாடு அறியும் பயிற்சி

#### அலகு – 3

12

சொல்லமைப்பு - ஒரேழுத்துச் சொற்கள், பல எழுத்துச் சொற்கள் - சொல்வகை - பெயர் வினை - சொற்பொருள் வேறுபாடு அறிதல் - சொற்களை உருவாக்கும் பயிற்சி

#### அலகு – 4

12

தொடர் அமைப்பு - சொற்கள் தொடராக அமையும் முறை - தொடர் வேறுபாடு - செய்தித் தொடர், வினாத் தொடர், உணர்ச்சித் தொடர், ஏவல் தொடர்- சொற்களை தொடரில் பயன்படுத்தும் பயிற்சி

#### பாட நூல்கள்

1. ஆறுமுகநாவலர், "தமிழ் இலக்கணம்", பாரிநிலையம், 2012
2. கழகப்புலவர்குழுவினர், "நன்னூல் – எழுத்ததிகாரம்", கழகவெளியீடு, 1996
3. கழகப்புலவர்குழுவினர், "நன்னூல் – சொல்லதிகாரம்", கழகவெளியீடு, 1996

#### பார்வைநூல்கள்

1. பவணந்திமுனிவர், "நன்னூல் -எழுத்ததிகாரம்", முல்லைநிலையம், 1994
2. சோம.இளவரசு, "நன்னூல்சொல்லதிகாரம்", : மெய்யப்பன்பதிப்பகம், 2012
3. கூழங்கைத்தம்பிரான், "நன்னூல்", உலகத்தமிழாராய்ச்சிநிறுவனம், 1998

|                                                                                                                             |                                                                   |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|------|--|
| BCA3E1                                                                                                                      |                                                                   | SPECIAL TAMIL – I                                                        |                          |                    |                        |                    | L                       | T                  | P         | C                                            |      |  |
|                                                                                                                             |                                                                   | Total Contact Hours – 45                                                 |                          |                    |                        |                    | 3                       | 0                  | 0         | 3                                            |      |  |
|                                                                                                                             |                                                                   | Prerequisite course – Tamil Under Part 1                                 |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             |                                                                   | Course Coordinator Name& Department :முனைவர்.ம.சித்ராகண்ணு & தமிழ்த்துறை |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| COURSE OBJECTIVES :- பண்டைத்தமிழரின்நாகரிகமும்பண்பாடும்பற்றிஅறியச்செய்தல்                                                   |                                                                   |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| COURSE OUTCOMES (COs)                                                                                                       |                                                                   |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO1                                                                                                                         | தமிழரின்அரசியல், தொழில், சமூகஅமைப்புபற்றிஅறிவர்                   |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO2                                                                                                                         | தமிழர்திருமணமுறை, குடும்பவாழ்வுபற்றிஅறிவர்                        |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO3                                                                                                                         | தமிழரின்உணவு, உடை, உறைவிடம்பற்றிஅறிவர்                            |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO4                                                                                                                         | தமிழரின்கல்வி, வானியல், விளையாட்டு, மகளிர், விழாக்கள்பற்றி அறிவர் |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO5                                                                                                                         | சங்ககாலமருத்துவம், கட்டடக்கலைப்பற்றி அறிவர்                       |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO6                                                                                                                         | சங்ககாலதமிழரின்நாகரிகம்பண்பாடுபற்றிதெளிவானஅறிவைபுஅறிவர்           |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                                   |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| 1                                                                                                                           | COs/Pos                                                           | PO1                                                                      | PO2                      | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                         | PSO3 |  |
| 2                                                                                                                           | CO1                                                               | M                                                                        |                          |                    | H                      |                    |                         |                    | H         | M                                            | M    |  |
|                                                                                                                             | CO2                                                               | M                                                                        |                          |                    | H                      |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO3                                                               | M                                                                        |                          |                    | H                      |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO4                                                               | M                                                                        |                          |                    | H                      |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO5                                                               | M                                                                        |                          |                    | H                      |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO6                                                               | M                                                                        |                          |                    | H                      |                    |                         |                    |           |                                              |      |  |
| 3                                                                                                                           | Category                                                          | Humanities & Social Studies (HS)                                         | Basic Sciences (BS)      | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |      |  |
|                                                                                                                             |                                                                   |                                                                          |                          |                    |                        |                    | ✓                       |                    |           |                                              |      |  |
| 4                                                                                                                           | Approval                                                          |                                                                          | Academic Council Meeting |                    |                        |                    |                         |                    |           |                                              |      |  |

**அலகு<sup>1</sup>** 9  
நாகரிகமும்பண்பாடும் -சங்ககாலத்துஅரசியல்நிலை - சங்ககாலத்தொழிற்பிரிவினரும்சமூகஅமைப்பும்

**அலகு<sup>2</sup>** 9  
பண்டைத்தமிழர்திருமணமுறை ,நல்லறம் - குடும்பவாழ்வுபற்றியதமிழர்கொள்கை - பண்டையத்தமிழரின்உணவு, உடை, உறையுள்

**அலகு<sup>3</sup>** 9  
பண்டைத்தமிழரின்கல்விநிலை - பண்டைத்தமிழரின்வானியல்அறிவு -பண்டைத்தமிழரின்விளையாட்டும்பொழுதுபோக்கும்

**அலகு<sup>4</sup>** 9  
மகளிர் நிலை - சங்கத் தமிழரின் சமய வாழ்வு - சங்ககால விழாக்கள்

**அலகு<sup>5</sup>** 9  
இந்திய நாகரீகத்தில் தமிழ்ப் பண்பாட்டுக்கூறுகள் - மருத்துவக் கலை - தமிழகக் கோயில் கட்டிடக்கலை வளர்ச்சி

**பாடநூல்கள்**

1. அ.தட்சிணாமூர்த்தி, "தமிழர்நாகரிகமும்பண்பாடும்",ஐந்திணைப்பதிப்பகம், 2010
- 2.பாவாணர், "பண்டைத்தமிழர்நாகரிகமும்பண்பாடும்", பூம்புகார்பதிப்பகம், 2012
- 3 கே.கே.பிள்ளை, "தமிழகவரலாறுமக்களும்பண்பாடும்", மணிவாசகர் பதிப்பகம், 2012

**பார்வைநூல்கள்**

1. நா. வானமாமலை, "தமிழ்ப்பண்பாடும்தத்துவமும்", அலைகள்வெளியீட்டகம், 2011
2. பேரின்பன், "தமிழர்வரலாறு:சிலகேள்விகளும்தேடல்களும்", அலைகள்வெளியீட்டகம், 2011
3. மா.இராசமாணிக்கனார், "தமிழகவரலாறும்தமிழ்ப்பண்பாடும்", செண்பகாபதிப்பகம், 2012

## SEMESTER IV

|                                                                                                                             |                                                                                |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|------|--|
| BAL401                                                                                                                      |                                                                                | TAMIL – IV                                                               |                          |                    |                        |                    | L                       | T                  | P         | C                                            |      |  |
|                                                                                                                             |                                                                                | Total Contact Hours – 45                                                 |                          |                    |                        |                    | 3                       | 0                  | 0         | 3                                            |      |  |
|                                                                                                                             |                                                                                | Prerequisite course – TAMIL –III                                         |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             |                                                                                | Course Coordinator Name& Department :முனைவர்.ம.சித்ராகண்ணு & தமிழ்த்துறை |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| COURSE OBJECTIVES :- சங்க இலக்கியத்தைப் பற்றி அறியச் செய்தல்                                                                |                                                                                |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| COURSE OUTCOMES (COs)                                                                                                       |                                                                                |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO1                                                                                                                         | எட்டுத்தொகையில் நற்றிணை, குறுந்தொகை, கலித்தொகை இலக்கியங்களை அறிவர்             |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO2                                                                                                                         | எட்டுத்தொகையில் புறநானூறு, பதிற்றுப்பத்து இலக்கியங்களை அறிவர்                  |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO3                                                                                                                         | பத்துப்பாட்டு இலக்கியத்தில் பொருநராற்றுப்படை, பெரும்பாணாற்றுப்படை பற்றி அறிவர் |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO4                                                                                                                         | பத்துப்பாட்டில் நெடுநல்வாடை, பட்டினப்பாலை, முல்லைப்பாட்டு பற்றி அறிவர்         |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO5                                                                                                                         | எட்டுத்தொகை, பத்துப்பாட்டு இலக்கிய வரலாற்றை அறிவர்                             |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO6                                                                                                                         | சங்க இலக்கியத்தைப் பற்றிய உயரிய சிந்தனையைப் பெறுவர்                            |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                                                |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| 1                                                                                                                           | COs/Pos                                                                        | PO1                                                                      | PO2                      | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                         | PSO3 |  |
| 2                                                                                                                           | CO1                                                                            | H                                                                        | M                        |                    |                        |                    |                         |                    | H         | M                                            | M    |  |
|                                                                                                                             | CO2                                                                            | H                                                                        | M                        |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO3                                                                            | H                                                                        | M                        |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO4                                                                            | H                                                                        | M                        |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO5                                                                            | H                                                                        | M                        |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO6                                                                            | H                                                                        | M                        |                    |                        |                    |                         |                    |           |                                              |      |  |
| 3                                                                                                                           | Category                                                                       | Humanities & Social Studies (HS)                                         | Basic Sciences (BS)      | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |      |  |
|                                                                                                                             |                                                                                | ✓                                                                        |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| 4                                                                                                                           | Approval                                                                       |                                                                          | Academic Council Meeting |                    |                        |                    |                         |                    |           |                                              |      |  |

**அலகு1** 9

நற்றிணை - 10, 110, 129

குறுந்தொகை - 8, 25, 32

கலித்தொகை - 6, 37, 51

**அலகு2** 9

புறநானூறு - 89, 109, 204

பதிற்றுப்பத்து - 42,46,49(5ம்பத்து)

**அலகு3** 9

பொருநராற்றுப்படை - 151 - 213

பெரும்பாணாற்றுப்படை - 5 - 15,

- 170 - 184

**அலகு4** 9

நெடுநல்வாடை - 1 - 25

பட்டினப்பாலை - 106 - 158

முல்லைப்பாட்டு - 1 - 28

**அலகு5** 9

எட்டுத்தொகைவரலாறு- பத்துப்பாட்டுவரலாறு

#### **பாட நூல்கள்**

1. வேங்கடராமன், "நற்றிணைமூலமும்உரையும்", உ.வே.சாநூல்நிலையம்,2013

2. புலியூர்க்கேசிகன், "குறுந்தொகைமூலமும்உரையும்", சாரதாபதிப்பகம், 2010

3. புலியூர்க்கேசிகன், "கலித்தொகைமூலமும்உரையும்", சாரதாபதிப்பகம், 2015

#### **பார்வைநூல்கள்**

1. புலியூர்க்கேசிகன், "புறநானூறுமூலமும்உரையும்", சாரதாபதிப்பகம், 2010

2. ஒளவைசு.துரைசாமிப்பிள்ளை, "பதிற்றுப்பத்துஉரை", சாரதாபதிப்பகம், 2008

3. கதிர்முருகு, "பத்துப்பாட்டுமூலமும்உரையும்", சாரதாபதிப்பகம், 2010

4. ச.வே.சுப்ரமணியம், "சங்கஇலக்கியம்", மணிவாசகர்பதிப்பகம், 2006

|                                                                                                                          |                                                              |                                  |                     |                   |                        |                    |                         |                    |           |                                              |          |
|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------|---------------------|-------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|----------|
| <b>BEH401</b>                                                                                                            | <b>ENGLISH- IV</b>                                           |                                  |                     |                   |                        |                    |                         | <b>L</b>           | <b>T</b>  | <b>P</b>                                     | <b>C</b> |
|                                                                                                                          | Total Contact Hours – 60                                     |                                  |                     |                   |                        |                    |                         | 4                  | 0         | 0                                            | 4        |
|                                                                                                                          | Prerequisite course – + 2 level English                      |                                  |                     |                   |                        |                    |                         |                    |           |                                              |          |
|                                                                                                                          | Course Coordinator Name & Dept. :Ms.E.REKHA - English        |                                  |                     |                   |                        |                    |                         |                    |           |                                              |          |
| <b>COURSE OBJECTIVES:-</b> To focus on the balanced development of the English language communication skills.            |                                                              |                                  |                     |                   |                        |                    |                         |                    |           |                                              |          |
| <b>COURSE OUTCOMES (COs)</b>                                                                                             |                                                              |                                  |                     |                   |                        |                    |                         |                    |           |                                              |          |
| CO1                                                                                                                      | Remember the basic concepts of English literature            |                                  |                     |                   |                        |                    |                         |                    |           |                                              |          |
| CO2                                                                                                                      | Understand the importance of the English language.           |                                  |                     |                   |                        |                    |                         |                    |           |                                              |          |
| CO3                                                                                                                      | Apply the themes and values by comprehending the given text. |                                  |                     |                   |                        |                    |                         |                    |           |                                              |          |
| CO4                                                                                                                      | Analyse the grammar and the literary texts.                  |                                  |                     |                   |                        |                    |                         |                    |           |                                              |          |
| CO5                                                                                                                      | Evaluate the characters and the genre prescribed.            |                                  |                     |                   |                        |                    |                         |                    |           |                                              |          |
| CO6                                                                                                                      | Create comprehensive essays efficiently.                     |                                  |                     |                   |                        |                    |                         |                    |           |                                              |          |
| Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                              |                                  |                     |                   |                        |                    |                         |                    |           |                                              |          |
| 1                                                                                                                        | COs/Pos                                                      | PO 1                             | PO2                 | PO3               | PO4                    | PO5                | PO6                     | PO7                | PS O1     | PSO2                                         | PS O3    |
| 2                                                                                                                        | CO1                                                          | H                                | L                   |                   |                        |                    |                         |                    | H         |                                              |          |
|                                                                                                                          | CO2                                                          | H                                | L                   |                   |                        |                    |                         |                    |           |                                              |          |
|                                                                                                                          | CO3                                                          | H                                | L                   |                   |                        |                    |                         |                    |           |                                              |          |
|                                                                                                                          | CO4                                                          | H                                | L                   |                   |                        |                    |                         |                    |           |                                              |          |
|                                                                                                                          | CO5                                                          | H                                | L                   |                   |                        |                    |                         |                    |           |                                              |          |
|                                                                                                                          | CO6                                                          | H                                | L                   |                   |                        |                    |                         |                    |           |                                              |          |
| 3                                                                                                                        | Category                                                     | Humanities & Social Studies (HS) | Basic Sciences (BS) | Eng Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |          |
|                                                                                                                          |                                                              | ✓                                |                     |                   |                        |                    |                         |                    |           |                                              |          |
| 4                                                                                                                        | <b>Approval</b>                                              | Academic Council Meeting         |                     |                   |                        |                    |                         |                    |           |                                              |          |

## UNIT 1 - PROSE

12

**Lalajee** – Jim Corbett – Author Biography – Plot – Theme - Summary - Critical analysis; **Face of Judas** – Bonnie Chamberlin - Author Biography – Plot – Theme - Summary - Critical analysis.

## UNIT 2 - POETRY

12

**Laugh and Be Merry** – **John Masefield** – Author Biography -Theme – Poetic devices – Annotations - Summary – Critical analysis; **Matilda** - **Hilaire Belloc**- Author Biography -Theme – Poetic devices – Annotations - Summary – Critical analysis.

## UNIT 3: SHORT STORIES

12

**Hunchback Sundari** – **C.Raja Gopalachari** – Author Biography - Plot – Theme - Character sketch – Summary – Critical analysis; **The Eyes Are Not There** - **Ruskin Bond**- Author Biography - Plot – Theme - Character sketch – Summary – Critical analysis.

## UNIT 4: ONE-ACT PLAYS

12

**Macbeth Soliloquy** – **Out, Out, Brief Candle** - **Shakespeare** – Author Biography - Plot – Theme - Character sketch – Summary – Critical analysis; **Julius Ceasar** - **Anthony’s Funeral Speech** – Author Biography - Plot – Theme - Character sketch – Summary – Critical analysis.

## UNIT 5: FUNCTIONAL ENGLISH

12

Wh – Questions - Pattern – Active and Passive voice – usage of passive voice – structure of passive verb; Modal verbs – Tenses.

### TEXT BOOKS:

1. Corbett, “My India”, Rupa Publications India Pvt. Ltd., 2018
2. Stories of Innocent by C.Rajagopalachari, Bharathiya Vidya Bhavan, 2009

### REFERENCE BOOKS:

1. Shakespeare – The Complete Work; Wilco Publishing House, Mumbai, India. 2005
2. Hilaire Belloc, “Matilda”, Random House UK, 1994
3. Shakespeare, “Macbeth”, Macmillan Publisher, 2014



## **BPS401 – NUCLEAR AND PARTICLE PHYSICS**

### **UNIT I - DISCHARGE PHENOMENON THROUGH GASES**

**12**

Motion of a charge in a transverse electric and magnetic fields - specific charge of an electron - Dunnington's method - Magnetron method - Positive rays - Thomson parabola method - **Aston and Dempster's mass spectrograph.**

### **UNIT II - ATOMIC STRUCTURE**

**12**

Vector atom model - Pauli's exclusion principle - explanation of periodic table - **various quantum numbers** - angular momentum and magnetic moment - coupling schemes - LS and JJ coupling - spatial quantisation - Bohr magneton - Stern and Gerlach experiment.

### **UNIT III - IONISATION POTENTIAL AND SPLITTING OF ENERGY LEVELS**

**12**

Excitation and ionization potential - Davis and Goucher's method - Zeeman effect - Larmor's theorem - Debye's explanation of normal Zeeman effect - Anomalous Zeeman effect - theoretical explanation - Lande's 'g' factor and explanation of splitting of D1 and D2 lines of sodium - **Paschen back effect-theory - Stark effect (qualitative treatment only).**

### **UNIT IV - Nuclear size, shapes and forces**

**12**

Nuclear size determination -Electron scattering method-**electric moments**- magnetic moments - Nuclear forces - Neutron Proton scattering at low energies-Singlet state magnetic moment.

### **UNIT V- Models of nuclei**

**12**

Liquid drop model - Semi-empirical mass formula - nuclear fission-Levy's formula-Atomic masses and its significance-Shell model-Magic numbers-Barrier penetration-**Basic ideas of nuclear reactors.**

#### **Books for study:**

1. Modern physics by R Murugesan, S Chand & Co., New Delhi – 2004
2. Atomic and Nuclear physics by N Subramanian and Brij Lal, S Chand & Co. - 2000
3. Atomic physics by J B Rajam
4. Atomic and Nuclear Physics - A.B. Gupta and Deepak Ghosh
5. Modern Physics by B.D.Guggal, C.L.Chabbra and P.L.Gupta

#### **Books for Reference**

1. Atomic physics by A B Gupta and Dipak Ghosh - Books and Allied Publishers
2. Modern physics by J H Hamilton and Yang, McGraw Hill Publication 1996
3. Concepts of Modern physics by A Beiser, Tata McGraw Hill, New Delhi 1997
4. Fundamentals of physics, 6th edition, by D Halliday, R Resnick and J Walker, Wiley NY 200
5. Introduction to Nuclear Physics, Harold Enge, (1969).
6. Nuclear Physics, Roy R.R and Nigam B.P., New Age International, Chennai, Edition 1 (2008).

|                                                                                                                                                                              |                                                                                   |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|---------------------------------------------|------|---|
| BPS4L1                                                                                                                                                                       | CORE 10 - GENERAL LAB IV                                                          |                                  |                     |                    |                        |                    |                         |                    | L         | T                                           | P    | C |
|                                                                                                                                                                              | Total contact Hours-30                                                            |                                  |                     |                    |                        |                    |                         |                    | 0         | 0                                           | 4    | 2 |
|                                                                                                                                                                              | Prerequisite- Science / Mathematics Studied in Higher Secondary Studies           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |   |
|                                                                                                                                                                              | Course Coordinator Name & Department:- Dr E. Thirumal / Physics                   |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |   |
| COURSE OBJECTIVES:-<br>To gain the knowledge of advanced scientific experiments with hands on experience of spectrometer, Ballistic galvanometer and deflection magnetometer |                                                                                   |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |   |
| COURSE OUTCOMES (COs)                                                                                                                                                        |                                                                                   |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |   |
| CO1                                                                                                                                                                          | Applying gained scientific knowledge in practical experiments                     |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |   |
| CO2                                                                                                                                                                          | Developing practical skills to find resolution of spectrometers and data analysis |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |   |
| CO3                                                                                                                                                                          | Understand the optical properties of given gratings and prisms                    |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |   |
| CO4                                                                                                                                                                          | To resolve the data graphs with real-time experiments                             |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |   |
| CO5                                                                                                                                                                          | To gain the knowledge of instrumentation techniques                               |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |   |
| CO6                                                                                                                                                                          | To acquire advanced scientific knowledge from different experiments               |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |   |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                                  |                                                                                   |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |   |
| 1                                                                                                                                                                            | COs/Pos                                                                           | PO1                              | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PS O1     | PSO2                                        | PSO3 |   |
| 2                                                                                                                                                                            | CO1                                                                               | H                                | M                   | L                  | L                      | L                  | L                       | M                  | H         |                                             |      |   |
|                                                                                                                                                                              | CO2                                                                               | M                                | H                   | L                  | M                      | M                  | L                       | M                  |           |                                             |      |   |
|                                                                                                                                                                              | CO3                                                                               | H                                | M                   | M                  | H                      | M                  | M                       | H                  |           |                                             |      |   |
|                                                                                                                                                                              | CO4                                                                               | H                                | H                   | H                  | M                      | M                  | M                       | H                  |           |                                             |      |   |
|                                                                                                                                                                              | CO5                                                                               | M                                | H                   | M                  | L                      | H                  | M                       | M                  |           |                                             |      |   |
|                                                                                                                                                                              | CO6                                                                               | H                                | H                   | H                  | L                      | H                  | M                       | H                  |           |                                             |      |   |
| 3                                                                                                                                                                            | Category                                                                          | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship(PR) |      |   |
|                                                                                                                                                                              |                                                                                   |                                  |                     |                    | ✓                      |                    |                         |                    |           |                                             |      |   |
| 4                                                                                                                                                                            | Approval                                                                          | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                             |      |   |

## **BPS4L1 - GENERAL LAB IV**

**Objective :** It is aimed at exposing the under graduate students of the Physics department to the techniques of handling equipments, making error free measurements and error analysis.

1. Young's modulus – Koneig's method
2. Newton law of cooling – Specific heat of liquid
3. Surface tension – Quinkes Method
4. Liquid lens – Refractive index of glass and liquid
5. Spectrometer – Hallow prism – Refractive index
6. Potentiometer – Calibration of high range
7. Ballastic galvanometer – Figure of Merit
8. Transistor – Characteristic curve common emitter mode

### **TEXT BOOKS:-**

1. C.C Ouseph, G.Rangarajan- A Text Book of Practical Physics- S. Viswanathan Publisher-Part I (1990)
2. C.C Ouseph, C.Rangarajan, R.Balakrishnan- A Text Book of Practical Physics- S.Viswanathan Publisher-Part II ( 1996)

### **BOOKS FOR REFERENCE:-**

1. S.L Gupta and V.Kumar- Practical Physics- Pragati Prakashan – 25th Edition (2002)

|                                                                                                                                                                      |                                                                         |                                                                                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|------|
| BCI402                                                                                                                                                               |                                                                         | ALLIED CHEMISTRY– II                                                                        |                          |                    |                        |                    | L                       | T                  | P         | C                                            |      |
|                                                                                                                                                                      |                                                                         | Total Contact Hours - 45                                                                    |                          |                    |                        |                    | 3                       | 1                  | 0         | 3                                            |      |
|                                                                                                                                                                      |                                                                         | Prerequisite course – Chemistry / Physics / Mathematics Studied in Higher Secondary studies |                          |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      |                                                                         | Course Coordinator Name & Department:- – Mrs. K. Kalpana / Chemistry                        |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly |                                                                         |                                                                                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OUTCOMES (COs)                                                                                                                                                |                                                                         |                                                                                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO1                                                                                                                                                                  | Gain the knowledge about the importance and uses of aquatic system      |                                                                                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO2                                                                                                                                                                  | Understand about the theoretical concepts of carbohydrates and proteins |                                                                                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO3                                                                                                                                                                  | Apply its properties and uses of solvent systems                        |                                                                                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO4                                                                                                                                                                  | Analyze the detail about the state of colloids and its importance       |                                                                                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO5                                                                                                                                                                  | Evaluate the importance of electrochemistry and its role                |                                                                                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO6                                                                                                                                                                  | Create the real time applications of Chemistry in day today life.       |                                                                                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                          |                                                                         |                                                                                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| 1                                                                                                                                                                    | COs/Pos                                                                 | PO1                                                                                         | PO2                      | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                         | PSO3 |
| 2                                                                                                                                                                    | CO1                                                                     | H                                                                                           | L                        |                    |                        |                    |                         |                    | H         |                                              |      |
|                                                                                                                                                                      | CO2                                                                     | H                                                                                           | L                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | CO3                                                                     | H                                                                                           | L                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | CO4                                                                     | H                                                                                           | L                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | CO5                                                                     | H                                                                                           | L                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | CO6                                                                     | H                                                                                           | L                        |                    |                        |                    |                         |                    |           |                                              |      |
| 3                                                                                                                                                                    | Category                                                                | Humanities & Social Studies                                                                 | Basic Sciences (BS)      | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |      |
|                                                                                                                                                                      |                                                                         |                                                                                             |                          |                    | ✓                      |                    |                         |                    |           |                                              |      |
| 4                                                                                                                                                                    | Approval                                                                |                                                                                             | Academic Council Meeting |                    |                        |                    |                         |                    |           |                                              |      |

## **UNIT – I Water Treatment**

9

Introduction – Characteristics – alkanity – types of alkanity and determination – hardness – types and estimation by EDTA method; Domestic water treatment – disinfection methods (chlorination, ozonation, UV treatment) – Boiler feed water – requirements – disadvantages of using hard water in boilers – internal conditioning (calgon and carbonate conditioning methods) – external conditioning – demineralization process – desalination and reverse osmosis.

## **UNIT – II Carbohydrates and Proteins**

9

Classification – glucose and fructose – preparation and properties – elucidation of structure of glucose – configuration of glucose – Fisher and Haworth cyclic structures. Sucrose – manufacture and properties – starch and cellulose – properties and uses. Amino acids and proteins - amino acids – classification based on structure and essential and non-essential amino acids – preparation and properties – proteins – classification based on physical properties and biological functions.

## **UNIT – III: Basic concepts of organic chemistry**

9

Inductive effect – relative strength of aliphatic mono carboxylic acid and aliphatic amines. Resonance – conditions for resonance - consequences of resonance – resonance energy - basic property of aniline and acidic property of phenol – hyper conjugation – consequences of hyper conjugation – heat of hydrogenation - bond length and dipole moment - steric effect – steric accelerated reaction and steric inhibited reaction - Types of solvents – polar - non-polar – their dissolving nature

## **UNIT – IV - Colloidal Chemistry**

9

Introduction : Types of Colloidal system – classification of colloids. Preparation of colloidal solution – dispersion method (mechanical and electrical) – condensation method (oxidation and reduction) Properties of colloidal system: colligative, optical, electrical and Brownian movement - **Emulsions**: Emulsifiers – types of emulsion - **Gels**: Gelation - preparations of gels – elastic and non – elastic gels. Applications of colloids.

## **UNIT – V – Electrochemistry**

9

Introduction; Conductors, Electrode potential Measurement of single electrode potential, ion selective electrodes – electro chemical series and applications. pH and buffer - importance of pH and buffers in living systems – pH determination by Colorimetric and Potentiometric methods. Specific and equivalent conductivities – their determination – effect of dilution on conductivity. Ostwald's dilution law, Kohlrausch's law, conductivity measurements, Conductometric titrations.

## **TEXT BOOKS:**

1. Principles of Inorganic Chemistry, B.R.Puri, L.R.Sharma, Shoban Lal Nagin Chand & Co.
2. Text Book of Organic Chemistry, P.L.Soni, H.M.Chawla, Sultan Chand & Co
3. Principles of Physical Chemistry, B.R.Puri, L.R.Sharma, M.S.Pathania, Shoban Lal Nagin Chand & Co.
4. Industrial Chemistry, B.K.Sharma, Goel Publishing House.

## **REFERENCES :**

1. Text Book of Inorganic Chemistry, P.L.Soni, Sultan Chand & Sons.
2. A Textbook of Environmental Chemistry and Pollution Control, S.S. Dara, S.Chand & Co Ltd.
3. Text Book of Physical Chemistry, P.L.Soni, O.P.Dharmara, U.N. Dash, Sultan Chand & Sons.
4. A Textbook of Environmental Chemistry and Pollution Control, S.S. Dara, S.Chand & Co Ltd.

|                                                                                                                                                                      |                                                                                             |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------|--------------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|------|
| BCI4L2                                                                                                                                                               | ALLIED CHEMISTRY LAB - II                                                                   |                             |                          | L                  | T                      | P                  | C                       |                    |           |                                              |      |
|                                                                                                                                                                      | Total Contact Hours - 48                                                                    |                             |                          | 0                  | 0                      | 4                  | 2                       |                    |           |                                              |      |
|                                                                                                                                                                      | Prerequisite course – Chemistry / Physics / Mathematics Studied in Higher Secondary studies |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | Course Coordinator Name & Department:- – Mrs. S.S.Vanitha / Chemistry                       |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OBJECTIVES:-To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly. |                                                                                             |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OUTCOMES (COs)                                                                                                                                                |                                                                                             |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO1                                                                                                                                                                  | Gain the knowledge about the basic of organic salt analysis                                 |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO2                                                                                                                                                                  | Understand about the theoretical concepts of chemistry Practical’s                          |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO3                                                                                                                                                                  | Apply and know about its importance in Industrial Process                                   |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO4                                                                                                                                                                  | Analyze the detail about practical importance to be aware of the concepts from the basis.   |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO5                                                                                                                                                                  | Evaluate the importance of handling and precision of experimental skills                    |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO6                                                                                                                                                                  | Create the real time applications of Chemistry in day today life.                           |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                          |                                                                                             |                             |                          |                    |                        |                    |                         |                    |           |                                              |      |
| 1                                                                                                                                                                    | COs/Pos                                                                                     | PO1                         | PO2                      | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                         | PSO3 |
| 2                                                                                                                                                                    | CO1                                                                                         | H                           | L                        |                    |                        |                    |                         |                    | H         |                                              |      |
|                                                                                                                                                                      | CO2                                                                                         | H                           | L                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | CO3                                                                                         | H                           | L                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | CO4                                                                                         | H                           | L                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | CO5                                                                                         | H                           | L                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                                                                      | CO6                                                                                         | H                           | L                        |                    |                        |                    |                         |                    |           |                                              |      |
| 3                                                                                                                                                                    | Category                                                                                    | Humanities & Social Studies | Basic Sciences (BS)      | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |      |
|                                                                                                                                                                      |                                                                                             |                             |                          |                    | ✓                      |                    |                         |                    |           |                                              |      |
| 4                                                                                                                                                                    | Approval                                                                                    |                             | Academic Council Meeting |                    |                        |                    |                         |                    |           |                                              |      |

## **ORGANIC ANALYSIS**

A STUDY OF REACTIONS OF THE FOLLOWING ORGANIC COMPOUNDS:

1. Carbohydrate
2. Amide
3. Aldehyde
4. Ketone
5. Acid
6. Amine
7. Phenol

The students may be trained to perform the Specific reactions like

Test for element (nitrogen only),

Aliphatic or aromatic, Saturated or unsaturated and functional group present and record their observation

### **TEXT BOOKS:**

1. Vogel, A.I. A Textbook of Quantitative Inorganic Analysis, ELBS. 1978
2. Ahluwalia, V.K. & Aggarwal, R. Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis, University Press (2000).
3. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co.: New Delhi (2011).
4. Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. Experiments in Physical Chemistry 8th Ed.; McGraw-Hill: New York (2003).

### **REFERENCE BOOKS:**

1. Halpern, A. M. & McBane, G. C. Experimental Physical Chemistry 3rd Ed.; W.H. Freeman & Co.: New York (2003).
  2. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
  3. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic Chemistry, 5th Ed., Pearson (2012)
- Ahluwalia, V.K. & Dhingra, S. Comprehensive Practical Organic Chemistry: Qualitative Analysis, University Press (2000).

|                                                                                                                             |                                                               |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------|--------------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|------|--|
| BAL004                                                                                                                      |                                                               | BASIC TAMIL – II                                             |                          |                    |                        |                    | L                       | T                  | P         | C                                            |      |  |
|                                                                                                                             |                                                               | Total Contact Hours – 45                                     |                          |                    |                        |                    | 3                       | 0                  | 0         | 3                                            |      |  |
|                                                                                                                             |                                                               | Prerequisite course – Basic Tamil – I                        |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             |                                                               | Course Coordinator Name & Department :- ஸ்ரீதேவி&தமிழ்த்துறை |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| COURSE OBJECTIVES :- தமிழ்மொழியின்அடிப்படைக்கூறுகள்பற்றிஅறியச்செய்தல்                                                       |                                                               |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| COURSE OUTCOMES (COs)                                                                                                       |                                                               |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO1                                                                                                                         | தமிழ்மொழியின்சொல்வகை, திணை, பால்பாகுபாடுபற்றிஅறிவர்           |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO2                                                                                                                         | அடுக்குத்தொடர், இரட்டைக்கிளவி, ண,ன,ர,ற,ள,ழவேறுபாடுபற்றிஅறிவர் |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO3                                                                                                                         | பத்திகளைசுருக்கியும், விரிவாக்கிஎழுதும்அறிவைப்பெறுவர்         |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO4                                                                                                                         | சொற்களைகையாண்டு உரையாடுவதுபற்றிபெறுவர்                        |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO5                                                                                                                         | கட்டுரை, கடிதம்எழுதும்அறிவைப்பெறுவர்                          |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| CO6                                                                                                                         | தமிழ்மொழியில்சரளமாகபேசும்எழுதும்திறனைப்பெறுவர்                |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                               |                                                              |                          |                    |                        |                    |                         |                    |           |                                              |      |  |
| 1                                                                                                                           | COs/Pos                                                       | PO1                                                          | PO2                      | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                         | PSO3 |  |
| 2                                                                                                                           | CO1                                                           | M                                                            | H                        |                    |                        |                    |                         |                    | M         | H                                            | M    |  |
|                                                                                                                             | CO2                                                           | M                                                            | H                        |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO3                                                           | M                                                            | H                        |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO4                                                           | M                                                            | H                        |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO5                                                           | M                                                            | H                        |                    |                        |                    |                         |                    |           |                                              |      |  |
|                                                                                                                             | CO6                                                           | M                                                            | H                        |                    |                        |                    |                         |                    |           |                                              |      |  |
| 3                                                                                                                           | Category                                                      | Humanities & Social Studies (HS)                             | Basic Sciences (BS)      | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |      |  |
|                                                                                                                             |                                                               |                                                              |                          |                    |                        |                    | ✓                       |                    |           |                                              |      |  |
| 4                                                                                                                           | Approval                                                      |                                                              | Academic Council Meeting |                    |                        |                    |                         |                    |           |                                              |      |  |

|                         |    |
|-------------------------|----|
| <b>அலகு – 1</b>         | 12 |
| 1.1 தமிழ் மொழி அறிமுகம் |    |
| 1.2 சொல் வகைகள்         |    |
| 1.3 திணை, பால் பாகுபாடு |    |

|                                     |    |
|-------------------------------------|----|
| <b>அலகு – 2</b>                     | 12 |
| 2.1 அடுக்குத் தொடர், இரட்டைக் கிளவி |    |
| 2.2 ஒரு ஓர் வேறுபாடு                |    |
| 2.3 ண,ன,ர,ற,ள,ழ வேறுபாடு            |    |

|                                                                 |    |
|-----------------------------------------------------------------|----|
| <b>அலகு – 3</b>                                                 | 12 |
| 3.1 பத்தியிலிருந்து வினாக்களுக்குரிய விடைகளை கண்டறியும் பயிற்சி |    |
| 3.2 சுருக்கி வரைதல்                                             |    |
| 3.3 விரிவாக்கி எழுதுதல்                                         |    |

|                 |   |
|-----------------|---|
| <b>அலகு – 4</b> | 9 |
| 4.1 உரையாடல்    |   |
| 4.2 கட்டுரை     |   |
| 4.3 மடல் வரைதல் |   |

#### **பாட நூல்கள்**

1. மருதூர் அரங்கராசன், "தவறின்றித் தமிழ் எழுத", ஐந்திணைப்பதிப்பகம், 2012
2. ஞா.தேவநேயப்பாவாணர், "உயர்தரக் கட்டுரை இலக்கணம்", கௌராபதிப்பகம், 2013
3. க. கயிலாயநாதன், "தமிழ் மொழி விளக்கம்", முல்லைநிலையம், 2006

#### **பார்வை நூல்கள்**

1. பாரதிதாசன், "தவறின்றித்தமிழ்எழுத", நாம்தமிழ்ப்பதிப்பகம், 2013
2. ஆசிரியர்குழு, "கடிதம்வரைதல்", லியோபப்ளிகேஷன்ஸ், 2013
3. பாவாணர், "கட்டுரைவரைவதுஎப்படி?", தமிழ்மண்பதிப்பகம், 2012

|                                                                                                                             |                                                              |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |
|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|------|
| BCA4E1                                                                                                                      |                                                              | SPECIAL TAMIL – II                                                       |                          |                    |                        |                    | L                       | T                  | P         | C                                            |      |
|                                                                                                                             |                                                              | Total Contact Hours – 45                                                 |                          |                    |                        |                    | 3                       | 0                  | 0         | 3                                            |      |
|                                                                                                                             |                                                              | Prerequisite course – SPECIAL TAMIL – I                                  |                          |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                             |                                                              | Course Coordinator Name& Department :முனைவர்.ம.சித்ராகண்ணு & தமிழ்த்துறை |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OBJECTIVES :- நாட்டுப்புறவாழ்வியலைபற்றி அறியச்செய்தல்                                                                |                                                              |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |
| COURSE OUTCOMES (COs)                                                                                                       |                                                              |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO1                                                                                                                         | தாலாட்டுமற்றும் குழந்தைப்பாடல்கள் பற்றி அறிவர்               |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO2                                                                                                                         | தொழிற்பாடல், காதல்பாடல், கொண்டாட்டப்பாடல்கள் பற்றி அறிவர்    |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO3                                                                                                                         | சங்ககாலமக்களின் விடுகதை, நம்பிக்கை, சடங்குகள் பற்றி அறிவர்   |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO4                                                                                                                         | பழமொழிகள், நாட்டுப்புறமருத்துவம், சமயவழிபாடுகள் பற்றி அறிவர் |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO5                                                                                                                         | நாட்டுப்புற இலக்கிய வரலாறு பற்றி அறிவர்                      |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |
| CO6                                                                                                                         | வாய்மொழி இலக்கியம் மூலம் சங்ககாலமக்களின் வாழ்வியலை அறிவர்    |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                              |                                                                          |                          |                    |                        |                    |                         |                    |           |                                              |      |
| 1                                                                                                                           | COs/Pos                                                      | PO1                                                                      | PO2                      | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                         | PSO3 |
| 2                                                                                                                           | CO1                                                          | H                                                                        | M                        |                    |                        |                    |                         |                    | H         | M                                            | M    |
|                                                                                                                             | CO2                                                          | H                                                                        | M                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                             | CO3                                                          | H                                                                        | M                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                             | CO4                                                          | H                                                                        | M                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                             | CO5                                                          | H                                                                        | M                        |                    |                        |                    |                         |                    |           |                                              |      |
|                                                                                                                             | CO6                                                          | H                                                                        | M                        |                    |                        |                    |                         |                    |           |                                              |      |
| 3                                                                                                                           | Category                                                     | Humanities & Social Studies (HS)                                         | Basic Sciences (BS)      | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |      |
|                                                                                                                             |                                                              |                                                                          |                          |                    |                        |                    | ✓                       |                    |           |                                              |      |
| 4                                                                                                                           | Approval                                                     |                                                                          | Academic Council Meeting |                    |                        |                    |                         |                    |           |                                              |      |

**அலகு1** 9

தாலாட்டுப்பாடல் - குழந்தைப்பாடல் - விளையாட்டுப்பாடல்

**அலகு2**

தொழிற்பாடல்கள் - காதல்பாடல்கள் - கொண்டாட்டப்பாடல்கள்

**அலகு3**

விடுகதைகள் - நம்பிக்கைகள் -சடங்குகள்

**அலகு4**

பழமொழிகள் -நாட்டுப்புறமருத்துவம் - சமயவழிபாடுகள்

**அலகு5**

நாட்டுப்புற இலக்கிய வரலாறு

**பாடநூல்கள்**

1. சு.சக்திவேல், "நாட்டுப்புறஇயல்ஆய்வு", மணிவாசகர்பதிப்பகம், 2015
2. சு.சண்முகசுந்தரம், "நாட்டுப்புறஇலக்கியவரலாறு", காவ்யாபதிப்பகம், 2017
3. நா. வானமாமலை, "தமிழர்நாட்டுப்பாடல்கள்", நியூசெஞ்சுரிபுக்ஹவுஸ், 2014

**பார்வைநூல்கள்**

1. ஆறு.இராமநாதன், "நாட்டுப்புறபாடல்வகைகள்", புலமைவெளியீடு, 1982
2. சரசுவதிவேணுகோபால், "தமிழகநாட்டுப்புறவியல்", தாமரைவெளியீடு, 1981
3. கழனிபூரன், "நாட்டுப்புறவியல்கட்டுரைகள்", காவ்யாபதிப்பகம், 2014

|                                                                                                                             |                                                                                   |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------|------------------------|-----------------------|---------------------------|-----------------------|----------------------------|-----------------------|--------------|------------------------------------------------------|----------|
| BPS4E3                                                                                                                      | Skill Based Elective I- DESKTOP PUBLISHING                                        |                                        |                        |                       |                           |                       | L                          | T                     | P            | C                                                    |          |
|                                                                                                                             | Total Contact Hours – 30                                                          |                                        |                        |                       |                           |                       | 2                          | 0                     | 0            | 2                                                    |          |
|                                                                                                                             | Prerequisite course – Higher Secondary Level                                      |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
|                                                                                                                             | Course Coordinator Name & Department :- N.Mathimagal& BCA                         |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| COURSE OBJECTIVES:-<br>The learner will have the knowledge about the use of Computer Hardware and basic Software            |                                                                                   |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| COURSE OUTCOMES (COs)                                                                                                       |                                                                                   |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| CO1                                                                                                                         | Gain knowledge of basic concepts of Computer Hardware and basic Software          |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| CO2                                                                                                                         | Analyze the use of Netscape to access the Course Home Page and Tips and Tricks. . |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| CO3                                                                                                                         | Discussthe basic Principles and development of publishing and printing .          |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| CO4                                                                                                                         | Identify the basic Knowledge and operations of a prepress computer system         |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| CO5                                                                                                                         | Demonstrate the typography.                                                       |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| CO6                                                                                                                         | Test real time application using a basic concept.                                 |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                                                   |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| 1                                                                                                                           | COs/Pos                                                                           | PO1                                    | PO2                    | PO3                   | PO4                       | PO5                   | PO6                        | PO7                   | PS<br>O<br>1 | PS<br>O<br>2                                         | PS<br>O3 |
| 2                                                                                                                           | CO1                                                                               | H                                      | L                      |                       |                           |                       |                            |                       | H            |                                                      |          |
|                                                                                                                             | CO2                                                                               | M                                      | L                      |                       |                           |                       |                            |                       |              |                                                      |          |
|                                                                                                                             | CO3                                                                               | H                                      | -                      |                       |                           |                       |                            |                       |              |                                                      |          |
|                                                                                                                             | CO4                                                                               | H                                      | L                      |                       |                           |                       |                            |                       |              |                                                      |          |
|                                                                                                                             | CO5                                                                               | M                                      | L                      |                       |                           |                       |                            |                       |              |                                                      |          |
|                                                                                                                             | CO6                                                                               | H                                      | L                      |                       |                           |                       |                            |                       |              |                                                      |          |
| 3                                                                                                                           | Category                                                                          | Humanities &<br>Social Studies<br>(HS) | Basic Sciences<br>(BS) | Engg Sciences<br>(ES) | Professional<br>Core (PC) | Core Elective<br>(CE) | Non-Major<br>Elective (NE) | Open Elective<br>(OE) | Any other    | Project/Term<br>Paper/<br>Seminar/<br>Internship(PR) |          |
|                                                                                                                             |                                                                                   |                                        |                        |                       |                           |                       |                            |                       |              | ✓                                                    |          |
| 4                                                                                                                           | Approval                                                                          | Academic Council Meeting               |                        |                       |                           |                       |                            |                       |              |                                                      |          |

## **DESKTOP PUBLISHING**

### **UNIT-1**

Classification of Computer Hardware and basic Software. Different Hardware and Software with • their uses. Types of Software i.e. System, - Application etc. Different types of Input & Output devices. Workshop safety and environmental awareness - Principles and development of publishing and printing - Desktop publishing.

### **UNIT-2**

Knowledge and operations of a prepress computer system – Typography - Image processing.

### **UNIT -3**

Finished art work - Other related processes – Case Study.

### **Reference Books:-**

**G.Dalin. M.Sc software engineering, HSI PUBLICATIONS**

## SEMESTER V

|                                                                                                                                                                                |                                                                                                                         |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|---------------------------------------------|------|
| BPS501                                                                                                                                                                         | CORE 11 -RELATIVITY AND QUANTUM MECHANICS                                                                               |                                  |                     |                    |                        |                    |                         | L                  | T         | P                                           | C    |
|                                                                                                                                                                                | Total contact Hours-60                                                                                                  |                                  |                     |                    |                        |                    |                         | 5                  | 0         | 0                                           | 4    |
|                                                                                                                                                                                | Prerequisite- Science / Mathematics Studied in Higher Secondary Studies                                                 |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
|                                                                                                                                                                                | Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics                                                        |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| COURSE OBJECTIVES:-<br>To acquire sufficient knowledge in Properties of matter waves, Wave equation, Schrodinger equation and applications, Operator formalism and Relativity. |                                                                                                                         |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| COURSE OUTCOMES (COs)                                                                                                                                                          |                                                                                                                         |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO1                                                                                                                                                                            | Understand the basic terms in Quantum Mechanics                                                                         |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO2                                                                                                                                                                            | To Learn about the principles of quantum particles                                                                      |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO3                                                                                                                                                                            | Apply basics to construct and solve one particle equation.                                                              |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO4                                                                                                                                                                            | To develop problem solving methods that will include mathematical as well as numerical computations and solutions       |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO5                                                                                                                                                                            | To design and construct particle equation in the free and bound states as well as to analyze and interpret the results. |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO6                                                                                                                                                                            | To understand the fundamentals and concepts in the special theory of relativity                                         |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                                    |                                                                                                                         |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| 1                                                                                                                                                                              | COs/Pos                                                                                                                 | PO1                              | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PS O1     | PSO2                                        | PSO3 |
| 2                                                                                                                                                                              | CO1                                                                                                                     | H                                | M                   | L                  | L                      | L                  | L                       | M                  | H         |                                             |      |
|                                                                                                                                                                                | CO2                                                                                                                     | M                                | H                   | L                  | M                      | M                  | L                       | M                  |           |                                             |      |
|                                                                                                                                                                                | CO3                                                                                                                     | H                                | M                   | M                  | H                      | M                  | M                       | H                  |           |                                             |      |
|                                                                                                                                                                                | CO4                                                                                                                     | H                                | H                   | H                  | M                      | M                  | M                       | H                  |           |                                             |      |
|                                                                                                                                                                                | CO5                                                                                                                     | M                                | H                   | M                  | L                      | H                  | M                       | M                  |           |                                             |      |
|                                                                                                                                                                                | CO6                                                                                                                     | H                                | H                   | H                  | L                      | H                  | M                       | H                  |           |                                             |      |
| 3                                                                                                                                                                              | Category                                                                                                                | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship(PR) |      |
|                                                                                                                                                                                |                                                                                                                         |                                  |                     |                    | ✓                      |                    |                         |                    |           |                                             |      |
| 4                                                                                                                                                                              | Approval                                                                                                                | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                             |      |

## BPS501 – RELATIVITY AND QUANTUM MECHANICS

**Objective:** To understand the basic concepts of quantum mechanics and apply it to various simple problems. In addition, to understand the laws of special & general theory of relativity.

### UNIT I - WAVE MECHANICS

12

Matter waves – de Broglie wavelength – wave velocity and group velocity – Heisenberg's Uncertainty principle – proof of Uncertainty principle for one dimensional wave packet – Postulates of wave mechanics – properties of wave functions – **operator formalism – eigen functions – eigen values – expectation values.**

### UNIT II - SCHRÖDINGER EQUATIONS AND ITS APPLICATIONS

12

Schrodinger equation – time dependent and time independent – **application of Schrodinger equations** – linear harmonic oscillator – zero point energy – particle in a one dimensional box – barrier penetration and tunnelling effect – rigid rotator – hydrogen atom.

### UNIT III - SPECIAL THEORY OF RELATIVITY

12

Classical relativity – Galilean transformation - Michelson – Morley experiment – Significance of negative result – postulates of special theory of relativity – Lorentz transformation equations – Length contraction – Time dilation – Relativity of simultaneity – Law of addition of velocities – **variation of mass with velocity – relativistic kinetic energy equations.**

### Unit VI - RELATIVISTIC KINEMATICS

12

Mass energy equivalence – Einstein mass energy equation – Illustration - pion decay - aberration and Doppler effect - velocity transformation - **transformation of acceleration** - four-dimensional Euclidean space-time.

### Unit V - GENERAL THEORY OF RELATIVITY

12

The conflict between Newtonian gravitation and special theory - General theory of relativity - Mach's principle - **Definable features of a gravitation theory** - Two approaches to general theory - Einstein's equations

### BOOKS FOR STUDY:

1. Quantum Mechanics – Bagade and Singh.
2. Quantum Mechanics Satya Prakash Sultan Chand Publishers .
3. Modern Physics - R.Murugesan
4. P.M.Mathews and K.Venkatesan, A Textbook of QUANTUM MECHANICS, 2nd Ed, Tata McGraw Hill PVT. (2010) (Units 1-3)
5. Robert Resnick, 1968, Introduction to Special Relativity, 1st Edition, Wiley Eastern, New Delhi. (Unit IV)
6. Arthur Beiser, Shobhit Mahajan and S.Rai choudhury, Concepts of MODERN PHYSICS, (special Ind.Ed) 6 th edition Tata McGraw Hill(2009)(units 1-3)
7. K D Krori, Fundamentals of Special and General Relativity, PHI (2012) (units 4-5) 4. Robert Resnick First edition, Introduction to special relativity, Wiley Eastern, New Delhi (1968)(units

### BOOKS FOR REFERENCE:

1. A.B. Gupta and Dipak Ghosh, Atomic and Nuclear Physics, Books and Allied (P) Ltd, Calcutta (1997)
2. Ghatak A, Introduction to Quantum mechanics, MacMillan India Ltd, Madras ( 2002)
3. Powell J.L and Craseman.B, Quantum mechanics, Narosa publishing, Madras (1995)
4. R.Murugesan and Kiruthiga Sivaprasath, Modern Physics, 14th Ed., S.Chand and Company Ltd ( 2009)
5. Quantum Physics - Berkeley Series - Sie - Eyvind Wichman - 1st Ed - Tata McGraw Hill -2010
6. Introduction to Quantum Mechanics- 2nd Ed - David Griffiths - PHI - 2004
7. Quantum Mechanics - 2nd Ed - G Aruldas - PHI - 2008
8. Introduction to Modern Physics - Mani H S and G K Mehta - Afiliated East and West - 1988

### Web sites:

[http://www.hi.is/~quantum\\_mechanics/quantum.html](http://www.hi.is/~quantum_mechanics/quantum.html) <http://newton.ex.ac.uk/research/qsystems/people/jenkins/mbody/mbody2.html>  
[http://en.wikipedia.org/wiki/quantum\\_mechanics](http://en.wikipedia.org/wiki/quantum_mechanics) <http://www2.slac.stanford.edu/vvc/theory/relativity.html>



## **BPS502 - BASIC ELECTRONICS**

### **UNIT I -SEMICONDUCTOR integrating and differentiating circuits THEORY DEVICES AND CHARACTERISTICS** **12**

Classification of solids in terms of forbidden energy gap - Fermi level - Fermi - dirac function - Carrier concentration intrinsic and extrinsic semi conductors - effect of temperature on Fermi level - PN junction diode - Zener diode - Tunnel diode - photo diode - PIN - APD - Photo transistor - LED, LCD.

### **UNIT II - RECTIFIERS AND AMPLIFIERS** **12**

Half-wave, full-wave and bridge rectifier - Two port representation of a transistor - h-parameters - AC equivalent circuit using h-parameters - analysis of an amplifier using h-parameters - Expressions for current gain, voltage gain, input impedance, output impedance and power gain for common emitter only.

### **UNIT III - FEEDBACK OSCILLATORS** **12**

Voltage gain of a feedback amplifier - Barkhausen criterion - Hartley, Colpitt's, phase shift and Weinbridge oscillators - expressions for frequency of oscillations and condition for sustained oscillations in each case - - frequency stability. crystal oscillator

### **UNIT IV - WAVE SHAPING CIRCUITS AND MULTI VIBRATORS** **12**

Clipping and clamping circuits - biased clipper - Multivibrators - Astable - Mono stable and bi-stable multivibrators - Schmitt trigger

### **UNIT V- RADIO COMMUNICATION AND TELEVISION** **12**

Principles of transmission and reception - Modulation - types of modulation - amplitude modulation - frequency modulation and phase modulation - theory and mathematical analysis for AM, FM and PM - detector - AM detector - FM Discriminator - AM and FM transmitter and receiver - Block diagram of TV transmission and reception – principles of colour TV.

#### **Books for study**

1. Principles of electronics by V K Mehta, S Chand & Co., 5th edition 2001
2. Elements of electronics by Bagde and S P Singh
3. Functional electronics by Ramanan
4. Monochrome and Colour TV by Gulati
5. Basic and applied electronics by M Arul Thalpathi, Comptek Publishers, Chennai 2005

#### **Books for reference:**

1. Electronic principles by Malvino
2. Electronic devices and circuits by Allen Mottershed
3. Monochrome and colour TV Gulati
4. Basic Television and videosystems by B Grob
5. Solid state electronics by Manna, Tata McGraw Hill
6. Basic electronics, 6th edition by B Grob, McGraw Hill, NY 1989



## **BPS503 – CRYSTAL PHYSICS**

### **UNIT I – NUCLEATION**

**12**

Introduction-kinds of nucleation-nucleation barometers - equilibrium stability and Meta stable state-classical theory of nucleation-nucleation parameters - effect of soluble impurities on nucleation-determination of solubility-methods of induction period measurements-desupersaturation.

### **UNIT II - SOLUTION AND GEL GROWTH TECHNIQUES**

**12**

Low temperature solution growth - slow cooling method – slow evaporation method - temperature gradient method-criteria for optimizing solution growth parameters-basic apparatus for solution growth - Gel growth-structure of silica gel and gelling mechanism -merits of gel method-experimental methods - chemical reaction method-chemical reduction method-complex de complex method-solubility reduction method-sol gel method.

### **UNIT III - HIGH TEMPERATURE AND OTHER TECHNIQUES OF GROWTH**

**12**

Growth from melt-Bridgman, Czochralski, zone melting, Verneuil techniques-physical vapour deposition-flux growth-chemical vapour deposition - chemical vapor transport-hydrothermal growth - epitaxial growth.

### **UNIT IV - OPTICAL STUDIES**

**12**

Atomic absorption spectroscopy-UV-Visible-NIR spectroscopy - Experimental set up for Fourier Transform Infrared analysis - FT-Raman vibrational spectroscopy and NMR-Illustrations with selected crystals-Nonlinear optical phenomenon (qualitative)-Kurtz powder SHG method-photoconductivity and schematic set up for measurements – positive and negative photoconductivity.

### **UNIT V - CRYSTAL CHARACTERIZATION**

**12**

Thermal analysis-methods of thermal analysis-thermogravimetric analysis (TGA)-Differential thermal analysis (DTA)-Differential Scanning Calorimetry (DSC)-Mechanical studies-methods of hardness testing (qualitative)-Vickers hardness testing-correlation of microhardness with other properties-estimation of hardness number and work hardening coefficient (n)-dielectric studies-dielectric constant and dielectric loss measurements.

### **BOOKS FOR REFERENCE:**

1. Brice J. C. (1986), 'Crystal Growth Process', John Wiley and Sons, New York.
2. Brice J.C. (1973), 'The growth of crystals from liquids', North Holland publishing company, Amsterdam.
3. Buckley H.E. (1951), 'Crystal Growth', John Wiley and Sons, New York.
4. Pamplin B.R. (1980), 'Crystal Growth', Pergman Press, London.
5. Henisch H.K. (1988), 'Crystals in gels and Liesegang rings', Cambridge Univ. Press. USA
6. R.T. Sane and Jagdish K Ghadge 'Thermal Analysis Theory and applications' Quest Publications 1997
7. V G Dmitriev, G.G. Gurzadyan, D.N. Nikigosyan; 'Handbook of Nonlinear optical crystals' SpringerVerlag 1991
8. Joshi V.N. (1990), 'Photoconductivity', Marcel Dekker, New York.
9. Santhanaraghavan P. and Ramasamy P. Crystal growth Process and Methods, (2000) KRU Publications, Kumbakonam.





**UNIT –I ENGINEERING MATERIALS - CHEMICAL BONDING****12**

Classification of engineering materials - levels of structure - structure-property relationship in materials stability and metastability - Bond energy - bond type and bond length - Ionic and covalent bonding secondary bonding - variation in bonding character and properties.

**UNIT -II- ELEMENTARY CRYSTALLOGRAPHY****12**

Space lattice - basis - unit cell - Bravais lattice - Miller indices - symmetry elements of a crystalline solid - symmetry groups - X-ray diffraction and Bragg's law - powder method - Crystal imperfections - point imperfections - geometry of dislocation - edge and screw dislocation - Burger's vector.

**UNIT –III MECHANICAL BEHAVIOUR OF MATERIALS****12**

Elastic behaviour - atomic model of elastic behaviour -Young's modulus - Poisson's ratio - Shear modulus - bulk modulus -The modulus as a parameter in design - rubber like elasticity - Plastic deformation - the tensile stress- strain curve.

**UNIT -IV NON DESTRUCTIVE TESTING****12**

Radiographic methods - Photoelastic method - magnetic methods - electrical methods Ultrasonic methods - Equipments used for NDT - metallurgical microscope - electron microscope - scanning electron microscope (SEM).

**UNIT –V MAGNETIC MATERIALS AND DIELECTRIC MATERIALS****12**

Terminology and classification - magnetic moments due to electron spin - ferro magnetism the domain structure - soft and hard magnetic materials. Polarization - electronic, ionic, orientation and space charge polarization - temperature and frequency effects - electric breakdown - ferroelectric materials – Pyro electric materials – Piezo electric materials

**TEXT BOOKS:-**

1. Raghavan V- Materials Science and Engineering a first course, III Ed., Prentice Hall of India (pvt) Ltd , 1990.
2. Structural M., Materials Science, Anuradha agencies & publishers, 1990.

**BOOKS FOR REFERENCE:-**

1. Kittel C., Introduction to Solid State Physics, V11 Ed, Wiley Eastern
2. Manchandra VK., A text book of Materials Science, New India Publishing House, 1992.

**Course Coordinator****HOD**

|                                                                                                                             |                                                                                                                                                                                                                  |                                  |                     |                    |                        |                    |                         |                    |             |                                             |             |
|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-------------|---------------------------------------------|-------------|
| <b>BPS5E6</b>                                                                                                               | <b>MAJOR ELECTIVE - ASTROPHYSICS</b>                                                                                                                                                                             |                                  |                     |                    |                        |                    |                         | <b>L</b>           | <b>T</b>    | <b>P</b>                                    | <b>C</b>    |
|                                                                                                                             | Total contact Hours-60                                                                                                                                                                                           |                                  |                     |                    |                        |                    |                         | 3                  | 1           | 0                                           | 4           |
|                                                                                                                             | Prerequisite course – Chemistry / Physics / Mathematics Studied in Higher Secondary studies                                                                                                                      |                                  |                     |                    |                        |                    |                         |                    |             |                                             |             |
|                                                                                                                             | Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics                                                                                                                                                 |                                  |                     |                    |                        |                    |                         |                    |             |                                             |             |
| <b>COURSE OBJECTIVES:-</b><br>To acquire sufficient knowledge in space and astronomy, solar systems etc.,                   |                                                                                                                                                                                                                  |                                  |                     |                    |                        |                    |                         |                    |             |                                             |             |
| <b>COURSE OUTCOMES (COs)</b>                                                                                                |                                                                                                                                                                                                                  |                                  |                     |                    |                        |                    |                         |                    |             |                                             |             |
| CO1                                                                                                                         | Understand the study about Big bang theory ,                                                                                                                                                                     |                                  |                     |                    |                        |                    |                         |                    |             |                                             |             |
| CO2                                                                                                                         | Reminder the basic ideas of gravity                                                                                                                                                                              |                                  |                     |                    |                        |                    |                         |                    |             |                                             |             |
| CO3                                                                                                                         | Detail changes which are observed when viewing the sky daily, weekly, monthly, annually and longer period of time and demonstrate an understanding of the reasons behind any observed changes.                   |                                  |                     |                    |                        |                    |                         |                    |             |                                             |             |
| CO4                                                                                                                         | Describe the features of objects in the Solar System (i.e. Sun, planets, moons, asteroids, comets, planetary interiors, atmospheres, etc.) giving details of similarities and differences between these objects; |                                  |                     |                    |                        |                    |                         |                    |             |                                             |             |
| CO5                                                                                                                         | Detail the main features and formation theories of the various types of observed galaxies, in particular the Milky Way;.                                                                                         |                                  |                     |                    |                        |                    |                         |                    |             |                                             |             |
| CO6                                                                                                                         | Learn about the various theories of stars                                                                                                                                                                        |                                  |                     |                    |                        |                    |                         |                    |             |                                             |             |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                                                                                                                                                                                  |                                  |                     |                    |                        |                    |                         |                    |             |                                             |             |
| 1                                                                                                                           | <b>COs/Pos</b>                                                                                                                                                                                                   | <b>PO1</b>                       | <b>PO2</b>          | <b>PO3</b>         | <b>PO4</b>             | <b>PO5</b>         | <b>PO6</b>              | <b>PO7</b>         | <b>PSO1</b> | <b>PSO2</b>                                 | <b>PSO3</b> |
| 2                                                                                                                           | CO1                                                                                                                                                                                                              | H                                | M                   | L                  | L                      | L                  | L                       | M                  | H           |                                             |             |
|                                                                                                                             | CO2                                                                                                                                                                                                              | M                                | H                   | L                  | M                      | M                  | L                       | M                  |             |                                             |             |
|                                                                                                                             | CO3                                                                                                                                                                                                              | H                                | M                   | M                  | H                      | M                  | M                       | H                  |             |                                             |             |
|                                                                                                                             | CO4                                                                                                                                                                                                              | H                                | H                   | H                  | M                      | M                  | M                       | H                  |             |                                             |             |
|                                                                                                                             | CO5                                                                                                                                                                                                              | M                                | H                   | M                  | L                      | H                  | M                       | M                  |             |                                             |             |
|                                                                                                                             | CO6                                                                                                                                                                                                              | H                                | H                   | H                  | L                      | H                  | M                       | H                  |             |                                             |             |
| 3                                                                                                                           | Category                                                                                                                                                                                                         | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other   | Project/Term Paper/ Seminar/ Internship(PR) |             |
|                                                                                                                             |                                                                                                                                                                                                                  |                                  |                     |                    |                        | ✓                  |                         |                    |             |                                             |             |
| 4                                                                                                                           | Approval                                                                                                                                                                                                         | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |             |                                             |             |

## UNIT – I EARLIEST ASTRONOMY AND SPACE 12

Origin – Earliest Astronomy (2500 – 100 BC) – Pythagorean Spherical Earth – Aristotle’s Earth as Centre – Copernicus Theory – Kepler’s Law – Galileo’s observations – Newton’s Synthesis.

## UNIT – II SPACE 12

Introduction – Hubble’s Law – Big bang theory – Shape of Universe – Expanding universe in space – Galaxies – Types of Galaxies – Spiral, Elliptical and Irregular Galaxies – Clusters of Galaxies – Milky Way – Quasars.

## UNIT – III STARS 12

Birth of Stars – Colour and Age – Life of Stars – Red giant stars – White dwarf star – Neutron Star – Black hole – Supernovae – Constellations - Zodiac.

## UNIT – IV SOLAR SYSTEM 12

Introduction – Sun – Structure of Sun – Nuclear reactions in sun – Sun spot and solar flares – Earth – Structure of earth – Atmosphere – Moon and its structure – Inner planets – Outer planets – Astroids – Meteors – Meteorites - Comets.

## UNIT – V SPACE DISTANCE, UNITS AND CO-ORDINATES 12

Cislunar space – Translunar space – Inter planetary distance – Interstellar space – Inter galactic space – Light Year – Astronomical Unit – Astronomical Map. Astronomical Systems – Astronomical co-ordinates – Celestial Sphere – Celestial Equators – Celestial Poles - Celestic.

### TEXT BOOKS

1. Hewish. A / Physics of the universe / CSIR publication, New Delhi, 1992.
2. Biman Basu / Inside Stars / CSIR Publication, New Delhi, 1992. Biman Basu / Cosmic Vistas / National Book Trust of India, 2002.
3. Krishnasamy K.S. / Astro Physics a modern perspective / New Age International / New Delhi. Murugesan. R / Modern Physics / S. Chand & Co. / New Delhi, 2003.

### BOOKS FOR REFERENCE

1. Mohan Sundara Rajan / Space today / National Book Trust of India, 2000.
2. William K. Hartmann / The Cosmic Voyage through time and space / Wadsworth Publishing company, California, 1990.

|                                                                                                                             |                                                                                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|---------------------------------------------|------|
| BPS5E7                                                                                                                      | MAJOR ELECTIVE - APPLIED ELECTRONICS                                                                  |                                  |                     |                    |                        |                    |                         | L                  | T         | P                                           | C    |
|                                                                                                                             | Total contact Hours-60                                                                                |                                  |                     |                    |                        |                    |                         | 3                  | 1         | 0                                           | 4    |
|                                                                                                                             | Prerequisite course – Chemistry / Physics / Mathematics Studied in Higher Secondary studies           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
|                                                                                                                             | Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics                                      |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| COURSE OBJECTIVES:-<br>Understand the basic concepts of current electricity, electronics and digital electronics            |                                                                                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| COURSE OUTCOMES (COs)                                                                                                       |                                                                                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO1                                                                                                                         | To understand the basic concepts of construction and working of electronic devices and optical fibers |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO2                                                                                                                         | To Learn about the principles of electronics circuits                                                 |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO3                                                                                                                         | To design and analyze the clocked synchronous and asynchronous                                        |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO4                                                                                                                         | To design and analyze the clocked synchronous and asynchronous                                        |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO5                                                                                                                         | To design and construct the electronic circuit and solve the mathematical equations.                  |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO6                                                                                                                         | Apply the knowledge to understand the working of amplifiers, oscillators and multivibrators           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                                                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| 1                                                                                                                           | COs/Pos                                                                                               | PO1                              | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PS O1     | PSO2                                        | PSO3 |
| 2                                                                                                                           | CO1                                                                                                   | H                                | M                   | L                  | L                      | L                  | L                       | M                  | H         |                                             |      |
|                                                                                                                             | CO2                                                                                                   | M                                | H                   | L                  | M                      | M                  | L                       | M                  |           |                                             |      |
|                                                                                                                             | CO3                                                                                                   | H                                | M                   | M                  | H                      | M                  | M                       | H                  |           |                                             |      |
|                                                                                                                             | CO4                                                                                                   | H                                | H                   | H                  | M                      | M                  | M                       | H                  |           |                                             |      |
|                                                                                                                             | CO5                                                                                                   | M                                | H                   | M                  | L                      | H                  | M                       | M                  |           |                                             |      |
|                                                                                                                             | CO6                                                                                                   | H                                | H                   | H                  | L                      | H                  | M                       | H                  |           |                                             |      |
| 3                                                                                                                           | Category                                                                                              | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship(PR) |      |
|                                                                                                                             |                                                                                                       |                                  |                     |                    |                        | ✓                  |                         |                    |           |                                             |      |
| 4                                                                                                                           | Approval                                                                                              | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                             |      |

## UNIT – I SPECIAL DEVICES AND APPLICATIONS FET 12

Characteristics – parameter FET as amplifier – FET as VVR – MOSFET – Depletion and enhancement – UJT characteristics – UJT as relaxation oscillator – SCR characteristics – SCR as half wave rectifier and full wave rectifier. **SCR as static current switch – Firing of SCR using UJT.**

## UNIT – II OPERATIONAL AMPLIFIER AND APPLICATIONS OPAMP 12

Parameters – Inverting and Non-inverting amplifier – gain – Miller effect – Virtual ground – Offset voltage – offset current – PSRR – CMRR. OPAMP – Sign and Scale changer – adder, subtractor and averager – **Integrator and differentiator – DC voltage follower – ac voltage follower.**

## UNIT – III OTHER APPLICATION OF OPAMP OPAMP 12

Logarithmic amplifier – antilogarithmic amplifier – **Logarithmic multiplier – Logarithmic divider.** Comparator – Schmitt trigger – astable multivibrator – monostable multivibrator – Bistable multivibrator.

## UNIT – IV 555 TIMER AND PLL 12

555 block diagram and work monostable operation – Astable operation – Schmitt trigger. Phase – Locked Loops (PLL): Basic principles – Phase Detector. Comparator – Analog phase detector – Digital phase detector – **voltage controlled oscillator (VCO).**

## UNIT – V D/ A AND A/D CONVERTER 12

Weighted resistor D/A converter – 4-bit R-2R ladder DAC – Analog to Digital converter – Stair case ADC – tracking or servo ADC – Successive approximation ADC – **Flash ADC Dual slope ADC.**

**Course Coordinator**

**HOD**

|                                                                                                                                                                  |                                                                                                                         |                                  |                     |                    |                        |                    |                         |                    |       |                                             |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-------|---------------------------------------------|------|
| BPS5L1                                                                                                                                                           | CORE 14 - GENERAL LAB V                                                                                                 |                                  |                     |                    |                        |                    |                         | L                  | T     | P                                           | C    |
|                                                                                                                                                                  | Total contact Hours-60                                                                                                  |                                  |                     |                    |                        |                    |                         | 0                  | 0     | 4                                           | 2    |
|                                                                                                                                                                  | Prerequisite course – Chemistry / Physics / Mathematics Studied in Higher Secondary studies                             |                                  |                     |                    |                        |                    |                         |                    |       |                                             |      |
|                                                                                                                                                                  | Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics                                                        |                                  |                     |                    |                        |                    |                         |                    |       |                                             |      |
| COURSE OBJECTIVES:- To make the students learn about the physics from the basic and understood all technical background with all concepts understands thoroughly |                                                                                                                         |                                  |                     |                    |                        |                    |                         |                    |       |                                             |      |
| COURSE OUTCOMES (COs)                                                                                                                                            |                                                                                                                         |                                  |                     |                    |                        |                    |                         |                    |       |                                             |      |
| CO1                                                                                                                                                              | Apply knowledge of mathematics and physics fundamentals and an instrumentation to arrive solution for various problems. |                                  |                     |                    |                        |                    |                         |                    |       |                                             |      |
| CO2                                                                                                                                                              | Understand the application side of the experiments                                                                      |                                  |                     |                    |                        |                    |                         |                    |       |                                             |      |
| CO3                                                                                                                                                              | Use of basic laws to study the spectral properties and optical properties of the given prism and grating. .             |                                  |                     |                    |                        |                    |                         |                    |       |                                             |      |
| CO4                                                                                                                                                              | Understand the usage of basic laws and theories to determine various properties of the materials given.                 |                                  |                     |                    |                        |                    |                         |                    |       |                                             |      |
| CO5                                                                                                                                                              | Analyze the detail about practical importance to be aware of the concepts from the basis.                               |                                  |                     |                    |                        |                    |                         |                    |       |                                             |      |
| CO6                                                                                                                                                              | To understand the fundamentals and concepts in the physics practicals                                                   |                                  |                     |                    |                        |                    |                         |                    |       |                                             |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                      |                                                                                                                         |                                  |                     |                    |                        |                    |                         |                    |       |                                             |      |
| 1                                                                                                                                                                | COs/Pos                                                                                                                 | PO1                              | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PS O1 | PSO2                                        | PSO3 |
| 2                                                                                                                                                                | CO1                                                                                                                     | H                                | M                   | L                  | L                      | L                  | L                       | M                  | H     |                                             |      |
|                                                                                                                                                                  | CO2                                                                                                                     | M                                | H                   | L                  | M                      | M                  | L                       | M                  |       |                                             |      |
|                                                                                                                                                                  | CO3                                                                                                                     | H                                | M                   | M                  | H                      | M                  | M                       | H                  |       |                                             |      |
|                                                                                                                                                                  | CO4                                                                                                                     | H                                | H                   | H                  | M                      | M                  | M                       | H                  |       |                                             |      |
|                                                                                                                                                                  | CO5                                                                                                                     | M                                | H                   | M                  | L                      | H                  | M                       | M                  |       |                                             |      |
|                                                                                                                                                                  | CO6                                                                                                                     | H                                | H                   | H                  | L                      | H                  | M                       | H                  |       |                                             |      |
| 3                                                                                                                                                                | Category                                                                                                                | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) |       | Project/Term Paper/ Seminar/ Internship(PR) |      |
|                                                                                                                                                                  |                                                                                                                         |                                  |                     |                    |                        | ✓                  |                         |                    |       |                                             |      |
| 4                                                                                                                                                                | Approval                                                                                                                | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |       |                                             |      |

### **BPS5L1– CORE 14 - GENERAL LAB V**

Kundt's tube – Longitudinal wave propagation

- 1) Newton's rings – radius of curvature of lens
- 2) Spectrometer- i-d curve-Refractive index.
- 3) Spectrometer- i-i' curve- Refractive index.
- 4) Spectrometer- Small angled prism- Refractive index
- 5) EMF of a thermocouple- Potentiometer.
- 6) Field along the axis of a circular coil- Determination of  $B_h$
- 7) Absolute determination of capacitance- BG.
- 8) Mutual Inductance- BG.

#### **TEXT BOOKS:-**

1. C.C Ouseph, G.Rangarajan- A Text Book of Practical Physics- S. Viswanathan Publisher-Part I (1990)
2. C.C Ouseph, C.Rangarajan, R.Balakrishnan- A Text Book of Practical Physics- S.Viswanathan Publisher-Part II ( 1996)

#### **BOOKS FOR REFERENCE:-**

2. S.L Gupta and V.Kumar- Practical Physics- Pragati Prakashan – 25th Edition (2002)

|                                                                                                                                                                                    |                                                                                                                                                                    |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|---------------------------------------------|-------|
| BPS5E5                                                                                                                                                                             | Skill Based Elective – II-COMPUTER APPLICATION                                                                                                                     |                                  |                     |                    |                        |                    | L                       | T                  | P         | C                                           |       |
|                                                                                                                                                                                    | Total Contact Hours – 30                                                                                                                                           |                                  |                     |                    |                        |                    | 2                       | 0                  | 0         | 2                                           |       |
|                                                                                                                                                                                    | Prerequisite course – Higher Secondary Level                                                                                                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                                                                                    | Course Coordinator Name & Department :- N.Mathimagal& BCA                                                                                                          |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| COURSE OBJECTIVES:-<br>The learner will have the knowledge about the basic operations of a computer system, computer applications software, input, and output and storage devices. |                                                                                                                                                                    |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| COURSE OUTCOMES (COs)                                                                                                                                                              |                                                                                                                                                                    |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO1                                                                                                                                                                                | Define the Characteristics, History, Classification, Personal Computers and Applications.                                                                          |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO2                                                                                                                                                                                | Demonstrate understanding of the basic operations of a computer system.                                                                                            |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO3                                                                                                                                                                                | Explain the principles of operations of computer systems used in a particular application, specifically in terms of the systems' hardware and software components. |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO4                                                                                                                                                                                | Discuss the various types of Processors, Input and Output devices, OS & DOS command.                                                                               |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO5                                                                                                                                                                                | Identify the suitable Storage Devices and Software's to solve the problem.                                                                                         |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO6                                                                                                                                                                                | Use computer applications software to solve problems.                                                                                                              |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                                           |                                                                                                                                                                    |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| 1                                                                                                                                                                                  | COs/Pos                                                                                                                                                            | PO1                              | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                        | PS O3 |
| 2                                                                                                                                                                                  | CO1                                                                                                                                                                | H                                | L                   |                    |                        |                    |                         |                    | H         |                                             |       |
|                                                                                                                                                                                    | CO2                                                                                                                                                                | H                                | L                   |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                                                                                    | CO3                                                                                                                                                                | H                                | -                   |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                                                                                    | CO4                                                                                                                                                                | H                                | L                   |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                                                                                    | CO5                                                                                                                                                                | M                                | -                   |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                                                                                    | CO6                                                                                                                                                                | H                                | L                   |                    |                        |                    |                         |                    |           |                                             |       |
| 3                                                                                                                                                                                  | Category                                                                                                                                                           | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship(PR) |       |
|                                                                                                                                                                                    |                                                                                                                                                                    |                                  |                     |                    |                        |                    |                         |                    | ✓         |                                             |       |
| 4                                                                                                                                                                                  | Approval                                                                                                                                                           | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                             |       |

# **COMPUTER APPLICATION**

## **UNIT-I:-**

Brief History of Development of Computers ,Computer System Concept, Computer System Characteristics ,Capabilities and Limitations, Types of Computers-.,Personal Computer (PCs) - IBM PCs, Types of PCs- Desktop, Laptop, Notebook, Palmtop, etc. Basic Components of a Computer System - Control Unit, ALU, Input/Output semiconductor Memory.Storage fundamentals - Primary Vs Secondary memory.

## **UNIT-II:-**

Input Devices :Keyboard, Mouse, Joystick, Scanners, Digital Camera, MICR,OCR, OMR, , Light pen, Touch Screen. Output Devices Monitors - Characteristics and types of monitor, Size, Resolution, Refresh Rate, Dot Pitch, Video Standard - VGA, SVGA, XGA etc. Printers - Daisy wheel, Dot Matrix, Inkjet, Laser. Plotter, Sound Card and Speakers.

## **UNIT-III:-**

Various Storage Devices - Magnetic Disks, Hard Disk Drives, Floppy, Disks, Optical Disks, Computer Software ,Need, Types of Software's - System software, Application software System Software - Operating System, compiler ,Assemblers, Interpreter .

## **TEXT & REFERENCE BOOKS:-**

- 1. COMPUTERS TODAY BY S.K. BASANDRA, GALGOTIA PUBLICATIONS.**
- 2. FUNDAMENTALS OF INFORMATION TECHNOLOGY BY ALEXIS LEON & MATHEWS LEON, VIKAS PUBLISHING HOUSE, NEW DELHI.**
- 3. DOS QUICK REFERENCE BY RAJEEV MATHUR, GALGOTIA PUBLICATIONS.**

|                                                                                                                             |                                                                    |                                     |                                  |               |                       |                  |                                                                 |                              |      |      |      |
|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-------------------------------------|----------------------------------|---------------|-----------------------|------------------|-----------------------------------------------------------------|------------------------------|------|------|------|
| BPS5E6                                                                                                                      | Skill Based Elective – III<br>GRAPHICAL AND WEB<br>DESIGNING       |                                     |                                  |               |                       |                  | L                                                               | T                            | P    | C    |      |
|                                                                                                                             | Total Contact Hours - 30                                           |                                     |                                  |               |                       |                  | 2                                                               | 0                            | 0    | 2    |      |
|                                                                                                                             | Prerequisite course – Nil                                          |                                     |                                  |               |                       |                  |                                                                 |                              |      |      |      |
|                                                                                                                             | Course Coordinator Name &Department :- Jennifer P. & CS            |                                     |                                  |               |                       |                  |                                                                 |                              |      |      |      |
| COURSE OBJECTIVES :-<br>To gain knowledge in basic web designing concepts.                                                  |                                                                    |                                     |                                  |               |                       |                  |                                                                 |                              |      |      |      |
| COURSE OUTCOMES (COs)                                                                                                       |                                                                    |                                     |                                  |               |                       |                  |                                                                 |                              |      |      |      |
| CO1                                                                                                                         | Remember the web basics and graphic design.                        |                                     |                                  |               |                       |                  |                                                                 |                              |      |      |      |
| CO2                                                                                                                         | Understand the design principle.                                   |                                     |                                  |               |                       |                  |                                                                 |                              |      |      |      |
| CO3                                                                                                                         | Analyze the color theory and typography.                           |                                     |                                  |               |                       |                  |                                                                 |                              |      |      |      |
| CO4                                                                                                                         | Apply the basic principle and drawing design.                      |                                     |                                  |               |                       |                  |                                                                 |                              |      |      |      |
| CO5                                                                                                                         | Implement the communication design and layout techniques           |                                     |                                  |               |                       |                  |                                                                 |                              |      |      |      |
| CO6                                                                                                                         | Illustrate a real time application using image processing concept. |                                     |                                  |               |                       |                  |                                                                 |                              |      |      |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low |                                                                    |                                     |                                  |               |                       |                  |                                                                 |                              |      |      |      |
| 1                                                                                                                           | COs/Pos                                                            | PO1                                 | PO2                              | PO3           | PO4                   | PO5              | PO6                                                             | PO7                          | PSO1 | PSO2 | PSO3 |
| 2                                                                                                                           | CO1                                                                | H                                   | L                                |               |                       |                  |                                                                 |                              |      | H    |      |
|                                                                                                                             | CO2                                                                | H                                   | L                                |               |                       |                  |                                                                 |                              |      |      |      |
|                                                                                                                             | CO3                                                                | H                                   | L                                |               |                       |                  |                                                                 |                              |      |      |      |
|                                                                                                                             | CO4                                                                | H                                   | -                                |               |                       |                  |                                                                 |                              |      |      |      |
|                                                                                                                             | CO5                                                                | M                                   | L                                |               |                       |                  |                                                                 |                              |      |      |      |
|                                                                                                                             | CO6                                                                | H                                   | L                                |               |                       |                  |                                                                 |                              |      |      |      |
| 3                                                                                                                           | Category                                                           | Part I<br>Tamil/Linguistic<br>Study | Part II<br>Linguistic<br>English | Part III Core | Part III<br>Substream | Part III Project | Part IV Basic/<br>Advanced<br>Tamil/ EVS/VE/<br>SBE/ Soft Skill | Part V Extension<br>Activity |      |      |      |
|                                                                                                                             |                                                                    |                                     |                                  |               |                       |                  | ✓                                                               |                              |      |      |      |
| 4                                                                                                                           | Approval                                                           | Academic Council Meeting            |                                  |               |                       |                  |                                                                 |                              |      |      |      |

## **GRAPHICAL AND WEB DESIGN**

Unit-1:-

Introduction to Graphic Design – Drawing – Design Principle.

Unit -2:-

Color theory – Typography – Idea Generation.

Unit -3:-

Stylisation – Communication Design – Lay outing Techniques – Image Processing – Page Layouting.

### **Reference Books:-**

1. **Computer Graphics: Principles and Practice in C, by J. D. Foley, A. Van Dam, S. K. Feiner, J. F. Hughes. Addison-Wesley, 2nd ed**

|                                                                                                                                                                                                 |                                                                                             |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|---------------------------------------------|------|
| BPS5L2                                                                                                                                                                                          | CORE 15 - ELECTRONICS LAB I                                                                 |                                  |                     |                    |                        |                    |                         | L                  | T         | P                                           | C    |
|                                                                                                                                                                                                 | Total contact Hours-30                                                                      |                                  |                     |                    |                        |                    |                         | 0                  | 0         | 4                                           | 2    |
|                                                                                                                                                                                                 | Prerequisite course – Chemistry / Physics / Mathematics Studied in Higher Secondary studies |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
|                                                                                                                                                                                                 | Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics                            |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| COURSE OBJECTIVES:- It is aimed at exposing the under graduate students of the Physics department to the techniques of handling equipments, making error free measurements and error analysis.. |                                                                                             |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| COURSE OUTCOMES (COs)                                                                                                                                                                           |                                                                                             |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO1                                                                                                                                                                                             | Analyze the significance of laws involved in electric circuits                              |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO2                                                                                                                                                                                             | Understand the basics of operational amplifier                                              |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO3                                                                                                                                                                                             | To learn about the basics to construct and solve the mathematical equation.                 |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO4                                                                                                                                                                                             | Apply the principles of electronics in day to life                                          |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO5                                                                                                                                                                                             | To design and construct the electrical and electronics circuits and interpret the results.  |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO6                                                                                                                                                                                             | Apply the characteristics of electronic devices in practicals                               |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                                                     |                                                                                             |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| 1                                                                                                                                                                                               | COs/Pos                                                                                     | PO1                              | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PS O1     | PSO2                                        | PSO3 |
| 2                                                                                                                                                                                               | CO1                                                                                         | H                                | M                   | L                  | L                      | L                  | L                       | M                  | H         |                                             |      |
|                                                                                                                                                                                                 | CO2                                                                                         | M                                | H                   | L                  | M                      | M                  | L                       | M                  |           |                                             |      |
|                                                                                                                                                                                                 | CO3                                                                                         | H                                | M                   | M                  | H                      | M                  | M                       | H                  |           |                                             |      |
|                                                                                                                                                                                                 | CO4                                                                                         | H                                | H                   | H                  | M                      | M                  | M                       | H                  |           |                                             |      |
|                                                                                                                                                                                                 | CO5                                                                                         | M                                | H                   | M                  | L                      | H                  | M                       | M                  |           |                                             |      |
|                                                                                                                                                                                                 | CO6                                                                                         | H                                | H                   | H                  | L                      | H                  | M                       | H                  |           |                                             |      |
| 3                                                                                                                                                                                               | Category                                                                                    | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship(PR) |      |
|                                                                                                                                                                                                 |                                                                                             |                                  |                     |                    | ✓                      |                    |                         |                    |           |                                             |      |
| 4                                                                                                                                                                                               | Approval                                                                                    | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                             |      |

## **SEMESTER V**

### **BPS5L2 - CORE 15 - ELECTRONICS LAB I**

**Objective :** It is aimed at exposing the under graduate students of the Physics department to the techniques of handling equipments, making error free measurements and error analysis.

1. Logic Gates – AND - OR – NOT – NOR – NAND (using IC)
2. NAND gate as universal building
3. NOR gate as universal building
4. Characteristics of Transistor
5. Characteristics of Zener diode
6. Transistor – Hartley's Oscillator
7. Transistor – RC coupled

#### **TEXT BOOKS:-**

1. C.C Ouseph, G.Rangarajan- A Text Book of Practical Physics- S. Viswanathan Publisher-Part I (1990)
2. C.C Ouseph, C.Rangarajan, R.Balakrishnan- A Text Book of Practical Physics- S.Viswanathan Publisher-Part II ( 1996)

#### **BOOKS FOR REFERENCE:-**

3. S.L Gupta and V.Kumar- Practical Physics- Pragati Prakashan – 25th Edition (2002)

## SEMESTER VI

|                                                                                                                             |                                                                                                      |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|--------------|---------------------------------------------|-------------|
| <b>BPS601</b>                                                                                                               | <b>CORE 16 - DIGITAL ELECTRONICS</b>                                                                 |                                  |                     |                    |                        |                    |                         | L                  | T            | P                                           | C           |
|                                                                                                                             | Total contact Hours-60                                                                               |                                  |                     |                    |                        |                    |                         | 3                  | 1            | 0                                           | 4           |
|                                                                                                                             | Prerequisite course – Chemistry / Physics / Mathematics Studied in Higher Secondary studies          |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
|                                                                                                                             | Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics                                     |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| <b>COURSE OBJECTIVES:-</b> To study about the electronic circuits that are used to process and control digital signals.     |                                                                                                      |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| <b>COURSE OUTCOMES (COs)</b>                                                                                                |                                                                                                      |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO1                                                                                                                         | Study about the numbersystem of base 2, 8, 16 and BCD-code (binary-coded decimal) calculations etc., |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO2                                                                                                                         | Explain the principles of analog-to-digital (AD) - and digital-to-analog (DA) conversion,            |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO3                                                                                                                         | Apply basics to construct and solve one particle equation.                                           |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO4                                                                                                                         | Excute the minimal sequential and combinational circuit that solves binary logical tasks,            |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO5                                                                                                                         | Apply the characteristics of electronic devices in practicals                                        |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO6                                                                                                                         | Apply the principles of electronics in day to life                                                   |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                                                                      |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| 1                                                                                                                           | <b>COs/Pos</b>                                                                                       | <b>PO1</b>                       | <b>PO2</b>          | <b>PO3</b>         | <b>PO4</b>             | <b>PO5</b>         | <b>PO6</b>              | <b>PO7</b>         | <b>PS O1</b> | <b>PSO2</b>                                 | <b>PSO3</b> |
| 2                                                                                                                           | CO1                                                                                                  | H                                | M                   | L                  | L                      | L                  | L                       | M                  | H            |                                             |             |
|                                                                                                                             | CO2                                                                                                  | M                                | H                   | L                  | M                      | M                  | L                       | M                  |              |                                             |             |
|                                                                                                                             | CO3                                                                                                  | H                                | M                   | M                  | H                      | M                  | M                       | H                  |              |                                             |             |
|                                                                                                                             | CO4                                                                                                  | H                                | H                   | H                  | M                      | M                  | M                       | H                  |              |                                             |             |
|                                                                                                                             | CO5                                                                                                  | M                                | H                   | M                  | L                      | H                  | M                       | M                  |              |                                             |             |
|                                                                                                                             | CO6                                                                                                  | H                                | H                   | H                  | L                      | H                  | M                       | H                  |              |                                             |             |
| 3                                                                                                                           | Category                                                                                             | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other    | Project/Term Paper/ Seminar/ Internship(PR) |             |
|                                                                                                                             |                                                                                                      |                                  |                     |                    | ✓                      |                    |                         |                    |              |                                             |             |
| 4                                                                                                                           | Approval                                                                                             | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |              |                                             |             |

## **BPS601 – DIGITAL ELECTRONICS**

### **UNIT I - DIGITAL FUNDAMENTALS**

**12**

Number systems - decimal, binary, octal and hexadecimal systems - conversion from one number system to another. Codes - BCD code - Excess 3 code, Gray code - ASCII code - Binary arithmetic - Binary addition - subtraction - unsigned binary numbers - sign magnitude numbers - 1's and 2's complement - Binary multiplication and division. Logic gates and logic families AND, OR circuits using diodes and transistors - NOT using transistors - NAND, NOR and EXOR - functions and truth tables. NAND & NOR as universal gates - bipolar and unipolar logic families - RTL NOR - DTL NAND - TTL NAND characteristics of TTL gates - ECL OR / NOR - MOS inverters - CMOS NAND and NOR.

### **UNIT II - BOOLEAN ALGEBRA AND SIMPLIFICATION OF LOGIC CIRCUITS**

**12**

Laws and theorems of Boolean algebra - De Morgan's theorems and their circuit implications - Duality theorem, simplification of Boolean equations - Karnaugh map - pairs, quads, octets - 2,3 and 4 variables - sum of products method - NAND - NAND circuits - product of sums methods - NOR-NOR circuits. Arithmetic circuits Arithmetic building blocks - Half adder - Full adder - parallel binary adder - Half subtractor - Full subtractor - The adder-subtractor - digital comparator - parity checker / generator

### **UNIT III - DATA PROCESSING CIRCUITS**

**12**

Multiplexers - Demultiplexers - Decoders - 1 of 16 decoder BCD to decimal decoder - seven segment decoder - Encoders - decimal to BCD encoder - Memory addressing - ROM, PROM, EPROM, PLA - RAM - Dynamic RAM - basic memory cells. Sequential Logic Flip - flops - RS Flip Flop - Clocked RS Flip-flop - D flip-flop - JK flip-flop - JK master slave flip-flop - T type flip-flop

### **UNIT IV - CLOCKS AND TIMERS**

**12**

Clock waveforms - TTL clock - 555 timer - astable, monostable - monostable with input logic. Shift registers and counters - Types of registers - serial in serial out - serial in parallel out - parallel in serial out - parallel in parallel out - ring counter - asynchronous counter - decoding gates - omitted states - modulus counters - BCD counter - up down counter - synchronous counter - combination counters - decade counter - cascaded counters.

### **UNIT V - D/A AND A/D CONVERTERS**

**12**

Introduction - variable resistor network - binary ladder - D/A converter - D/A accuracy and resolution - A/D converter - simultaneous conversion - A/D accuracy and resolution. Digital applications Multiplexing displays - frequency counters - time measurement - digital clock - principles - digital voltmeter.

#### **Books for study:**

1. Malvino and Leech (2000), Digital Principles and Application, 4th edition, Tata McGraw Hill, New Delhi
2. Millman and Halkias, (1972), Integrated Electronics, International edition, McGraw Hill, New Delhi
3. Arul Thalapapathi, Fundamentals of digital computers, Comptek publishers, Chennai, 1995.

|                                                                                                                                                                                                    |                                                                                                                                       |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|--------------|---------------------------------------------|-------------|
| <b>BPS602</b>                                                                                                                                                                                      | <b>CORE 17 - SOLID STATE PHYSICS</b>                                                                                                  |                                  |                     |                    |                        |                    |                         | L                  | T            | P                                           | C           |
|                                                                                                                                                                                                    | Total contact Hours-60                                                                                                                |                                  |                     |                    |                        |                    |                         | 5                  | 0            | 0                                           | 4           |
|                                                                                                                                                                                                    | Prerequisite course – Chemistry / Physics / Mathematics Studied in Higher Secondary studies                                           |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
|                                                                                                                                                                                                    | Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics                                                                      |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| <b>COURSE OBJECTIVES:-</b> To learn about the matter from an atomic view point. Topics covered include the structure, super conductivity and electrical properties of matter and its applications. |                                                                                                                                       |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| <b>COURSE OUTCOMES (COs)</b>                                                                                                                                                                       |                                                                                                                                       |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO1                                                                                                                                                                                                | To study about the relationships between chemical bonding & crystal structure and their defects                                       |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO2                                                                                                                                                                                                | Understand the basic properties of metals, insulators and semiconductors and their technological applications                         |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO3                                                                                                                                                                                                | Understand the basic concept in magnetic properties                                                                                   |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO4                                                                                                                                                                                                | Extend their knowledge in theoretical fundamentals of electron theory and super conductiv                                             |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO5                                                                                                                                                                                                | Transfer their knowledge level from theoretical physical subjects towards the understanding of basic properties of solid state matter |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO6                                                                                                                                                                                                | To understand the fundamentals and concepts in solid state physics in the modern society                                              |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                                                        |                                                                                                                                       |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| 1                                                                                                                                                                                                  | <b>COs/Pos</b>                                                                                                                        | <b>PO1</b>                       | <b>PO2</b>          | <b>PO3</b>         | <b>PO4</b>             | <b>PO5</b>         | <b>PO6</b>              | <b>PO7</b>         | <b>PS O1</b> | <b>PSO2</b>                                 | <b>PSO3</b> |
| 2                                                                                                                                                                                                  | CO1                                                                                                                                   | H                                | M                   | L                  | L                      | L                  | L                       | M                  | H            |                                             |             |
|                                                                                                                                                                                                    | CO2                                                                                                                                   | M                                | H                   | L                  | M                      | M                  | L                       | M                  |              |                                             |             |
|                                                                                                                                                                                                    | CO3                                                                                                                                   | H                                | M                   | M                  | H                      | M                  | M                       | H                  |              |                                             |             |
|                                                                                                                                                                                                    | CO4                                                                                                                                   | H                                | H                   | H                  | M                      | M                  | M                       | H                  |              |                                             |             |
|                                                                                                                                                                                                    | CO5                                                                                                                                   | M                                | H                   | M                  | L                      | H                  | M                       | M                  |              |                                             |             |
|                                                                                                                                                                                                    | CO6                                                                                                                                   | H                                | H                   | H                  | L                      | H                  | M                       | H                  |              |                                             |             |
| 3                                                                                                                                                                                                  | Category                                                                                                                              | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other    | Project/Term Paper/ Seminar/ Internship(PR) |             |
|                                                                                                                                                                                                    |                                                                                                                                       |                                  |                     |                    | ✓                      |                    |                         |                    |              |                                             |             |
| 4                                                                                                                                                                                                  | Approval                                                                                                                              | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |              |                                             |             |

## **BPS602 – SOLID STATE PHYSICS**

### **UNIT I - CRYSTAL PHYSICS**

**12**

Crystalline and amorphous solids- Lattice and basis-Unit cell and primitive cell Crystal systems- Translation vectors-Number of atoms per unit cell in a Cubic Crystal -Bravais lattice - Simple - Body centered and face centered cubic lattices Hexagonal close packed and diamond structure-Miller indices-Inter planar spacing- Crystal diffraction- Bragg's law-Experimental diffraction methods-Laue method-Powder diffraction method-Reciprocal lattice.

### **UNIT II - BONDING IN SOLIDS**

**12**

Crystal binding-Crystal binding-Crystals of inert gas-Van der Waals-Cohesive energy-Compressibility and bulk modulus-Ionic Crystals-Madelung energy Evaluation of Madelung constant – Covalent crystals- Energy value for single covalent bonds – Metallic crystals- Hydrogen bonding– Atomic radii –Tetrahedralcovalent radii and ionic crystal radii.

### **UNIT III- LATTICE VIBRATION AND THERMAL PROPERTIES OF SOLIDS**

**12**

Vibration of one dimensional monatomic linear lattice-Derivation of force constant-Dispersion relation-Brillouin zone-Phase velocity-Group velocity Phonons-characteristics of phonons – Phonon momentum-Thermal Properties of Solids-Classical theory of specific heat- Einstein's theory of specific heat Debye's theory of specific heat-Debye approximation-Specific heat capacity Experimental verification

### **UNIT IV - FREE ELECTRON THEORY OF METALS**

**12**

Free electron theory – Drude Lorentz theory – Explanation of Ohm's law – Electrical conductivity – Thermal conductivity – Wiedemann and Franz ratio – Sommerfield model – Schotcky effect – Hall effect – Hall voltage and Hall coefficient – Mobility and Hall angle – Importance of Hall effect – Experimental determination of Hall coefficient.

### **UNIT V - DIELECTRICS AND SUPERCONDUCTIVITY**

**12**

Dielectrics- Dielectric constant and displacement vector- Clausius mossotti relation- Atomic or molecular polarizability – Types of polarizability – Superconductivity-Occurrence of superconductivity – Destruction of superconductivity by magnetic fields – Meissner effect – London equation – Josephson effect – Energy gap – Elements of BCS theory – Classification of Superconductivity – Application

A

### **TEXT BOOKS**

1. Pillai S.O., Solid State Physics, 6<sup>th</sup> Edition, New Age Science, 2013.
2. Charles Kittel, Introduction to Solid State Physics, Wiley, 2005.

### **REFERENCES**

1. Ashcroft W. and Mermin N.D., Solid State Physics, Holt-Rinehart-Winston, 1976.
2. Blakemore J. S., Solid State Physics, 2<sup>nd</sup> Edition, Cambridge University Press, Cambridge, 1974.
3. Dekker A. J., Solid State Physics, Mac Millan, 1971.
4. Giuseppe Grosso, Giuseppe Pastori Parravicini, Solid State Physics, Academic Press, Second Edition, 2014.
5. Woolfson M. M., An Introduction to X-ray Crystallography, Cambridge University Press, 1991.

|                                                                                                                                                                         |                                                                                                     |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|--------------|---------------------------------------------|-------------|
| <b>BPS6L1</b>                                                                                                                                                           | <b>CORE 19 - ELECTRONICS LAB II</b>                                                                 |                                  |                     |                    |                        |                    |                         | L                  | T            | P                                           | C           |
|                                                                                                                                                                         | Total contact Hours-30                                                                              |                                  |                     |                    |                        |                    |                         | 0                  | 0            | 4                                           | 2           |
|                                                                                                                                                                         | Prerequisite course – Chemistry / Physics / Mathematics Studied in Higher Secondary studies         |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
|                                                                                                                                                                         | Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics                                    |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| <b>COURSE OBJECTIVES:-</b> To make the students learn about the physics from the basic and understood all technical background with all concepts understands thoroughly |                                                                                                     |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| <b>COURSE OUTCOMES (COs)</b>                                                                                                                                            |                                                                                                     |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO1                                                                                                                                                                     | Execute the basic circuits to create amplifier circuits, oscillator, regulated power supplies etc., |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO2                                                                                                                                                                     | Understand the given concepts and its physical significance                                         |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO3                                                                                                                                                                     | Apply the characteristics of electronic devices in practicals.                                      |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO4                                                                                                                                                                     | Understand about the significance of laws involved in electric circuit                              |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO5                                                                                                                                                                     | Apply and know about its importance in electronics and mechanical in mathematical Process           |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO6                                                                                                                                                                     | Analyze the detail about practical importance to be aware of the concepts from the basis.           |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                             |                                                                                                     |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| 1                                                                                                                                                                       | <b>COs/Pos</b>                                                                                      | <b>PO1</b>                       | <b>PO2</b>          | <b>PO3</b>         | <b>PO4</b>             | <b>PO5</b>         | <b>PO6</b>              | <b>PO7</b>         | <b>PS O1</b> | <b>PSO2</b>                                 | <b>PSO3</b> |
| 2                                                                                                                                                                       | CO1                                                                                                 | H                                | M                   | L                  | L                      | L                  | L                       | M                  | H            |                                             |             |
|                                                                                                                                                                         | CO2                                                                                                 | M                                | H                   | L                  | M                      | M                  | L                       | M                  |              |                                             |             |
|                                                                                                                                                                         | CO3                                                                                                 | H                                | M                   | M                  | H                      | M                  | M                       | H                  |              |                                             |             |
|                                                                                                                                                                         | CO4                                                                                                 | H                                | H                   | H                  | M                      | M                  | M                       | H                  |              |                                             |             |
|                                                                                                                                                                         | CO5                                                                                                 | M                                | H                   | M                  | L                      | H                  | M                       | M                  |              |                                             |             |
|                                                                                                                                                                         | CO6                                                                                                 | H                                | H                   | H                  | L                      | H                  | M                       | H                  |              |                                             |             |
| 3                                                                                                                                                                       | Category                                                                                            | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other    | Project/Term Paper/ Seminar/ Internship(PR) |             |
|                                                                                                                                                                         |                                                                                                     |                                  |                     |                    | ✓                      |                    |                         |                    |              |                                             |             |
| 4                                                                                                                                                                       | Approval                                                                                            | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |              |                                             |             |

## **BPS6L1 - ELECTRONICS LAB II**

- 1) Colpitt Oscillator – transistor
- 2) Cathode Ray Oscilloscope
- 3) IC regulated power supply
- 4) ASM programs – Add & subtract (all modes of addressing) -  $\mu$ P 8085
- 5) programs – multiply & divide (all modes of addressing) -  $\mu$ P 8085
- 6) Verification of DeMorgan theorem
- 7) Solving simultaneous equations – Op-amp IC 741.

### **TEXT BOOKS:-**

1. C.C Ouseph, G.Rangarajan- A Text Book of Practical Physics- S. Viswanathan Publisher-Part I (1990)
2. C.C Ouseph, C.Rangarajan, R.Balakrishnan- A Text Book of Practical Physics- S.Viswanathan Publisher-Part II ( 1996)

### **BOOKS FOR REFERENCE:-**

4. S.L Gupta and V.Kumar- Practical Physics- Pragati Prakashan – 25th Edition (2002)

|                                                                                                                              |                                                                                                     |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|---------------------------------------------|------|
| <b>BPS6E6</b>                                                                                                                | <b>MAJOR ELECTIVE - NANO SCIENCE AND NANOTECHONOLGY</b>                                             |                                  |                     |                    |                        |                    |                         | L                  | T         | P                                           | C    |
|                                                                                                                              | Total contact Hours-60                                                                              |                                  |                     |                    |                        |                    |                         | 5                  | 0         | 0                                           | 4    |
|                                                                                                                              | Prerequisite course – Chemistry / Physics / Mathematics Studied in Higher Secondary studies         |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
|                                                                                                                              | Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics                                    |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| <b>COURSE OBJECTIVES:- :-</b> To learn and study about the Processing and Properties of Nanostructured, nanoparticles, etc., |                                                                                                     |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| <b>COURSE OUTCOMES (COs)</b>                                                                                                 |                                                                                                     |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO1                                                                                                                          | To learn about the basic of material science with special, emphasize on nanomaterials               |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO2                                                                                                                          | To know about processes in handling polymers and nanostructured materials                           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO3                                                                                                                          | Tounderstand various forms of nanomaterials and polymers for special applications                   |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO4                                                                                                                          | Understand Metal/Ceramic Powder synthesis methods for composite                                     |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO5                                                                                                                          | Understand and learn about the charectrization techniques and basics of non-linear optical property |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| CO6                                                                                                                          | Understand the environmental impact of nanostructured materials                                     |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low  |                                                                                                     |                                  |                     |                    |                        |                    |                         |                    |           |                                             |      |
| 1                                                                                                                            | COs/Pos                                                                                             | PO1                              | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PS O1     | PSO2                                        | PSO3 |
| 2                                                                                                                            | CO1                                                                                                 | H                                | M                   | L                  | L                      | L                  | L                       | M                  | H         |                                             |      |
|                                                                                                                              | CO2                                                                                                 | M                                | H                   | L                  | M                      | M                  | L                       | M                  |           |                                             |      |
|                                                                                                                              | CO3                                                                                                 | H                                | M                   | M                  | H                      | M                  | M                       | H                  |           |                                             |      |
|                                                                                                                              | CO4                                                                                                 | H                                | H                   | H                  | M                      | M                  | M                       | H                  |           |                                             |      |
|                                                                                                                              | CO5                                                                                                 | M                                | H                   | M                  | L                      | H                  | M                       | M                  |           |                                             |      |
|                                                                                                                              | CO6                                                                                                 | H                                | H                   | H                  | L                      | H                  | M                       | H                  |           |                                             |      |
| 3                                                                                                                            | Category                                                                                            | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship(PR) |      |
|                                                                                                                              |                                                                                                     |                                  |                     |                    |                        | ✓                  |                         |                    |           |                                             |      |
| 4                                                                                                                            | Approval                                                                                            | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                             |      |

## **BPS6E7 – NANO SCIENCE AND NANOTECHONOLGY**

### **UNIT I - BASICS OF NANOSCIENCE**

**12**

Nano revolution of the 20<sup>th</sup> century - Difference between bulk and nanoscale materials and their significance - Properties at the nanoscale - Optical property Magnetic property and electronic property - Size dependent behavior – **Scaling Mechanical properties of Nano materials and Chemical properties of Nanoparticles.**

### **UNIT II - CLASSES OF NANOMATERIALS**

**12**

Metals and Semiconductor Nanomaterials - Quantum dots - Nano wells – Nano ribbons and Nano Wires - Bucky balls - Carbon nanotubes - Single walled and Multi walled CNT-Structure - Synthesis- Properties- Functionalization and applications - **Fullerenes/Bucky Balls/ C60- Synthesis - Properties Functionalization And application**

### **UNIT III - SYNTHESIS OF NANOMATERIALS**

**12**

Wet Chemical Synthesis for Nanomaterials: Chemical and co-precipitation, Sol fundamentals-sol-gel synthesis of metal oxides, Micro emulsions or reverse micelles, Solvothermal, Microwave heating synthesis, Sonochemical synthesis, Electrochemical synthesis, **Photochemical synthesis, Langmuirblodgett (LB) technique.**

### **UNIT IV - CHARACTERIZATION TECHNIQUES**

**12**

Powder X-Ray Diffraction, Energy dispersive X-ray (EDX), X-ray photoelectron spectroscopy (XPS), Scanning electron microscope (SEM), Transmission electron microscope (TEM), Scanning tunnelling microscope (STM), Atomic force microscope (AFM), Scanning probe microscopy (SPM), UV-Visible absorption, Photoluminescence, **Impedance measurement, IN characteristics, Vibrating sample magnetometer (VSM).**

### **UNIT V - APPLICATIONS OF NANOTECHNOLOGY**

**12**

Nanotechnology in Energy systems - Electronics - Environment - Space and Aviation - Textiles - Food and Agriculture - Automotive Industry – Solar Technology - Chemical engineering - Building and Construction - Biotech and Biomedical Engineering - Pharmaceutical and drugs - Molecular Nanoelectronics Nanobots - Photonic crystals – **NEMS(NANO ELECTRO MECHANICAL SYSTEM) device - Nanosensors and Devices.**

### **BOOKS FOR STUDY:**

1. Structure and properties of solid state materials – B. Viswanathan, Oxford: Alpha Science International, II Edition (2006).
2. Nano the essentials by T.Pradeep, Tata McGraw-Hill publishing company limited (2007).

### **BOOKS FOR REFERENCES:**

1. Nanocomposite Science and Technology- Pulickel M. Ajayan, Linda S. Schadler, Paul V. Braun, Copyright © 2003 Wiley-VCH Verlag GmbH & Co. KGaA.
2. Nanoparticles: from theory to application- G.Schmidt, Wiley Weinheim (2004).
3. Nanotechnology principle and practices by Sulabha K.Kulkarni, Capital publishing company (2007), India.
4. Encyclopedia of materials characterization-C.Rechard Brundle, Charles A.Evans, ButterworthHeinemann publishers (1992).
5. Introduction to nanotechnology by Charles P.Poole, Frank J. Owens, John Wiley & Sons publication (2003).
6. Synthesis of inorganic materials by Ulrich Schubert, Nicola Husing, Wiley-VCH, 2nd Edition (2005).
7. Cluster Beam synthesis of nanotechnology by Milani and S.Lannota, Springer Verlang Berlin Heidelberg, New York (1999).

**Course Coordinator**

**HOD**

|                                                                                                                             |                                                                                                                        |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|--------------|---------------------------------------------|-------------|
| <b>BPS6E7</b>                                                                                                               | <b>MAJOR ELECTIVE - ENERGY RESOURCES</b>                                                                               |                                  |                     |                    |                        |                    |                         | L                  | T            | P                                           | C           |
|                                                                                                                             | Total contact Hours-60                                                                                                 |                                  |                     |                    |                        |                    |                         | 3                  | 1            | 0                                           | 4           |
|                                                                                                                             | Prerequisite course – Chemistry / Physics / Mathematics Studied in Higher Secondary studies                            |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
|                                                                                                                             | Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics                                                       |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| <b>COURSE OBJECTIVES:-</b> :- To learn and study about the Renewable and Non-Renewable energy, and environmental aspects,   |                                                                                                                        |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| <b>COURSE OUTCOMES (COs)</b>                                                                                                |                                                                                                                        |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO1                                                                                                                         | Explain the principles that underlie the ability of various natural phenomena to deliver solar energy                  |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO2                                                                                                                         | Outline the technologies that are used to harness the power of solar energy                                            |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO3                                                                                                                         | Discuss the positive and negative aspects of solar energy in relation to natural and human aspects of the environment. |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO4                                                                                                                         | To study about the conventional and non-conventional energy                                                            |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO5                                                                                                                         | Understand and learn about the Geothermal thermal energy                                                               |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| CO6                                                                                                                         | Understand the environmental impact of other forms of energy                                                           |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                                                                                        |                                  |                     |                    |                        |                    |                         |                    |              |                                             |             |
| 1                                                                                                                           | <b>COs/Pos</b>                                                                                                         | <b>PO1</b>                       | <b>PO2</b>          | <b>PO3</b>         | <b>PO4</b>             | <b>PO5</b>         | <b>PO6</b>              | <b>PO7</b>         | <b>PS O1</b> | <b>PSO2</b>                                 | <b>PSO3</b> |
| 2                                                                                                                           | CO1                                                                                                                    | H                                | M                   | L                  | L                      | L                  | L                       | M                  | H            |                                             |             |
|                                                                                                                             | CO2                                                                                                                    | M                                | H                   | L                  | M                      | M                  | L                       | M                  |              |                                             |             |
|                                                                                                                             | CO3                                                                                                                    | H                                | M                   | M                  | H                      | M                  | M                       | H                  |              |                                             |             |
|                                                                                                                             | CO4                                                                                                                    | H                                | H                   | H                  | M                      | M                  | M                       | H                  |              |                                             |             |
|                                                                                                                             | CO5                                                                                                                    | M                                | H                   | M                  | L                      | H                  | M                       | M                  |              |                                             |             |
|                                                                                                                             | CO6                                                                                                                    | H                                | H                   | H                  | L                      | H                  | M                       | H                  |              |                                             |             |
| 3                                                                                                                           | Category                                                                                                               | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other    | Project/Term Paper/ Seminar/ Internship(PR) |             |
|                                                                                                                             |                                                                                                                        |                                  |                     |                    |                        | ✓                  |                         |                    |              |                                             |             |
| 4                                                                                                                           | Approval                                                                                                               | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |              |                                             |             |

## UNIT -I CONVENTIONAL ENERGY SOURCES

12

Worlds reserve - commercial energy sources and their availability – various forms of energy – renewable and conventional energy system – comparison – Coal, oil and natural gas – applications – Merits and Demerits

## UNIT -II SOLAR ENERGY RENEWABLE ENERGY SOURCES

12

Solar energy – nature and solar radiation – components – solar heaters – crop dryers – solar cookers – water desalination (block diagram) Photovoltaic generation – merits and demerits

## UNIT -III ENERGY FUNDAMENTALS

12

Biomass energy – classification – photosynthesis – Biomass conversion process

## UNIT -IV BIOMASS UTILIZATION

12

Gobar gas plants – wood gasification – advantages & disadvantages of biomass as energy source

## UNIT -V OTHER FORMS OF ENERGY SOURCES

12

Geothermal energy – wind energy – Ocean thermal energy conversion – energy from waves and tides (basic ideas)

### TEXT BOOKS

1. G.D.Rai, Non- Conventional Energy Sources, Kanna Publishers, IVth Edn., 15th Reprint, 2005.

### REFERENCE BOOKS

1. “Renewable energy sources and emerging Technologies”, by D.P. Kothari, K.C. Singal & Rakesh Ranjan, Prentice Hall of India pvt. Ltd., New Delhi. 2008.
2. “Renewable Energy sources and their environmental impact” – S.A. Abbasi and Nasema Abbasi PHI Learning Pvt. Ltd., New Delhi, 2008.

**Course Coordinator**

**HOD**

|                                                                                                                                                                                  |                                                                                 |                             |                     |                    |                        |                    |                         |                    |       |           |                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-------|-----------|----------------------------------------------|
| BPS6P1                                                                                                                                                                           | PROJECT (DISSERTATION AND VIVA-VOCE)                                            |                             |                     |                    |                        |                    | L                       | T                  | P     | C         |                                              |
|                                                                                                                                                                                  | Total Contact Hours – 45                                                        |                             |                     |                    |                        |                    | 0                       | 0                  | 20    | 10        |                                              |
|                                                                                                                                                                                  | Prerequisite course – Science / Mathematics Studied in Higher Secondary studies |                             |                     |                    |                        |                    |                         |                    |       |           |                                              |
|                                                                                                                                                                                  | Course Coordinator Name & Department: -Dr.S.Anandhi/Physics                     |                             |                     |                    |                        |                    |                         |                    |       |           |                                              |
| COURSE OBJECTIVES:-To make the students understand the importance of experimental and theoretical analysis and to educate and train the students to write the scientific papers. |                                                                                 |                             |                     |                    |                        |                    |                         |                    |       |           |                                              |
| COURSE OUTCOMES (COs)                                                                                                                                                            |                                                                                 |                             |                     |                    |                        |                    |                         |                    |       |           |                                              |
| CO1                                                                                                                                                                              | List out the concept and objectives, nature, types and methods of project.      |                             |                     |                    |                        |                    |                         |                    |       |           |                                              |
| CO2                                                                                                                                                                              | To develop a scientific approach in solving problems related to physics         |                             |                     |                    |                        |                    |                         |                    |       |           |                                              |
| CO3                                                                                                                                                                              | To Practice the research design, and methodology                                |                             |                     |                    |                        |                    |                         |                    |       |           |                                              |
| CO4                                                                                                                                                                              | To study the characterization and synthesized material                          |                             |                     |                    |                        |                    |                         |                    |       |           |                                              |
| CO5                                                                                                                                                                              | Measure the major findings, suggestions and conclusion                          |                             |                     |                    |                        |                    |                         |                    |       |           |                                              |
| CO6                                                                                                                                                                              | Design the model for project report.                                            |                             |                     |                    |                        |                    |                         |                    |       |           |                                              |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                                      |                                                                                 |                             |                     |                    |                        |                    |                         |                    |       |           |                                              |
| 1                                                                                                                                                                                | COs/POs                                                                         | PO1                         | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO 1 | PS O2     | PS O3                                        |
| 2                                                                                                                                                                                | CO1                                                                             | H                           | H                   |                    |                        |                    |                         |                    | H     |           |                                              |
|                                                                                                                                                                                  | CO2                                                                             | M                           | H                   |                    |                        |                    |                         |                    |       |           |                                              |
|                                                                                                                                                                                  | CO3                                                                             | H                           | H                   |                    |                        |                    |                         |                    |       |           |                                              |
|                                                                                                                                                                                  | CO4                                                                             | H                           | M                   |                    |                        |                    |                         |                    |       |           |                                              |
|                                                                                                                                                                                  | CO5                                                                             | H                           | H                   |                    |                        |                    |                         |                    |       |           |                                              |
|                                                                                                                                                                                  | CO6                                                                             | M                           | H                   |                    |                        |                    |                         |                    |       |           |                                              |
| 3                                                                                                                                                                                | Category                                                                        | Humanities & Social Studies | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) |       | Any other | Project/Term Paper/ Seminar/ Internship (PR) |
|                                                                                                                                                                                  |                                                                                 |                             |                     |                    | ✓                      |                    |                         |                    |       |           |                                              |
| 4                                                                                                                                                                                | Approval                                                                        | Academic Council Meeting    |                     |                    |                        |                    |                         |                    |       |           |                                              |

**PROJECT (DISSERTATION AND VIVA-VOCE)****10**

Topics in Projects will be assigned to each group of students by the staff coordinator guiding the project. The project work is to be carried out at the department or any other organization approved by the staff coordinator and the HoD. Review meeting will be conducted once in a month. Viva Voce presentation will be conducted by the HoD, internal examiner and the staff coordinator guiding the project.

**Marks**

|                               |            |
|-------------------------------|------------|
| <b>Dissertation</b>           | <b>150</b> |
| <b>Viva- Voce Examination</b> | <b>50</b>  |

**Course Coordinator****HOD**

|        |                                                                  |          |          |          |          |
|--------|------------------------------------------------------------------|----------|----------|----------|----------|
| BBA011 | <b>BUSINESS PROCESS<br/>OUTSOURCING-<br/>MANAGEMENT</b>          | <b>L</b> | <b>T</b> | <b>P</b> | <b>C</b> |
|        | Total Contact Hours– 30                                          | 2        | 0        | 0        | 2        |
|        | Prerequisite course – Higher Secondary Level                     |          |          |          |          |
|        | Course Coordinator Name& Department:- Ms.D.K.Sowmiyalaskshmi,BBA |          |          |          |          |

**COURSE OBJECTIVES:-**

- To familiarize the students with the basic fundamentals of BPO.
- To impart knowledge on type of BPO and call centers .
- To enable the students onthe conceptHealthcare BPO & Transaction BPO.
- To peep into the concept of Human Resource BPO and the career opportunities in BPO.

**COURSE OUTCOMES(COs)**

|     |                                                                               |
|-----|-------------------------------------------------------------------------------|
| CO1 | Describe the basic fundamentals of BPO.                                       |
| CO2 | Discuss and develop the awareness about Types of BPOs and Call Centers        |
| CO3 | Identify the concept of Health care BPOs                                      |
| CO4 | Examine the concept of Transaction BPOs                                       |
| CO5 | Develop the confidence in Human Resource BPO and career opportunities in BPOs |
| CO6 | Formulate the Types of Transaction Processing BPO in India                    |

**Mapping of Course Outcomes with Program outcomes (POs)**

(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

| 1 | COs/Pos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
|---|---------|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| 2 | CO1     | H   |     |     |     |     |     |     | H    |      |      |
|   | CO2     |     |     |     | H   |     |     |     |      |      |      |
|   | CO3     |     |     | H   |     |     |     |     |      |      |      |
|   | CO4     |     | M   |     |     |     |     |     |      |      |      |
|   | CO5     | M   |     |     |     |     |     |     |      |      |      |
|   | CO6     |     | H   |     |     |     |     |     |      |      |      |

|   |          |                                              |                          |
|---|----------|----------------------------------------------|--------------------------|
| 3 | Category | Humanities & Social Studies                  |                          |
|   |          | Basic Sciences (BS)                          |                          |
|   |          | Engg Sciences (ES)                           |                          |
|   |          | Professional Core (PC)                       |                          |
|   |          | Core Elective (CE)                           |                          |
|   |          | Non-Major Elective (NE)                      |                          |
|   |          | Open Elective (OE)                           |                          |
|   |          | Any other                                    | ✓                        |
|   |          | Project/Term Paper/ Seminar/ Internship (PR) |                          |
| 4 | Approval |                                              | Academic Council Meeting |

**UNIT-I**

**6**

Business Process Outsourcing– Basics – Benefits of BPO– BPO companies in India.

**UNIT-II**

**6**

BPO Industry – Employment Opportunities– types of BPO – Call centers– Types of Call Centers–  
Issues and Problems.

**UNIT-III**

**6**

Health Care-BPO - Structure of foreign Health Care sector– Future Trends and Threats.

**UNIT-IV**

**6**

Transaction Processing BPO– Elements of Back Office services– Types of Transaction Processing  
BPO in India.

**UNIT-V**

**6**

Human Resource BPO-Reasons for outsourcing HR– Activities involved in HR BPO– HR  
Outsourcing Trends– Carrier in HR BPO.

**Text Books:**

1. John K. Holvey, Borboro Murphy Melby, Business Process Outsourcing–Wiley Publisher-2007
2. SarikaKulkarni –Business Process Outsourcing–Jai co Publishing house – 2005
3. .RickL.Click, Thomas N.Duening,BusinessProcess Outsourcing–John Willey &sons,Publisher  
2004

**Reference Books:**

1. Deepak Shikapur – BPO DIGEST– Ameya (Inspiring books) – 2004.
2. Clifton – System analysis for business data processing– Prentice hall Publications.
3. Anandkumar, V. & Biswas, S., 2008. Business Process Outsourcing, Sage Publications Pvt. Ltd

**Course Coordinator**

**HOD**

|                                                                                                                             |                                                                                   |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|---------------------------------------------|-------|
| BBE002                                                                                                                      | DESKTOP PUBLISHING                                                                |                                  |                     |                    |                        |                    | L                       | T                  | P         | C                                           |       |
|                                                                                                                             | Total Contact Hours – 30                                                          |                                  |                     |                    |                        |                    | 2                       | 0                  | 0         | 2                                           |       |
|                                                                                                                             | Prerequisite course – Higher Secondary Level                                      |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                             | Course Coordinator Name & Department :- N.Mathimagal& BCA                         |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| COURSE OBJECTIVES:-<br>The learner will have the knowledge about the use of Computer Hardware and basic Software            |                                                                                   |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| COURSE OUTCOMES (COs)                                                                                                       |                                                                                   |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO1                                                                                                                         | Gain knowledge of basic concepts of Computer Hardware and basic Software          |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO2                                                                                                                         | Analyze the use of Netscape to access the Course Home Page and Tips and Tricks. . |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO3                                                                                                                         | Discussthebasic Principles and development of publishing and printing .           |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO4                                                                                                                         | Identify the basic Knowledge and operations of a prepress computer system         |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO5                                                                                                                         | Demonstrate the typography.                                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO6                                                                                                                         | Test real time application using a basic concept.                                 |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                                                   |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| 1                                                                                                                           | COs/Pos                                                                           | PO1                              | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PS O 1    | PS O 2                                      | PS O3 |
| 2                                                                                                                           | CO1                                                                               | H                                | L                   |                    |                        |                    |                         |                    | H         |                                             |       |
|                                                                                                                             | CO2                                                                               | M                                | L                   |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                             | CO3                                                                               | H                                | -                   |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                             | CO4                                                                               | H                                | L                   |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                             | CO5                                                                               | M                                | L                   |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                             | CO6                                                                               | H                                | L                   |                    |                        |                    |                         |                    |           |                                             |       |
| 3                                                                                                                           | Category                                                                          | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship(PR) |       |
|                                                                                                                             |                                                                                   |                                  |                     |                    |                        |                    |                         |                    | ✓         |                                             |       |
| 4                                                                                                                           | Approval                                                                          | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                             |       |

## **DESKTOP PUBLISHING**

### **UNIT-1**

Classification of Computer Hardware and basic Software. Different Hardware and Software with • their uses. Types of Software i.e. System, - Application etc. Different types of Input & Output devices. Workshop safety and environmental awareness - Principles and development of publishing and printing - Desktop publishing.

### **UNIT-2**

Knowledge and operations of a prepress computer system – Typography - Image processing.

### **UNIT -3**

Finished art work - Other related processes – Case Study.

### **Reference Books:-**

**G.Dalin. M.Sc software engineering, HSI PUBLICATIONS**

|                                                                                                                                                                                   |                                                                                                                                                                    |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|---------------------------------------------|-------|
| BCA001                                                                                                                                                                            | COMPUTER APPLICATION                                                                                                                                               |                                  |                     |                    |                        |                    |                         | L                  | T         | P                                           | C     |
|                                                                                                                                                                                   | Total Contact Hours – 30                                                                                                                                           |                                  |                     |                    |                        |                    |                         | 2                  | 0         | 0                                           | 2     |
|                                                                                                                                                                                   | Prerequisite course – Higher Secondary Level                                                                                                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                                                                                   | Course Coordinator Name & Department :- N.Mathimagal& BCA                                                                                                          |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| COURSE OBJECTIVES:-<br>The learner will have the knowledge about the basic operations of a computer system, computer applications software, input and output and storage devices. |                                                                                                                                                                    |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| COURSE OUTCOMES (COs)                                                                                                                                                             |                                                                                                                                                                    |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO1                                                                                                                                                                               | Define the Characteristics, History, Classification, Personal Computers and Applications.                                                                          |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO2                                                                                                                                                                               | Demonstrate understanding of the basic operations of a computer system.                                                                                            |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO3                                                                                                                                                                               | Explain the principles of operations of computer systems used in a particular application, specifically in terms of the systems' hardware and software components. |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO4                                                                                                                                                                               | Discuss the various types of Processors, Input and Output devices, OS & DOS command.                                                                               |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO5                                                                                                                                                                               | Identify the suitable Storage Devices and Software's to solve the problem.                                                                                         |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO6                                                                                                                                                                               | Use computer applications software to solve problems.                                                                                                              |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                                          |                                                                                                                                                                    |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| 1                                                                                                                                                                                 | COs/Pos                                                                                                                                                            | PO1                              | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO 1     | PSO2                                        | PS O3 |
| 2                                                                                                                                                                                 | CO1                                                                                                                                                                | H                                | L                   |                    |                        |                    |                         |                    | H         |                                             |       |
|                                                                                                                                                                                   | CO2                                                                                                                                                                | H                                | L                   |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                                                                                   | CO3                                                                                                                                                                | H                                | -                   |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                                                                                   | CO4                                                                                                                                                                | H                                | L                   |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                                                                                   | CO5                                                                                                                                                                | M                                | -                   |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                                                                                   | CO6                                                                                                                                                                | H                                | L                   |                    |                        |                    |                         |                    |           |                                             |       |
| 3                                                                                                                                                                                 | Category                                                                                                                                                           | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship(PR) |       |
|                                                                                                                                                                                   |                                                                                                                                                                    |                                  |                     |                    |                        |                    |                         |                    | ✓         |                                             |       |
| 4                                                                                                                                                                                 | Approval                                                                                                                                                           | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                             |       |

## **UNIT-I:-**

Brief History of Development of Computers ,Computer System Concept, Computer System Characteristics ,Capabilities and Limitations, Types of Computers-.,Personal Computer (PCs) - IBM PCs, Types of PCs- Desktop, Laptop, Notebook, Palmtop, etc. Basic Components of a Computer System - Control Unit, ALU, Input/Output semiconductor Memory.Storage fundamentals - Primary Vs Secondary memory.

## **UNIT-II:-**

Input Devices :Keyboard, Mouse, Joystick, Scanners, Digital Camera, MICR,OCR, OMR, , Light pen, Touch Screen. Output Devices Monitors - Characteristics and types of monitor, Size, Resolution, Refresh Rate, Dot Pitch, Video Standard - VGA, SVGA, XGA etc. Printers - Daisy wheel, Dot Matrix, Inkjet, Laser. Plotter, Sound Card and Speakers.

## **UNIT-III:-**

Various Storage Devices - Magnetic Disks, Hard Disk Drives, Floppy, Disks, Optical Disks, Computer Software ,Need, Types of Software's - System software, Application software System Software - Operating System, compiler ,Assemblers, Interpreter .

## **TEXT & REFERENCE BOOKS:-**

- 1. COMPUTERS TODAY BY S.K. BASANDRA, GALGOTIA PUBLICATIONS.**
- 2. FUNDAMENTALS OF INFORMATION TECHNOLOGY BY ALEXIS LEON & MATHEWS LEON, VIKAS PUBLISHING HOUSE, NEW DELHI.**
- 3. DOS QUICK REFERENCE BY RAJEEV MATHUR, GALGOTIA PUBLICATIONS.**

|                                                                                                                             |                                                                    |                                                         |                               |               |                    |                  |                                                                                     |                           |       |      |      |
|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------|-------------------------------|---------------|--------------------|------------------|-------------------------------------------------------------------------------------|---------------------------|-------|------|------|
| BCA002                                                                                                                      |                                                                    | GRAPHICAL AND WEB DESIGNING                             |                               |               |                    |                  | L                                                                                   | T                         | P     | C    |      |
|                                                                                                                             |                                                                    | Total Contact Hours - 30                                |                               |               |                    |                  | 2                                                                                   | 0                         | 0     | 2    |      |
|                                                                                                                             |                                                                    | Prerequisite course – Nil                               |                               |               |                    |                  |                                                                                     |                           |       |      |      |
|                                                                                                                             |                                                                    | Course Coordinator Name &Department :- Jennifer P. & CS |                               |               |                    |                  |                                                                                     |                           |       |      |      |
| COURSE OBJECTIVES :-<br>To gain knowledge in basic web designing concepts.                                                  |                                                                    |                                                         |                               |               |                    |                  |                                                                                     |                           |       |      |      |
| COURSE OUTCOMES (COs)                                                                                                       |                                                                    |                                                         |                               |               |                    |                  |                                                                                     |                           |       |      |      |
| CO1                                                                                                                         | Remember the web basics and graphic design.                        |                                                         |                               |               |                    |                  |                                                                                     |                           |       |      |      |
| CO2                                                                                                                         | Understand the design principle.                                   |                                                         |                               |               |                    |                  |                                                                                     |                           |       |      |      |
| CO3                                                                                                                         | Analyze the color theory and typography.                           |                                                         |                               |               |                    |                  |                                                                                     |                           |       |      |      |
| CO4                                                                                                                         | Apply the basic principle and drawing design.                      |                                                         |                               |               |                    |                  |                                                                                     |                           |       |      |      |
| CO5                                                                                                                         | Implement the communication design and layout techniques           |                                                         |                               |               |                    |                  |                                                                                     |                           |       |      |      |
| CO6                                                                                                                         | Illustrate a real time application using image processing concept. |                                                         |                               |               |                    |                  |                                                                                     |                           |       |      |      |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low |                                                                    |                                                         |                               |               |                    |                  |                                                                                     |                           |       |      |      |
| 1                                                                                                                           | COs/Pos                                                            | PO1                                                     | PO2                           | PO3           | PO4                | PO5              | PO6                                                                                 | PO7                       | PSO 1 | PSO2 | PSO3 |
| 2                                                                                                                           | CO1                                                                | H                                                       | L                             |               |                    |                  |                                                                                     |                           |       | H    |      |
|                                                                                                                             | CO2                                                                | H                                                       | L                             |               |                    |                  |                                                                                     |                           |       |      |      |
|                                                                                                                             | CO3                                                                | H                                                       | L                             |               |                    |                  |                                                                                     |                           |       |      |      |
|                                                                                                                             | CO4                                                                | H                                                       | -                             |               |                    |                  |                                                                                     |                           |       |      |      |
|                                                                                                                             | CO5                                                                | M                                                       | L                             |               |                    |                  |                                                                                     |                           |       |      |      |
|                                                                                                                             | CO6                                                                | H                                                       | L                             |               |                    |                  |                                                                                     |                           |       |      |      |
| 3                                                                                                                           | Category                                                           | Part I<br>Tamil/Linguistic Study                        | Part II<br>Linguistic English | Part III Core | Part III Substream | Part III Project | Part IV Basic/<br>Advanced<br>Tamil/ EVS/VE/<br>SBE/ Soft Skill                     | Part V Extension Activity |       |      |      |
|                                                                                                                             |                                                                    |                                                         |                               |               |                    |                  |  |                           |       |      |      |
| 4                                                                                                                           | Approval                                                           | Academic Council Meeting                                |                               |               |                    |                  |                                                                                     |                           |       |      |      |

# **GRAPHICAL AND WEB DESIGN**

Unit-1:-

Introduction to Graphic Design – Drawing – Design Principle.

Unit -2:-

Color theory – Typography – Idea Generation.

Unit -3:-

Stylisation – Communication Design – Lay outing Techniques – Image Processing – Page Layouting.

## **Reference Books:-**

2. **Computer Graphics: Principles and Practice in C**, by J. D. Foley, A. Van Dam, S. K. Feiner, J. F. Hughes.  
Addison-Wesley, 2nd ed

|                                                                                                                                                                                                                                                                                                          |                                                                 |                                             |                            |                           |                               |                           |                                |                           |                  |                                                    |              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------------|----------------------------|---------------------------|-------------------------------|---------------------------|--------------------------------|---------------------------|------------------|----------------------------------------------------|--------------|
| <b>BCA003</b>                                                                                                                                                                                                                                                                                            | <b>MULTIMEDIA</b>                                               |                                             |                            |                           |                               |                           | <b>L</b>                       | <b>T</b>                  | <b>P</b>         | <b>C</b>                                           |              |
|                                                                                                                                                                                                                                                                                                          | Total Contact Hours – 30                                        |                                             |                            |                           |                               |                           | 2                              | 0                         | 0                | 2                                                  |              |
|                                                                                                                                                                                                                                                                                                          | Prerequisite course – Higher Secondary Level                    |                                             |                            |                           |                               |                           |                                |                           |                  |                                                    |              |
|                                                                                                                                                                                                                                                                                                          | Course Coordinator Name & Department :- N.Mathimagal& BCA       |                                             |                            |                           |                               |                           |                                |                           |                  |                                                    |              |
| <b>COURSE OBJECTIVES:-</b>                                                                                                                                                                                                                                                                               |                                                                 |                                             |                            |                           |                               |                           |                                |                           |                  |                                                    |              |
| The learner will have the knowledge about the principles of different types of media and able to identify the proper applications of multimedia, how multimedia can be used in various application areas, and evaluate the appropriate multimedia systems and develop effective multimedia applications. |                                                                 |                                             |                            |                           |                               |                           |                                |                           |                  |                                                    |              |
| <b>COURSE OUTCOMES (COs)</b>                                                                                                                                                                                                                                                                             |                                                                 |                                             |                            |                           |                               |                           |                                |                           |                  |                                                    |              |
| CO1                                                                                                                                                                                                                                                                                                      | Gain knowledge of basic concepts of multimedia                  |                                             |                            |                           |                               |                           |                                |                           |                  |                                                    |              |
| CO2                                                                                                                                                                                                                                                                                                      | Analyze the multimedia application problems.                    |                                             |                            |                           |                               |                           |                                |                           |                  |                                                    |              |
| CO3                                                                                                                                                                                                                                                                                                      | Discuss the Video capturing, Sound capturing, editing concepts. |                                             |                            |                           |                               |                           |                                |                           |                  |                                                    |              |
| CO4                                                                                                                                                                                                                                                                                                      | Identify the basic multimedia design principles.                |                                             |                            |                           |                               |                           |                                |                           |                  |                                                    |              |
| CO5                                                                                                                                                                                                                                                                                                      | Demonstrate the multimedia system and Design Process            |                                             |                            |                           |                               |                           |                                |                           |                  |                                                    |              |
| CO6                                                                                                                                                                                                                                                                                                      | Test real time application using a multimedia concept.          |                                             |                            |                           |                               |                           |                                |                           |                  |                                                    |              |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                                                                                                                                                              |                                                                 |                                             |                            |                           |                               |                           |                                |                           |                  |                                                    |              |
| <b>1</b>                                                                                                                                                                                                                                                                                                 | <b>COs/Pos</b>                                                  | <b>PO1</b>                                  | <b>PO2</b>                 | <b>PO3</b>                | <b>PO4</b>                    | <b>PO5</b>                | <b>PO6</b>                     | <b>PO7</b>                | <b>PS O 1</b>    | <b>PS O 2</b>                                      | <b>PS O3</b> |
| <b>2</b>                                                                                                                                                                                                                                                                                                 | <b>CO1</b>                                                      | <b>H</b>                                    | <b>L</b>                   |                           |                               |                           |                                |                           | <b>H</b>         |                                                    |              |
|                                                                                                                                                                                                                                                                                                          | <b>CO2</b>                                                      | <b>M</b>                                    | <b>L</b>                   |                           |                               |                           |                                |                           |                  |                                                    |              |
|                                                                                                                                                                                                                                                                                                          | <b>CO3</b>                                                      | <b>H</b>                                    | <b>-</b>                   |                           |                               |                           |                                |                           |                  |                                                    |              |
|                                                                                                                                                                                                                                                                                                          | <b>CO4</b>                                                      | <b>H</b>                                    | <b>L</b>                   |                           |                               |                           |                                |                           |                  |                                                    |              |
|                                                                                                                                                                                                                                                                                                          | <b>CO5</b>                                                      | <b>M</b>                                    | <b>L</b>                   |                           |                               |                           |                                |                           |                  |                                                    |              |
|                                                                                                                                                                                                                                                                                                          | <b>CO6</b>                                                      | <b>H</b>                                    | <b>L</b>                   |                           |                               |                           |                                |                           |                  |                                                    |              |
| <b>3</b>                                                                                                                                                                                                                                                                                                 | <b>Category</b>                                                 | <b>Humanities &amp; Social Studies (HS)</b> | <b>Basic Sciences (BS)</b> | <b>Engg Sciences (ES)</b> | <b>Professional Core (PC)</b> | <b>Core Elective (CE)</b> | <b>Non-Major Elective (NE)</b> | <b>Open Elective (OE)</b> | <b>Any other</b> | <b>Project/Term Paper/ Seminar/ Internship(PR)</b> |              |
|                                                                                                                                                                                                                                                                                                          |                                                                 |                                             |                            |                           |                               |                           |                                |                           | ✓                |                                                    |              |
| <b>4</b>                                                                                                                                                                                                                                                                                                 | <b>Approval</b>                                                 | <b>Academic Council Meeting</b>             |                            |                           |                               |                           |                                |                           |                  |                                                    |              |

# MULTIMEDIA

## UNIT-1:-

Multimedia Fundamentals: Define the concept of multimedia, fundamental criteria for the design of a multimedia presentation, multimedia application goals & objectives, opportunities in multimedia production, Role of multimedia development team members, avoiding problems in planning a multimedia application.

## UNIT-2:-

Multimedia Building Blocks: Text, Graphics, video capturing, Sound capturing, editing. Basic design principle: proximity, visual hierarchy, Symmetry / Asymmetry, Repetition, unity, Contrast, dynamics, Emphasis, Multimedia Authoring tools.

## UNIT-3 :-

Design, Development and evaluation of multimedia a system: The development of user interface design, Design Process,

## Reference Books:-

1. John Villamil-Casanova, Louis Molina, An introduction to multimedia
2. Mohammad Dastbaz, Designing Interactive Multimedia Systems
3. Bohdan O. Szuprowicz, Multimedia Networking
4. Stephen McGloughlin, Multimedia on the web

|                                                                                                                                                                                                |                                                                                           |                                     |                                  |                  |                       |                     |                                                                 |                                 |       |      |       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------|------------------|-----------------------|---------------------|-----------------------------------------------------------------|---------------------------------|-------|------|-------|
| BCA004                                                                                                                                                                                         | NETWORKING AND MAINTENANCE                                                                |                                     |                                  |                  |                       |                     | L                                                               | T                               | P     | C    |       |
|                                                                                                                                                                                                | Total Contact Hours - 30                                                                  |                                     |                                  |                  |                       |                     | 2                                                               | 0                               | 0     | 2    |       |
|                                                                                                                                                                                                | Prerequisite course – Computer Science / Mathematics Studied in Higher Secondary Studies. |                                     |                                  |                  |                       |                     |                                                                 |                                 |       |      |       |
|                                                                                                                                                                                                | Course Coordinator Name &Department :- E.Srimathi/CS                                      |                                     |                                  |                  |                       |                     |                                                                 |                                 |       |      |       |
| <b>COURSE OBJECTIVES :-</b><br>Learners familiar with the basic concepts of Microprosser, Controller, Server and to demonstrate the traditional imperative design of CPUs, cards,PCs and BIOS. |                                                                                           |                                     |                                  |                  |                       |                     |                                                                 |                                 |       |      |       |
| <b>COURSE OUTCOMES (COs)</b>                                                                                                                                                                   |                                                                                           |                                     |                                  |                  |                       |                     |                                                                 |                                 |       |      |       |
| CO1                                                                                                                                                                                            | Design the structure of Micro Processor and PCs and CPUs                                  |                                     |                                  |                  |                       |                     |                                                                 |                                 |       |      |       |
| CO2                                                                                                                                                                                            | Understand the structure of PC architecture and the study of various PCs                  |                                     |                                  |                  |                       |                     |                                                                 |                                 |       |      |       |
| CO3                                                                                                                                                                                            | Understand the Basics of Processor                                                        |                                     |                                  |                  |                       |                     |                                                                 |                                 |       |      |       |
| CO4                                                                                                                                                                                            | Study the Computer Organisation& Operating Systems(Windows And Linux) Types Of Computer   |                                     |                                  |                  |                       |                     |                                                                 |                                 |       |      |       |
| CO5                                                                                                                                                                                            | Working with Background And Number System                                                 |                                     |                                  |                  |                       |                     |                                                                 |                                 |       |      |       |
| CO6                                                                                                                                                                                            | Used to develop the Backups, Switches Routers, BIOS, Floppy Disk and zip Driver           |                                     |                                  |                  |                       |                     |                                                                 |                                 |       |      |       |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low                                                                    |                                                                                           |                                     |                                  |                  |                       |                     |                                                                 |                                 |       |      |       |
| 1                                                                                                                                                                                              | COs/Pos                                                                                   | PO1                                 | PO2                              | PO3              | PO4                   | PO5                 | PO6                                                             | PO7                             | PSO 1 | PSO2 | PSO 3 |
| 2                                                                                                                                                                                              | CO1                                                                                       | H                                   | L                                |                  |                       |                     |                                                                 |                                 | H     |      |       |
|                                                                                                                                                                                                | CO2                                                                                       | H                                   | L                                |                  |                       |                     |                                                                 |                                 |       |      |       |
|                                                                                                                                                                                                | CO3                                                                                       | H                                   | L                                |                  |                       |                     |                                                                 |                                 |       |      |       |
|                                                                                                                                                                                                | CO4                                                                                       | M                                   | L                                |                  |                       |                     |                                                                 |                                 |       |      |       |
|                                                                                                                                                                                                | CO5                                                                                       | H                                   | -                                |                  |                       |                     |                                                                 |                                 |       |      |       |
|                                                                                                                                                                                                | CO6                                                                                       | H                                   | L                                |                  |                       |                     |                                                                 |                                 |       |      |       |
| 3                                                                                                                                                                                              | Category                                                                                  | Part I<br>Tamil/Linguistic<br>Study | Part II<br>Linguistic<br>English | Part III<br>Core | Part III<br>Substream | Part III<br>Project | Part IV Basic/<br>Advanced Tamil/<br>EVS/VE/ SBE/ Soft<br>Skill | Part V<br>Extension<br>Activity |       |      |       |
|                                                                                                                                                                                                |                                                                                           |                                     |                                  |                  |                       |                     |                                                                 |                                 |       |      |       |
| 4                                                                                                                                                                                              | Approval                                                                                  | Academic Council Meeting            |                                  |                  |                       |                     |                                                                 |                                 |       |      |       |

# **NETWORKING AND MAINTENANCE**

## **UNIT -1 :- COMPUTER HARDWARE**

Computer Organizations and Operating Systems(Windows and Linux) , Basic Electrical Engineering and Electronics , Microprocessors , Computer Hardware , Internet and Viruses , Principles of Data Communication & Network Maintenance , Digital Fundamentals , Computer Assembling and Software Installations , Hardware Lab , Project

## **UNIT -2:- COMPUTER ORGANISATION & OPERATING SYSTEMS(WINDOWS AND LINUX)TYPES OF COMPUTER**

Analog, Digital, and Hybrid type, Hardware, Software, System software, Application software, Stored Program Concept and Von Newman Architecture, Firmware, Humanware, Stored Program Concept, Evolution of computers, Generation of computer.

## **UNIT-3: - BACKGROUND AND NUMBER SYSTEM**

Information Representation and Codes, Data Types, Complements, Addition and Subtraction of Binary Numbers, Fixed Point and Floating Point Representation, Octal and Hexadecimal System , Conversion of Number Systems, Alpha Numeric Codes – ASCII & EBCDIC, Error Detection Codes, Building Blocks of Computers, Combinational Blocks (Gates, Multiplexes, Decoders, Encoders etc.), Sequential Building Blocks (Flip Flops, Registers, Counters, Random Access Memory, etc.)

## **Reference Books:**

1. IBM PC and CLONES, B.Govindrajalu, Tata McGrawhill Publishers, IBM PC and CLONES
2. Computer Installation and Servicing, D.Balasubramanian, Tata McGraw Hill
3. Computer Installation and Servicing
4. The complete PC upgrade and Maintenance, Mark Minasi, BPB Publication, The complete PC upgrade and Maintenance
5. Troubleshooting, Maintaining and Repairing PCs, Stephen J Bigelow ,Tata MCGraw Hill Publication ,Troubleshooting Maintaining and Repairing PCs

|                                                                                                                          |                                                                  |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|---------------------------------------------|-------|
| BCA006                                                                                                                   | WEB DESIGNING                                                    |                                  |                     |                    |                        |                    | L                       | T                  | P         | C                                           |       |
|                                                                                                                          | Total Contact Hours – 30                                         |                                  |                     |                    |                        |                    | 2                       | 0                  | 0         | 2                                           |       |
|                                                                                                                          | Prerequisite course – Higher Secondary Level                     |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                          | Course Coordinator Name & Department:- V.Ramya& BCA              |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| COURSE OBJECTIVES: -<br>To gain knowledge in basic web designing concepts.                                               |                                                                  |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| COURSE OUTCOMES (COs)                                                                                                    |                                                                  |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO1                                                                                                                      | Definethe web basics and server side scripting.                  |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO2                                                                                                                      | Execute the HTML coding and linking process.                     |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO3                                                                                                                      | Analyze the hyperlinks and special characters.                   |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO4                                                                                                                      | Relatethe Embedded Style Sheets & Linking External Style Sheets. |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO5                                                                                                                      | Use the backgrounds and user style sheets.                       |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| CO6                                                                                                                      | Test real time application using web designing concept.          |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                                  |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| 1                                                                                                                        | COs/Pos                                                          | PO1                              | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PS O1     | PS O2                                       | PS O3 |
| 2                                                                                                                        | CO1                                                              | H                                | L                   |                    |                        |                    |                         |                    |           | H                                           |       |
|                                                                                                                          | CO2                                                              | M                                | L                   |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                          | CO3                                                              | H                                | -                   |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                          | CO4                                                              | H                                | -                   |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                          | CO5                                                              | H                                | -                   |                    |                        |                    |                         |                    |           |                                             |       |
|                                                                                                                          | CO6                                                              | H                                | -                   |                    |                        |                    |                         |                    |           |                                             |       |
| 3                                                                                                                        | Category                                                         | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship(PR) |       |
|                                                                                                                          |                                                                  |                                  |                     |                    |                        |                    |                         |                    |           |                                             |       |
| 4                                                                                                                        | Approval                                                         | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                             |       |

# WEB DESIGNING

## UNIT -1

Introduction, Syllabus, Calendar, Terminology, Files and Folders, Purchasing Domain/Hosting, Remote Hosting, FTP, HTML basics, Starting a Website, HTML Coding

## UNIT-2

Terminology, Starting a Website, HTML Coding

## UNIT-3

HTML Coding, Wireframe, Website Design/Development, FTP, Basics of CSS Coding, CSS Coding, Internal CSS

## Reference Books:-\

1. Blanck, Peter. *eQuality: The Struggle for Web Accessibility by Persons with Cognitive*
2. *Disabilities*, Cambridge Disability Law and Policy Series, 2015.
3. Burgstahle, Sheryl. *Universal Design in Higher Education: From Principles to Practice*, Harvard Education Press, 2008.
4. Byrne, Jim. *60 hot to touch Accessible Web Design tips – the tips no web developer can live without!*, Jim Byrne, 2006, (ISBN: 978-1-4116-6729-7).
5. Chisholm, and May. *Universal Design for Web Applications: Web Applications That Reach Everyone*, O'Reilly Media, 2008.
6. Clark, Joe. *Building Accessible Websites*, New Riders Publishing, 2002.

|                                                                                                                                                   |                                                                                   |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------|------------------------|-----------------------|---------------------------|-----------------------|----------------------------|-----------------------|--------------|------------------------------------------------------|----------|
| BSC001                                                                                                                                            | <b>ANIMATION</b>                                                                  |                                        |                        |                       |                           |                       | <b>L</b>                   | <b>T</b>              | <b>P</b>     | <b>C</b>                                             |          |
|                                                                                                                                                   | Total Contact Hours – 30                                                          |                                        |                        |                       |                           |                       | 2                          | 0                     | 0            | 2                                                    |          |
|                                                                                                                                                   | Prerequisite course – Higher Secondary Level                                      |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
|                                                                                                                                                   | Course Coordinator Name & Department :- N.Mathimagal& BCA                         |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| <b>COURSE OBJECTIVES:-</b><br>The learner will have the knowledge about the use of animation, digitized sound, video control, and scanned images. |                                                                                   |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| <b>COURSE OUTCOMES (COs)</b>                                                                                                                      |                                                                                   |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| CO1                                                                                                                                               | Gain knowledge of basic concepts of Animations                                    |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| CO2                                                                                                                                               | Analyze the use of Netscape to access the Course Home Page and Tips and Tricks. . |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| CO3                                                                                                                                               | Discussthe basic instructional design principles in the development of stacks..   |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| CO4                                                                                                                                               | Identify the basicFormulate a working definition of interactive multimedia.       |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| CO5                                                                                                                                               | Demonstrate the competence in using the authoring program Hyper Studio.           |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| CO6                                                                                                                                               | Test real time application using a basic concept.                                 |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                       |                                                                                   |                                        |                        |                       |                           |                       |                            |                       |              |                                                      |          |
| 1                                                                                                                                                 | COs/Pos                                                                           | PO1                                    | PO2                    | PO3                   | PO4                       | PO5                   | PO6                        | PO7                   | PS<br>O<br>1 | PS<br>O<br>2                                         | PS<br>O3 |
| 2                                                                                                                                                 | CO1                                                                               | H                                      | L                      |                       |                           |                       |                            |                       | H            |                                                      |          |
|                                                                                                                                                   | CO2                                                                               | M                                      | L                      |                       |                           |                       |                            |                       |              |                                                      |          |
|                                                                                                                                                   | CO3                                                                               | H                                      | -                      |                       |                           |                       |                            |                       |              |                                                      |          |
|                                                                                                                                                   | CO4                                                                               | H                                      | L                      |                       |                           |                       |                            |                       |              |                                                      |          |
|                                                                                                                                                   | CO5                                                                               | M                                      | L                      |                       |                           |                       |                            |                       |              |                                                      |          |
|                                                                                                                                                   | CO6                                                                               | H                                      | L                      |                       |                           |                       |                            |                       |              |                                                      |          |
| 3                                                                                                                                                 | Category                                                                          | Humanities &<br>Social Studies<br>(HS) | Basic Sciences<br>(BS) | Engg Sciences<br>(ES) | Professional<br>Core (PC) | Core Elective<br>(CE) | Non-Major<br>Elective (NE) | Open Elective<br>(OE) | Any other    | Project/Term<br>Paper/<br>Seminar/<br>Internship(PR) |          |
|                                                                                                                                                   |                                                                                   |                                        |                        |                       |                           |                       |                            |                       | ✓            |                                                      |          |
| 4                                                                                                                                                 | Approval                                                                          | Academic Council Meeting               |                        |                       |                           |                       |                            |                       |              |                                                      |          |

# **ANIMATION**

## **Unit - 1**

### **INTRODUCTION:**

Elements of Information Technology - Introduction to Programming Languages - Basics of Animation.-  
Foundation Art. -Computer Based 2D Animation. - Multimedia & Computer Graphics. Introduction to 3D  
Animation & Modeling- Introduction to Mass Communication & Media Literacy

## **Unit - 2**

3-D Animation-I.- Production Process-I. - Multimedia-I. - Composing and Editing. - Color Theory.

## **Unit- 3**

Script Writing-I. - Content Development Direction-I. - Gaming Technology - Digital Editing and Motion  
Graphics-I. - Visual Effects-I. - V.F.X.-I.

### **REFERENCE BOOKS :**

- 1. Introduction to mass Communication : Medial Literacy & Culture By Stanley Baran The Tata McGraw Hill**
- 2. The Media in your life - By Jean Folkerts& Stephen Lacy by Pearson Publications.**

|                                                                                                                                                                                               |                                                                             |                                             |                            |                           |                               |                           |                                |                           |                  |                                                     |              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------|----------------------------|---------------------------|-------------------------------|---------------------------|--------------------------------|---------------------------|------------------|-----------------------------------------------------|--------------|
| <b>BSC002</b>                                                                                                                                                                                 | <b>COMPUTER HARDWARE AND NETWORKING</b>                                     |                                             |                            |                           |                               | <b>L</b>                  | <b>T</b>                       | <b>P</b>                  | <b>C</b>         |                                                     |              |
|                                                                                                                                                                                               | <b>Total Contact Hours – 30</b>                                             |                                             |                            |                           |                               | 2                         | 0                              | 0                         | 2                |                                                     |              |
|                                                                                                                                                                                               | Prerequisite course – Higher Secondary Level                                |                                             |                            |                           |                               |                           |                                |                           |                  |                                                     |              |
|                                                                                                                                                                                               | Course Coordinator Name & Department :- Ms.K.HemaLakshmi / CS               |                                             |                            |                           |                               |                           |                                |                           |                  |                                                     |              |
| <b>COURSE OBJECTIVES :-</b><br>Learners familiar with the basic concepts of Microprocessor,Controller, Server and to demonstrate the traditional imperative design of CPUs,cards,PCsand BIOS. |                                                                             |                                             |                            |                           |                               |                           |                                |                           |                  |                                                     |              |
| <b>COURSE OUTCOMES (COs)</b>                                                                                                                                                                  |                                                                             |                                             |                            |                           |                               |                           |                                |                           |                  |                                                     |              |
| CO1                                                                                                                                                                                           | Define the structure of Micro Processor and PCs and CPUs                    |                                             |                            |                           |                               |                           |                                |                           |                  |                                                     |              |
| CO2                                                                                                                                                                                           | State the structure of PC architecture and the study of various PCs         |                                             |                            |                           |                               |                           |                                |                           |                  |                                                     |              |
| CO3                                                                                                                                                                                           | Describe the basics of Processor                                            |                                             |                            |                           |                               |                           |                                |                           |                  |                                                     |              |
| CO4                                                                                                                                                                                           | Study the CPU,Chips,Processor and Controllers                               |                                             |                            |                           |                               |                           |                                |                           |                  |                                                     |              |
| CO5                                                                                                                                                                                           | Examine the working of Internal Components cards and Higher Level Processor |                                             |                            |                           |                               |                           |                                |                           |                  |                                                     |              |
| CO6                                                                                                                                                                                           | Relate the Backups,SwitchesRouters,BIOS,Floppy Disk and zip Driver          |                                             |                            |                           |                               |                           |                                |                           |                  |                                                     |              |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                                                   |                                                                             |                                             |                            |                           |                               |                           |                                |                           |                  |                                                     |              |
| <b>1</b>                                                                                                                                                                                      | <b>COs/Pos</b>                                                              | <b>PO1</b>                                  | <b>PO2</b>                 | <b>PO3</b>                | <b>PO4</b>                    | <b>PO5</b>                | <b>PO6</b>                     | <b>PO7</b>                | <b>PSO1</b>      | <b>PS O2</b>                                        | <b>PS O3</b> |
| <b>2</b>                                                                                                                                                                                      | <b>CO1</b>                                                                  | H                                           | -                          |                           |                               |                           |                                |                           | H                |                                                     |              |
|                                                                                                                                                                                               | <b>CO2</b>                                                                  | H                                           | L                          |                           |                               |                           |                                |                           |                  |                                                     |              |
|                                                                                                                                                                                               | <b>CO3</b>                                                                  | H                                           | L                          |                           |                               |                           |                                |                           |                  |                                                     |              |
|                                                                                                                                                                                               | <b>CO4</b>                                                                  | M                                           | -                          |                           |                               |                           |                                |                           |                  |                                                     |              |
|                                                                                                                                                                                               | <b>CO5</b>                                                                  | H                                           | L                          |                           |                               |                           |                                |                           |                  |                                                     |              |
|                                                                                                                                                                                               | <b>CO6</b>                                                                  | M                                           | -                          |                           |                               |                           |                                |                           |                  |                                                     |              |
| <b>3</b>                                                                                                                                                                                      | <b>Category</b>                                                             | <b>Humanities &amp; Social Studies (HS)</b> | <b>Basic Sciences (BS)</b> | <b>Engg Sciences (ES)</b> | <b>Professional Core (PC)</b> | <b>Core Elective (CE)</b> | <b>Non-Major Elective (NE)</b> | <b>Open Elective (OE)</b> | <b>Any other</b> | <b>Project/Term Paper/ Seminar/ Internship (PR)</b> |              |
|                                                                                                                                                                                               |                                                                             |                                             |                            |                           |                               |                           |                                |                           |                  | ✓                                                   |              |
| <b>4</b>                                                                                                                                                                                      | <b>Approval</b>                                                             | <b>Academic Council Meeting</b>             |                            |                           |                               |                           |                                |                           |                  |                                                     |              |

# COMPUTER HARDWARE AND NETWORKING

## UNIT-1

Microprocessor System Introduction of System overview, Introduction to Processors, Memory Interfacing, Interfacing I/O Devices, Interfacing Data Converters, Display Interface, Serial I/O and Data Communication, Higher level Processors

## UNIT - 2

Introduction to PC Architecture Study of PC-AT/ATX System, Pentium, Core, Core 2 Duo, Core 2 Duo, I3, I5, I7 Processor Basics of Processor and CPU Block Diagram of Computer and Computer Generation Motherboards, Chipset and Controllers, BIOS and the Boot Process, Computer Memory.

## UNIT-3

Internal Components IDE and SATA Devices: Hard Disk Drive and CD/DVDs Drives, SCSI Devices, Floppy Disk, Zip Drive, Backup Drive, Expansion Cards- LAN Card, IDE Card , VGA and SVGA Cards, Sound Card, Interface Cards, I/O cards, Video Cards, USB Card, Fire-Wire Cards, Internal Ports, Cables and Connector Types. Introduction of Network Cable like UTP, STP, Fiber Optics, Hub, Unmanageable Switch, Manageable Switch, Router, Modem, Wi-Fi, Access Point, PCI Wireless Card, USB Wireless Device, Print Server, USB Network Sharer, Backup Device, Server Hardware etc.

### Reference Book:

- (1) Microprocessor Architecture Programming and Application with the 8085 Ramesh Gaonkar Penram International Publication.
- (2) Electronics and Radio Engineering M.L. Gupta Dhanpatrai & Sons, New Delhi.
- (3) PC AND CLONES Hardware, Troubleshooting and Maintenance B. Govindarajulu, Tata Mc-graw-Hill Publication.
- (4) PC Troubleshooting and Repair Stephen J. Bigelow Dream tech Press, New Delhi

|                                                                                                                                                                                   |                                                                                                                    |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|
| BSC003                                                                                                                                                                            | COMPUTER PROGRAMMING                                                                                               |                                  |                     |                    |                        | L                  | T                       | P                  | C         |                                              |
|                                                                                                                                                                                   | Total Contact Hours – 30                                                                                           |                                  |                     |                    |                        | 2                  | 0                       | 0                  | 2         |                                              |
|                                                                                                                                                                                   | Prerequisite course – Higher Secondary Level                                                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
|                                                                                                                                                                                   | Course Coordinator Name & Department :- Ms.K.HemaLakshmi/ CS                                                       |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| COURSE OBJECTIVES :-                                                                                                                                                              |                                                                                                                    |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| Learners will be familiar with the programming language C, Algorithm,and Design the flowchart and implement the programs using the concept such asFunctions,Pointers and Strings. |                                                                                                                    |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| COURSE OUTCOMES (COs)                                                                                                                                                             |                                                                                                                    |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| CO1                                                                                                                                                                               | Apply and Write the clear, structure and Looping of elementary C programs.                                         |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| CO2                                                                                                                                                                               | Explain algorithmic thinking and apply it to programming.                                                          |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| CO3                                                                                                                                                                               | Describe problem-solving techniques.                                                                               |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| CO4                                                                                                                                                                               | Ability to use C with Various operators Expressions and Decision making control.                                   |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| CO5                                                                                                                                                                               | Write Code using Arrays with single dimensions, Two dimensions and Multidimensional and Various Strings operations |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| CO6                                                                                                                                                                               | Examine programs using Functions, Pointers, Structures and Union                                                   |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low                                                       |                                                                                                                    |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| 1                                                                                                                                                                                 | COs/Pos                                                                                                            | PO1                              | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                         |
| 2                                                                                                                                                                                 | CO1                                                                                                                | H                                | -                   |                    |                        |                    |                         |                    | H         |                                              |
|                                                                                                                                                                                   | CO2                                                                                                                | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |
|                                                                                                                                                                                   | CO3                                                                                                                | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |
|                                                                                                                                                                                   | CO4                                                                                                                | H                                | -                   |                    |                        |                    |                         |                    |           |                                              |
|                                                                                                                                                                                   | CO5                                                                                                                | M                                | L                   |                    |                        |                    |                         |                    |           |                                              |
|                                                                                                                                                                                   | CO6                                                                                                                | H                                | -                   |                    |                        |                    |                         |                    |           |                                              |
| 3                                                                                                                                                                                 | Category                                                                                                           | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |
|                                                                                                                                                                                   |                                                                                                                    |                                  |                     |                    |                        |                    |                         |                    | ✓         |                                              |
| 4                                                                                                                                                                                 | Approval                                                                                                           | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                              |

# **COMPUTER PROGRAMMING**

## **UNIT-1:-**

### **INTRODUCTION:-**

Generation and Classification of Computers – Basic organization of a Computer – Number System – Binary – Decimal – Conversion – Problems. Need for logical Analysis and thinking algorithm – Pseudo code – Flow Chart.

## **UNIT-2:-**

### **PROGRAMMING BASICS:-**

Problem formulation – Problem solving – introduction to “C” programming – Fundamentals – structure of C Program – compilation and linking processes – Constants, Variables – Data Types – Expressions using operators in C- Managing input and output operations – Decision making and Branching – Looping Statements – Solving simple scientific and statistical problems.

## **UNIT -3:-**

### **ARRAYS, STRINGS, FUNCTIONS AND STRUCTURES:-**

Arrays – Initialization – Declaration – One Dimensional and Two Dimensional Arrays – String – String Operations – String Arrays. Simple programs – sorting – searching – matrix operations. Function – definition of function – declaration of function – Recursion – pointers – pointer and arrays – example problems – need for structure data type – structure definition – structure declaration – structure within a structure – union - storage classes, pre-processor directives.

### **Text Books:-**

1. Anita Goel and Ajay Mittal, “Computer Fundamentals and programming in C”, Dorling Kindersley (India) Pvt Ltd., Pearson Education in South Asia 2011.
2. Pradip Dey, Manas Ghosh, “fundamentals of computing and programming in c”, First edition, Oxford University Press, 2009.
3. Yashavant P. Kanethar, “Let Us C”, BPB Publications, 2011.

### **Reference Books:-**

1. Byron S Gottfried, “ Programming with C”, Schaum’s Outlines, Second Edition, Tata McGraw-Hill 2006.
2. Dromey R.G., How to Solve it by Computer”, Pearson Education, Fourth Reprint, 2007.
3. Kernighan., B.W and Ritchie, D.M, “ The C Programming Language”, Second Edition, Pearson Education, 2006.

|                                                                                                                             |                                                                                                                           |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------|--------------------|------------------------|--------------------|-------------------------|--------------------|-----------|----------------------------------------------|
| BSC004                                                                                                                      | COMPUTER TECHNOLOGY                                                                                                       |                                  | L                   | T                  | P                      | C                  |                         |                    |           |                                              |
|                                                                                                                             | Total Contact Hours – 30                                                                                                  |                                  | 2                   | 0                  | 0                      | 2                  |                         |                    |           |                                              |
|                                                                                                                             | Prerequisite course – Higher Secondary Level                                                                              |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
|                                                                                                                             | Course Coordinator Name & Department :- Ms.K.HemaLakshmi/ CS                                                              |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| COURSE OBJECTIVES :-                                                                                                        |                                                                                                                           |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| Learners will be Explore and demonstrate knowledge of how to maintain computer equipment and solvecommon hardware problems  |                                                                                                                           |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| COURSE OUTCOMES (COs)                                                                                                       |                                                                                                                           |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| CO1                                                                                                                         | Design, implement and evaluate computer technologies.                                                                     |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| CO2                                                                                                                         | Think critically, creatively and analytically in developing technological solutions to simpleand complex problems. .      |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| CO3                                                                                                                         | Plan, analyze, design and construct information systems to identified specifications.                                     |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| CO4                                                                                                                         | Ability to efficient code in the relevant programming language(s). .                                                      |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| CO5                                                                                                                         | Evaluate, and use computer software. Use software tools for creating, finding, organizing, and communicating information. |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| CO6                                                                                                                         | Work effectively as a team member to achieve a common stated goal.                                                        |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| Mapping of Course Outcomes with Program outcomes (POs)<br>(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low |                                                                                                                           |                                  |                     |                    |                        |                    |                         |                    |           |                                              |
| 1                                                                                                                           | COs/Pos                                                                                                                   | PO1                              | PO2                 | PO3                | PO4                    | PO5                | PO6                     | PO7                | PSO1      | PSO2                                         |
| 2                                                                                                                           | CO1                                                                                                                       | H                                | -                   |                    |                        |                    |                         |                    | H         |                                              |
|                                                                                                                             | CO2                                                                                                                       | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |
|                                                                                                                             | CO3                                                                                                                       | H                                | L                   |                    |                        |                    |                         |                    |           |                                              |
|                                                                                                                             | CO4                                                                                                                       | H                                | -                   |                    |                        |                    |                         |                    |           |                                              |
|                                                                                                                             | CO5                                                                                                                       | M                                | L                   |                    |                        |                    |                         |                    |           |                                              |
|                                                                                                                             | CO6                                                                                                                       | H                                | -                   |                    |                        |                    |                         |                    |           |                                              |
| 3                                                                                                                           | Category                                                                                                                  | Humanities & Social Studies (HS) | Basic Sciences (BS) | Engg Sciences (ES) | Professional Core (PC) | Core Elective (CE) | Non-Major Elective (NE) | Open Elective (OE) | Any other | Project/Term Paper/ Seminar/ Internship (PR) |
|                                                                                                                             |                                                                                                                           |                                  |                     |                    |                        |                    |                         |                    | ✓         |                                              |
| 4                                                                                                                           | Approval                                                                                                                  | Academic Council Meeting         |                     |                    |                        |                    |                         |                    |           |                                              |

# COMPUTER TECHNOLOGY

## UNIT - 1

Digital Logic: Logic functions, Minimization, Design and synthesis of combinational and sequential circuits; Number representation and computer arithmetic (fixed and floating point). Computer Organization and Architecture: Machine instructions and addressing modes, ALU and data-path, CPU control design, Memory interface, I/O interface (Interrupt and DMA mode), Instruction pipelining, Cache and main memory, Secondary storage. Programming and Data Structures: Programming in C; Functions, Recursion, Parameter passing, Scope, Binding; Abstract data types, Arrays, Stacks, Queues, Linked Lists, Trees, Binary search trees, Binary heaps

## UNIT - 2

Algorithms: Analysis, Asymptotic notation, Notions of space and time complexity, Worst and average case analysis; Design: Greedy approach, Dynamic programming, Divide-and-conquer; Tree and graph traversals, Connected components, Spanning trees, Shortest paths; Hashing, Sorting, Searching. Asymptotic analysis (best, worst, average cases) of time and space, upper and lower bounds, Basic concepts of complexity classes – P, NP, NP-hard, NP-complete.

## UNIT -3

Theory of Computation: Regular languages and finite automata, Context free languages and Push-down automata, Recursively enumerable sets and Turing machines, Undecidability. Compiler Design: Lexical analysis, Parsing, Syntax directed translation, Runtime environments, Intermediate and target code generation, Basics of code optimization. Operating System: Processes, Threads, Inter-process communication, Concurrency, Synchronization, Deadlock, CPU scheduling, Memory management and virtual memory, File systems, I/O systems, Protection and security. Databases: ER-model, Relational model (relational algebra, tuple calculus), Database design (integrity constraints, normal forms), Query languages (SQL), File structures (sequential files, indexing, B and B+ trees), Transactions and concurrency control.

### Reference Books:

1. A First Course in Computers” by Sanjay Sexena
2. Computer Organization and Architecture – Carl Hamcher&SafatZaky
3. Computer Architecture and Organization – J. P. Hayes