

Bharath Institute of Higher Education and Research
Syllabus Format for UG and PG Courses

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	30	70	100
Part II	BEH101	English	5	4	3	30	70	100
Part III	BCA101	Programming in C	5	4	3	30	70	100
	BCA102	Digital Logic and Fundamentals	5	4	3	30	70	100
	BCA103	Mathematics I	5	4	3	30	70	100
	BCA1L1	Practical – I : Programming in C Lab	4	2	3	40	60	100
		Library	1	-	-	-	-	-
		Total	30	22				600

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	30	70	100
Part II	BEH201	English	4	3	3	30	70	100
Part III	BCA201	Data Structure	5	4	3	30	70	100
	BCA202	Programming in C++	4	3	3	30	70	100
	BCA203	Mathematics – II	5	4	3	30	70	100
	BCA2L1	Practical – II: Programming in C++ Lab	4	2	3	40	60	100
Part IV	BCI204	Environmental Studies	2	2	3	30	70	100
	BBC206	Value Education	2	2	3	30	70	100
		Total	30	23				800

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	30	70	100
Part II	BEH301	English	5	4	3	30	70	100
Part III	BCA301	Computer Architecture	5	4	3	30	70	100
	BCA302	Visual Programming	4	3	3	30	70	100
	BCA303	Financial Accounting	5	4	3	30	70	100
	BCA3L1	Practical – III : Visual Programming Lab	4	2	3	40	60	100
Part IV	BCA3E1	Non Major Elective I – for those who studied Tamil under Part I a) Basic Tamil for other language students b) Special Tamil for those who studied Tamil upto 10 th +2 but opt for other languages in degree programme.	2	2	3	30	70	100
		Total	30	23				700

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	30	70	100
Part II	BEH401	English	4	3	3	30	70	100
Part III	BCA401	Operating Systems	5	4	3	30	70	100
	BCA402	Programming in JAVA	4	4	3	30	70	100
	BCA403	Cost & Management Accounting	5	4	3	30	70	100
	BCA4L1	Practical – IV : Programming in JAVA Lab	4	2	3	40	60	100
Part IV	BCA4E2	Non Major Elective II – for those who studied Tamil under Part I a) Basic Tamil for other language students b) Special Tamil for those who studied Tamil upto 10 th +2 but opt for other languages in degree programme.	2	2	3		70	100
	BCA4E3	Skill Based Elective I	2	2	3	30	70	100
		Total	30	24				800

Semester V:

Part	Sub Code	Sub Name	Hrs	Credit	Exam Hrs	Int. Mark	Ext. Mark	Total
Part III	BCA501	Computer Networks	5	5	3	30	70	100
	BCA502	Software Engineering	5	5	3	30	70	100
	BCA503	Programming in ASP .NET	4	4	3	30	70	100
	BCA5E4	Major Elective – I : • Web Technology • Computer Graphics • Data Mining and Data Warehousing	4	4	3	30	70	100
	BCA5L1	Practical – V : Programming in ASP .NET Lab	4	2	3	40	60	100
	BCA5L2	Practical – VI : Software Development Lab	4	2	3	40	60	100
Part IV	BCA5E5	Skill Based Elective – II	2	2	3	30	70	100

	BCA5E6	Skill Based Elective - III	2	2	3	30	70	100
		Total	30	26				800

Semester VI:

Part	Sub Code	Sub Name	Hrs	Credit	Exam Hrs	Int. Mark	Ext. Mark	Total
Part III	BCA601	Database Technology	5	4	3	30	70	100
	BCA602	Software Testing	5	4	3	30	70	100
	BCA6E7	Major Elective – II : • Network Programming • C# • Open Source Software	5	4	3	30	70	100
	BCA6L1	Practical – VII : Elective III Lab	5	3	3	40	60	100
	BCA6P1	Project	10	6	-	-	-	200
Part V	BCA6V1	Extension Activities	-	1	-	-	-	-
		Total	30	22				600
		GRAND TOTAL		140				4300

Note :

1. Theory
2. Practical
3. *** Examination at the end of the next semester.

Internal Marks

30
40

External Marks

70
60

LIST OF SKILL BASED ELECTIVES:

1. Animation
2. BPO Management
3. Call Centre Management –Voice & Non Voice
4. Computer Application
5. Computer Hardware and Networking
6. Computer Programming
7. Computer Technology
8. Customer Relationship Management
9. Desk Top Publishing
10. Graphical and Web Design
11. Multimedia

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.சித்ரா கண்ணு&தமிழ்த்துறை									
COURSE OBJECTIVES :-இருபதாம்நூற்றாண்டுஇலக்கியம்மற்றும்மொழிவரலாற்றைஅறியச்செய்தல்											
COURSE OUTCOMES (COs)											
CO1	இருபதாம்நூற்றாண்டுகவிதைஇலக்கியத்தைப்பற்றிஅறிவர்										
CO2	இருபதாம்நூற்றாண்டுகட்டுரைஇலக்கியத்தைப்பற்றிஅறிவர்										
CO3	இருபதாம்நூற்றாண்டுசிறுகதைஇலக்கியத்தைப்பற்றிஅறிவர்										
CO4	இக்காலஇலக்கியவரலாறுபற்றிஅறிவர்										
CO5	மொழிவரலாறு – செம்மொழிபற்றிஅறிவர்										
CO6	தற்காலஇலக்கியத்தில்ஆழ்ந்தஅறிவைப்பெறுவர்										
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	PS01	PS02	PS03
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 இருபதாம்நூற்றாண்டுகவிதைகள் 9

1. பாரதியார்-யாமறிந்தமொழிகளிலே 2. பாரதிதாசன்-நீங்களேசொல்லுங்கள்!
3. கண்ணதாசன்-அழகை 4. பெருஞ்சித்திரனார்-தமிழாநீளங்கே?
5. தமிழ்ஒளி- (I) வள்ளைப்பாட்டு (II) பட்டமரம்
6. அப்துல்ரகுமான்-கல்லின்காயம்

அலகு -2 உரைநடை (I) 4 கட்டுரைகள் 9

1. மனிதனும்அழகும் - திரு.வி.க.2. வீட்டிற்கோர்புத்தகசாலை-அறிஞர்அண்ணா
3. பொறியியல்தமிழ் - நா. மால்முருகன்
4. தேசியமறைதிருக்குறள் - வ.சுப.மாணிக்கம்

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

1. நட்சத்திரக்குழந்தைகள் - பி.எஸ்.இராமையா2. விடியுமா-கு.ப.ராசகோபாலன்
3. குருபீடம்-ஜெயகாந்தன்4. கடவுளும்கந்தசாமிப்பிள்ளையும்-புதுமைப்பித்தன்

அலகு -4 இக்காலஇலக்கியவரலாறு 9

1. இருபதாம்நூற்றாண்டுகவிதைஇலக்கியவரலாறு
2. இருபதாம்நூற்றாண்டுஉரைநடைஇலக்கியவரலாறு
3. இருபதாம்நூற்றாண்டுகதைஇலக்கியவரலாறு

அலகு -5 மொழிவரலாறு 9

1. தமிழ்மொழிவரலாறு 2. உலகச்செம்மொழிகளின்வரலாறு
3. தமிழுக்கும்உலகச்செம்மொழிகளுக்குமானஉறவுவரலாறு

பாடநூல்

1. இருபதாம்நூற்றாண்டுகவிதை, உரைநடை, சிறுகதை(அலகு-3)பாரத்பல்கலைக்கழகவெளியிடு

பார்வைநூல்கள்

1. சு. ஆனந்தன், "தமிழ்இலக்கியவரலாறு", பாரிநிலையம், 2012
2. ஞானப்பிரகாசர், "தமிழ்அமைப்புற்றவரலாறு", வியாபாரஐக்கியசங்கம், 2012
3. ஞா.தேவநேயன், "தமிழ்வரலாறு", பூம்புகார்பதிப்பகம், 2009
4. ஞா.தேவநேயன், "முத்தாய்மொழி", பூம்புகார்பதிப்பகம், 2008
5. ஞா.தேவநேயன், "சுட்டுவிளக்கம்", பூம்புகார்பதிப்பகம், 2006

Course Coordinator

HOD

BAL10X	Hindi	L	T	P	C
	Total Contact Hours – 45	3	0	0	3
	Prerequisite course – Hindi as second language in Grade 12				
	Course Coordinator Name &Department:- Dr. K. MustakHusaaain / Department of Hindi				

COURSE OBJECTIVES :-											
To understand , read, write and speak Hindi language with grammatical.											
COURSE OUTCOMES (COs)											
CO1	Remember the behavior										
CO2	Understand the importance of money by story										
CO3	Apply the concept of Hindi grammar										
CO4	Analyze the usage of translation from English to Hindi										
CO5	Evaluatethe unseen passage to answer the questions										
CO6	Create the knowledge in Hindi Language										
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	PS01	PS02	PS03
2	CO1	H	M						H		
	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									

Bhagavaanbachaaye - NumberovaliThijori – Kaffan - Gunda

UNIT II

9

NON DETAILED TEXT: KAHANI KUNJ - Stories: 6 – 10 only

UNIT III

9

GRAMMAR: SHABDA VICHAR ONLY - NOUN, PRONOUN, ADJECTIVE, VERB, TENSE, CASE ENDINGS - Theoretical & Applied

UNIT IV

9

TRANSLATION - English – Hindi only - ANUVADH ABHYAS – III - 1 – 15 Lessons Only

UNIT V

9

COMPREHENSION - 1 Passage from ANUVADH ABHYAS – III (16 – 30)

TEXT BOOKS:

UNIT 1 - Dakshina Bharat Hindi Prachar Sabha, Chennai – 600017

UNIT II - Govind Prakashan, SadharBagaar, Mathura, Uttar Pradesh – 281001 - Editor: Dr V.P. Amithab

UNIT III - Vyakaran Pradeep by Ramdev - Hindi Bhavan, 36, Tagor Town, Allahabad – 211002.

UNIT IV - Dakshina Bharat Hindi Prachar Sabha, Chennai – 600017.

UNIT V - Dakshina Bharat Hindi Prachar Sabha, Chennai – 600017

Course Coordinator

HOD

BAL10X	Française	L	T	P	C
	Total Contact Hours – 45	3	0	0	3
	Prerequisite course – French as second language in Grade 12				

		Course Coordinator Name & Department:- Ms. Tushita Naidu K / Département De Française									
COURSE OBJECTIVES :-											
Initier les étudiants aux principes de base et à la pratique de la communication orale et écrite.											
COURSE OUTCOMES (COs)											
CO1	Comprendre les bases de la langue.										
CO2	Analyser les modèles de phrases et former la grammaire.										
CO3	Pour apprendre les bases de la grammaire ainsi que ses principes.										
CO4	Se souvenir de l'anatomie des conjugaisons.										
CO5	Créer des dialogues et des conversations par eux-mêmes dans la langue et pratiquer des compétences orales et écrites.										
CO6	Se souvenir des règles nécessaires de la langue										
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low											
1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PS01	PS02	PS03
2	CO1	H	M						H		
	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									

UNIT I - Vous comprenez

Alphabets - French Accents - Les Nombres – Pronunciations.

UNIT II Au travail!

9

Masculine Singular and Feminine singular - Conjugaison des verbes (present tense) - Les articles définis.

UNIT III En se detend?

9

Conjugaison (faire-aller-venir-Vouloir-Pouvoir-Devoir)

UNIT IV Racontez-moi

9

La date et l'heure – les saisons – les couleurs

UNIT V Bon voyage!

9

Adjectifs demonstratives - Adjectifs possessives - Les Voyages / les transport-Bon appétit!-Article partitif - Emploi des articles - Interrogation (Forme avec inversion) - Les repas - La fête

TEXT BOOKS:

A1 ECHO- J. GIRARDET, J. PECHEURB CLE PUBLICATION.

Course Coordinator

HOD

ENGLISH I

	ENGLISH I	L	T	P	C
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BEH101	Total Contact Hours – 60							4	0	0	4
	Prerequisite course – + 2 level English										
	Course Coordinator Name & Dept: Mrs. SHEEBA - English										
COURSE OBJECTIVES:- :- To use English effectively for study purpose and enable the learner to communicate appropriately in real life situation.											
COURSE OUTCOMES (COs)											
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 01	PS02	PS 03
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)	Professiona I 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									

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 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 III- SHORT STORIES

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 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

Course Coordinator

HOD

BCA101	PROGRAMMING IN C						L	T	P	C	
	Total Contact Hours - 60						3	1	0	4	
	Prerequisite course – Computer Science / Mathematics Studied in Higher Secondary Studies.										
	Course Coordinator Name &Department :- S.Surya/BCA										
COURSE OBJECTIVES :- Learners will be familiar with the basic programming in C concepts.											
COURSE OUTCOMES (COs)											
CO1	Remember the basic structures of Data type, operators and statements										
CO2	Understand the Fundamentals of C programming.										
CO3	Choose the suitable loop statements and decision making statements to solve the problem.										
CO4	Use functions to apply for real time application										
CO5	Analyze the C code using Array and Pointers										
CO6	Examine an application using files										
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	PS01	PS02	PS03
2	CO1	H	L						H		
	CO2	H	L								
	CO3	M	L								
	CO4	H	L								
	CO5	H	-								
	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				✓						

UNIT-1:

Fundamental character set – Identifier and keywords – data types – Constants – variables – Declarations – Expressions – Statements – Arithmetic, Unary, Relational and logical, Assignment and conditional Operators – Library Functions.

UNIT-2:

Data input output functions – Simple C programs – Flow of control – if, if-else, while, do-while, for loop, Nested control structures – Switch, Break and continue, go to statements – Comma operator.

UNIT –3:

Functions – Definition – Proto-types – Passing arguments – Recursions – storage Classes – Automatic, External, Static, Register Variable – Multi-file programs.

UNIT-4:

Arrays – defining and Processing – Passing arrays to functions – Multi-Dimensional Arrays – Arrays and String. Structures – User defined data types – Passing structures to functions – self-referential structures – Unions – Bit wise operations.

UNIT –5:

Pointers – declarations – Passing pointers to functions – Operation in Pointers – Pointer and Arrays – Arrays and pointers – structures and pointers – Files – Creating, Processing, opening and closing a data file.

Recommended BOOKS

1. E. Balaguruswamy, 1995, Programming in ANSI C, TMH publishing Company Ltd.

Reference Books:

1. H. Schildt, 2004, The Complete Reference, 4th Edition, TMH.
2. Gottfried, B.S, 1996, Programming with C, second edition, TMH Pub.Co.Ltd.
3. Kanetkar Y, 1999, Let us C, BPB publications with ANSI & Turbo C, First edition, Pearson Education, New Delhi.

BCA102	DIGITAL LOGIC AND FUNDAMENTALS						L	T	P	C	
	Total Contact Hours – 60						3	1	0	4	
	Prerequisite course – Computer Science / Mathematics Studied in Higher Secondary Studies.										
	Course Coordinator Name &Department :- Ms.S.Gomathi Sakthi/ BCA										
COURSE OBJECTIVES :- Learners will be familiar with the given fundamental principles of digital electronics, semiconductor memories, A/D and D/A converters											
COURSE OUTCOMES (COs)											
CO1	Apply the principles of Boolean algebra to manipulate and minimize logic expressions.										
CO2	Use K-maps to minimize and optimize two-level logic functions up to 5 variables.										
CO3	Learning the operation of latches, flip-flops, counters, registers, and register transfers.										
CO4	Analyze the operation of sequential circuits built with various flip-flops.										
CO5	Understand the concepts of micro-operations and building blocks of digital systems										
CO6	Ability to apply the concepts of Master Slave flip flops ,counters and Registers for a real time application										
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	PS01	PS02	PS03
2	CO1	M	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	-								
	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:

Number systems – Conversion from one number to another – Compliments – Binary codes – Binary logic – Logic gates – Truth tables. Boolean Algebra – Axioms – Simplification of Boolean functions – Karnaugh Map method (up to 5 variables) – Tabulation method.

UNIT- 2:

Adders – Sub tractors – Code Converter – Multilevel NAND and NOR circuits – Binary parallel Adder – Decimal Adder - Decoders – Encoders – Multiplexes – Demultiplexer – Design of circuits using Multiplexers/Decoders.

UNIT- 3:

Flip Flops – RS, JK,D and T Flip Flops –Excitation Table - Registers – Shift Registers – Counters – Ripple Counters – Synchronous Counters – Design of Counters.

UNIT- 4:

Memory unit – Bus organization – ALU – Design of ALU – Status Register – Effects of Output carry – Microprogramming – Design of specific arithmetic circuits.

UNIT- 5:

Accumulator – Design of Accumulator – Computer configuration – Instruction and data formats – Instruction Sets – Timing and control – Execution of instruction – design of computer – Hardwired control – PLA control and Microprogrammed control.

Recommended Texts:

1. M.M. Mano, Digital Logic Computer Design, Pearson Education.

Reference Books:

1. Givone, 2002, Digital Principles Design, Tata McGraw Hill, New Delhi.
2. V. Rajaraman, 2002, Fundamental of Computers, Third Edition, PHI, New Delhi.
3. T.C. Bartee, 1991, Computer Architecture and Logical Design, Mc Graw Hill.

Course Coordinator

HOD

BCA103	MATHEMATICS –I					L	T	P	C		
	Total Contact Hours – 60					3	1	0	4		
	Prerequisite course – Computer Science / Mathematics Studied in Higher Secondary										
	Course Coordinator Name & Department :- Dr.P.Sumathi&Mathematics										
COURSE OBJECTIVES :- Learners will be familiarized with certain concepts in Set theory, Matrices and Theory of Equations.To direct the students to develop problem solving skills based on the concepts ofTrigonometry and Differential Equations.											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge in Newton’s forward and backward.										
CO2	Understand the concept of Cayley - Hamilton theorem.										
CO3	Apply suitable Hyperbolic and inverse hyperbolic functions.										
CO4	Analyze the algorithm for trigonometric series and using the theorems in real time applications.										
CO5	Evaluate maxima and minima of functions of two variables.										
CO6	Create a real time application reciprocal equation.										
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low											
1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PS01	PS02	PS03
2	CO1	H	M	-	-	-	-	M	H		
	CO2	M	H	-	-	-	-	M			
	CO3	H	M	-	-	-	-	M			
	CO4	H	H	-	-	-	-	M			
	CO5	M	H	-	-	-	-	M			
	CO6	H	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											

UNIT-I : SET THEORY

Sets, Subsets, Equal sets Universal sets, Finite and Infinite sets, Operation on sets, Union Intersection and complements of sets, Cartesian product, Cardinality of sets, Simple applications.

UNIT-II : MATRICES AND DETERMINANTS

Determinants: Definitions, Minors, cofactors, Properties of determinants, Application of determinant in finding the area of triangle, Solving a system of linear equations Cramer's rule.

Matrices: Definitions, Types of Matrices, Addition, Subtraction, Scalar Multiplication and Product of Matrices, Adjoint, Inverse. Solving a system of linear equation using matrix inverse.

UNIT-III : DIFFERENTIATION

Derivatives of a function, derivatives of sum, differences, Product and quotient of functions, Derivatives of polynomial, trigonometric, Exponential, Logarithmic, Inverse trigonometric and Implicit functions, Logarithmic differentiation, Chain Rule and Differentiation by substitution.

UNIT-IV : INTEGRATION

Indefinite Integrals, Method of integration by substitution by parts, Partial fractions, Integration of algebraic and transcendental functions, Reduction formulae for simple and trigonometric functions, Definite integral as limit of sum, Fundamental theorem of integral calculus, evaluation of definite integrals by substitution, Using properties of definite integrals.

UNIT-V: ORDINARY DIFFERENTIAL EQUATION

Higher order linear differential equations with constant coefficients, Method of variation of parameters, Cauchy's and Legendre's linear equations.

TEXT BOOK:

1. P.R.Vital, "Mathematical Foundation", Margham Publishing.2001

REFERENCES:

1. "Engineering Mathematics"-Dr.M.K.Venkatraman, National Publishing co, Chennai.
2. "Integral Calculus", T.K.Manickavasagam Pillai, SVPublications. 2004
3. "Elements of Discrete Mathematis" by C.L.Liu, MGH. 2014
4. "Ordinary Differential Equations" Sivarama Krishna Das And Vijayakumari, Viji's Academy. 2012

Course Coordinator

HOD

BCA1L1	PROGRAMMING IN C LAB					L	T	P	C		
	Total Contact Hours – 30					0	0	4	2		
	Prerequisite course – Computer Applications / Mathematics Studied in Higher Secondary Studies.										
	Course Coordinator Name &Department :- Ms.S.Surya /BCA										
COURSE OBJECTIVES :-											
Learners will be familiar with the basic concepts of C programming. Practice the use of statements to implement the arrays, functions and pointers & Gain skills to handle strings and files.											
COURSE OUTCOMES (COs)											
CO1	Construct programs that demonstrate effective use of C statements.										
CO2	To perform the matrix operations.										
CO3	Develop programs using predefined and user defined functions.										
CO4	Implement C features including arrays, structures, pointers and files.										
CO5	Perform sorting and searching using C programs.										
CO6	Implement the arrays, functions and pointers										
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low											
1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PS01	PS02	PS03
2	CO1	H	L							H	
	CO2	H	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								

	MATRIX MANIPULATION
1.	Addition & subtraction.
2.	Multiplication.
3.	Transpose, and trace of a matrix.
4.	Determination of Matrix.
5.	Inverse of Matrix.
	SUMMATION OF SERIES
6.	Sin (x)
7.	cos (x)
8.	Exp (x) (Comparison with built in functions)
	STRING MANIPULATIONS
9.	Counting the no. of vowels, consonants , words, white spaces in a line of text and array of lines
10.	Reverse a string & check for palindrome.
11.	Substring detection, count and removal.
12.	Finding and replacing substring
	RECURSION
13.	nPr and nCr
14.	GCD of two numbers.

15.	Fibonacci series.
16.	Maximum and minimum..
17.	Tower of Hanoi.
	SORTING AND SEARCHING
18.	Insertion and Sort
19.	Bubble Sort.
20.	Linear Search
21.	Binary Search

Course Coordinator

HOD

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.சித்ரா கண்ணு &தமிழ்த்துறை										
COURSE OBJECTIVES :- சிற்றிலக்கியம் மற்றும் சமய இலக்கியத்தை அறியச் செய்தல்											
COURSE OUTCOMES (COs)											
CO1	சிற்றிலக்கியமான தூது, பள்ளு, குறவஞ்சி பற்றி அறிந்து கொள்வர்										
CO2	சைவ சமய இலக்கியம் பற்றி அறிந்து கொள்வர்										
CO3	வைணவ சமய இலக்கியம் பற்றி அறிந்து கொள்வர்										
CO4	பௌத்த, இசுலாம், கிறித்துவ சமய இலக்கியம் பற்றி அறிந்து கொள்வர்										
CO5	சிற்றிலக்கியம் மற்றும் சமய இலக்கிய வரலாறு பற்றி அறிந்து கொள்வர்										
CO6	சிற்றிலக்கியம் மற்றும் சமய இலக்கியம் பற்றிய தெளிவான அறிவைப் பெறுவர்										
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	PS01	PS02	PS03
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
அழகர்கிள்ளைவிடுதூது	- 1 - 20		
முக்கூடற்பள்ளு - நாட்டுவளம்	- 21,22,25,26,35		
திருக்குற்றாலக்குறவஞ்சி- குறத்திமலைவளம்கூறுதல்	- 1 - 5		

அலகு2			9
அற்புதத்திருவந்தாதி	- 1 - 5		
திருஞானசம்பந்தர் - தேவாரம்	- திருவெண்காட்டுப்பதிகம் - 1 - 10		
மாணிக்கவாசகர்- திருவாசகம்	- திருச்சாழல் - 1 - 10		

அலகு3			9
பெரியாழ்வார்- முதல்திருமொழி	- 1 - 10		
ஆண்டாள் - திருப்பாவை	- 1 - 10		
தொண்டரடிப்பொடிஆழ்வார்- திருமாலை	- 1 - 5		

அலகு4			9
ஆசியஜோதி - கருணைக்கடல்	- அறவுரைகூறுதல் - 1 - 10		
பராபரக்கண்ணி	- குணங்குடிமஸ்தான்சாகிபு - 1 - 20		
இயேசுகாவியம்	- பாடுகளின்பாதை- கண்ணதாசன்		

அலகு5			9
சிற்நிலக்கியவரலாறு, சமயஇலக்கியவரலாறு			

பாடநூல்கள்

1. கதிர்முருகு, "அழகர்கிள்ளைவிடுதூது", 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

Course Coordinator

HOD

BAL20X	Hindi	L	T	P	C
	Total Contact Hours – 45	3	0	0	3
	Prerequisite course – Hindi as second language in Grade 12				
	Course Coordinator Name & Department:- Dr. K. MustakHusaa'in / Department of Hindi				

COURSE OBJECTIVES: -

To understand and improve the skills in the Language of Hindi

COURSE OUTCOMES (COs)

C01	Remember of Ramayana In Sabari part
C02	Understand the historical stories
C03	Apply the concept of translation
C04	Analyzeand develop the letter writing skills
C05	Evaluateand develop the speaking skills
C06	Create knowledge in letter writing and speaking skills

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PS01	PS02	PS03
2	C01	H	M						H		
	C02	H	M								
	C03	H	M								
	C04	H	M								
	C05	H	M								
	C06	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								

UNIT I MODERN POETRY - SHABARI	09
UNIT II ONE ACT PLAY - EKANKI SANKALAM	09
UNIT III TRANSLATION - HINDI – ENGLISH ONLY	09
UNIT IV LETTER WRITING - Leave letter - Job Application - Ordering books - Letter to Publisher - Personal letter	09
UNIT V CONVERSATION - Doctor & Patient - Teacher & Student - Storekeeper & Buyer - Two Friends - Booking clerk & Passenger at Railway station – Auto rickshaw driver and passenger.	09

Text Books:

By Naresh Mehtha,Veerendra Kumar Mishra

Reference Books:

UNIT 1 – Publisheres - LokbharathiPrakashan ,1 Floor, DuebariBuilding,Mahathma Gandhi Marg, Allahabad – 1.

UNIT II – Publishers – Vani Prakasam, New Delhi-110002

UNIT III – Publishers – Dakshin Bharath Hindi Prachar Sabha, Chennai- 17

BAL20X	Française	L	T	P	C
	Total Contact Hours – 45	3	0	0	3
	Prerequisite course – French as second language in Grade 12				
	Course Coordinator Name & Department:- Ms. Tushita Naidu K / Département De Française				

COURSE OBJECTIVES :-

Présenter aux élèves la complexité de la grammaire et comment la surmonter avec des règles simples.

COURSE OUTCOMES (COs)

CO1	Être capable d'interpréter la langue.
CO2	Se familiariser avec les approches méthodologiques de l'étude des textes littéraires et culturels, telles que la lecture attentive, la contextualisation socio-historique et la théorie littéraire et culturelle.
CO3	Acquérir une maîtrise avancée du français parlé et écrit.
CO4	Encourager le développement de compétences en linguistique, en traduction et en études comparatives.
CO5	Se souvenir de l'anatomie des conjugaisons au passé.
CO6	Pour évaluer le texte donné de manière critique et améliorer les compétences en communication.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PS01	PS02	PS03
2	CO1	H	M						H		
	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								

UNIT I -Quelle journee! 9

La Conjugaison pronominale -L'imperatif -L'expression de la quantite (peu-in peu de- quelque – etc.)

UNIT II - Qu'on est bien ici ! 9

Prepositions et adverbs de lieu - Verbs exprimant un deplacement (employ des prepositions)
Le lodgement/la localisation/ l'orientation/l'etat physique/le temps qu'il fait

UNIT III -En se detend? 9

L'imparfait-Emplois du passé compose et de l'imparfait-Expression de la duree-L'enchainement des idees (alors, donc, mais) /Le sens reciproque

UNIT IV- On s'appelle? 9

Les pronoms complements direct -Les pronoms compliments indirects de personne -c'est/ il est-Imperatif des verbes avec pronoms-La formation des mots

UNIT V Un bon conseil ! 9

Expression du deroulement de l'action--passe recent--Present progressif-future proche-Les phrases rapportees- La place de l'adjectif- La proposition relative finale avec -qui

TEXT BOOKS:

A1 ECHO- J. GIRARDET, J. PECHEURB CLE PUBLICATION.

Course Coordinator

HOD

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	PO 6	PO7	PSO 1	PSO 2	PS 03
2	C01	H	L						H		
	C02	H	L								
	C03	H	L								
	C04	H	L								

	CO5	H	L								
	CO6	H	L								
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professiona I 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

Course Coordinator

HOD

: BCA201	DATA STRUCTURE						L	T	P	C	
	Total Contact Hours – 60						3	1	0	4	
	Prerequisite course –Computer Science / Mathematics Studied in Higher Secondary studies										
	Course Coordinator Name &Department:-Ms.V.Ramya/BCA										
COURSE OBJECTIVES:- Learners will be familiar with basic data structure and algorithm analysis. Learners will understand the applications of data structure & able to apply the problem solving techniques using data structure.											
COURSE OUTCOMES (COs)											
C01	Gain knowledge in fundamental data structure										
C02	Understand the concept of algorithmic design and implementation										
C03	Apply suitable data structure for developing a real time application										
C04	Analyze the algorithm for its complexity and performance										
C05	Apply data structures and algorithms on which file structures and data bases are based										
C06	Analyze an real time application using a suitable data structure										
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low											
1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PS01	PS02	PS07
2	C01	H	L						H		
	C02	H	L								

	C03	H	-									
	C04	M	L									
	C05	H	L									
	C06	H	L									
3	Category	Humanities & Social Studies (HS)		Basic Sciences (BS)	Engg Sciences (ES)	Professional Core	Core Elective	Non-Major Elective (NE)	Open Elective	Any other	Project/Term Paper/Seminar/Internship(PR)	
					✓							
4	Approval	Academic Council Meeting										

Unit 1:

Data Structures: Definition of a Data Structure – Primitive and Composite data types, Asymptotic notations, Arrays, Operation on arrays, Order lists

Unit 2:

Stacks - Applications of Stack Infix to Postfix Conversion, Recursion, Maze Problems - Queues Operations on Queues, Queue Applications, Circular Queue.

Unit 3:

Singly Linked List - Operations, Application - Representation of a Polynomial, Polynomial Addition; Doubly Linked List - Operations, Applications Ordering of Books in Library (Alphabetical Ordering).

Unit 4:

Trees and Graphs: Binary Trees - Conversion of Forest to Binary Tree, Operations - Tree Traversals; Graph - Definition, Types of Graphs, Hashing Tables and Hashing Functions, Traversal - Shortest Path; Dijkstra's Algorithm.

Unit 5:

Algorithm - Definition - Examples - Complexity - Divide and Conquer - Binary Search - Maximum and Minimum - Merge Sort.

Books For Study:

1. E.Horowitz and S.Shani Fundamentals of Data Structures in C++, Galgotia Pub. 1999.
2. Horowitz, S. Sahni, and S. Rajasekaran, Computer Algorithms, Galgotia Pub. Pvt. Ltd., 1998.
3. R. Kruse C.L. Tondo and B. Leung, Data Structures and Program design in C, PFU, 1997.

Course Coordinator

HOD

BCA202	PROGRAMMING IN C++					L	T	P	C		
	Total Contact Hours - 60					3	1	0	4		
	Prerequisite course – Computer Science/ Mathematics Studied in Higher Secondary Studies.										
	Course Coordinator Name &Department :- Ms.N.Mathimagal/BCA										
COURSE OBJECTIVES :-											
Learners will be familiar with the basic programming in C++ concepts and to demonstrate the differences between traditional imperative design and object-oriented design.											
COURSE OUTCOMES (COs)											
CO1	Remember the basic concepts and elementary of C++ programs.										
CO2	Understand algorithmic thinking and apply it to programming.										
CO3	Gain knowledge to use problem-solving techniques.										
CO4	Analyze the programming with different operators										
CO5	Ability to apply OOPs concepts										
CO6	Used to implement real time application using suitable logic programming in C++										
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	PS01	PS02	PSO3
2	CO1	H	L								
	CO2	H	L								
	CO3	H	L								

	C04	M	-								
	C05	H	L								
	C06	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:

Principles of Object Oriented Programming (OOP): Software Evolution-OOP Paradigm-Basic Concepts of OOP-Benefits of OOP- Object Oriented Languages-Applications of OOP

UNIT 2:

Introduction to C++; Tokens, Keywords, Identifiers, Variables, Operators, Manipulators, Expressions and Control Structures in C++; Pointers - Functions in C++ Main Function Function Prototyping Parameters Passing in Functions - Values Return by Functions - Inline Functions - Friend and Virtual Functions

UNIT 3:

Classes and Objects; Constructors and Destructors; and Operator Overloading and Type Conversions - Type of Constructors - Function overloading

UNIT 4:

Inheritance: Single Inheritance Multilevel Inheritance Multiple Inheritance Hierarchical Inheritance Hybrid Inheritance. Pointers, Virtual Functions and Polymorphism; Managing Console I/O operations

UNIT 5:

Working with Files: Classes for File Stream Operations Opening and Closing a File
End of File Deduction File Pointers Updating a File Error Handling during File
Operations Command line Arguments.

Books For Study:

1. Herbert Schildt, 1999, C++ - The complete Reference, Third Edition, Tata McGraw –Hill.
2. E. Balagurusamy, 1995, Object Oriented Programming with C++, Tata McGraw Hill Publishing Company Ltd.
3. E. Horowitz and S. Shani, 1999, Fundamentals of Data Structures in C++ , Galgotia Pub.
4. Robert Lafore, Object Oriented Programming in Microsoft C++, Galgotia publications.

Course Coordinator

HOD

BCA203	MATHEMATICS –II				L	T	P	C			
	Total Contact Hours – 60				3	1	0	4			
	Prerequisite course – Computer Science / Mathematics Studied in Higher Secondary										
	Course Coordinator Name & Department :- Dr.P.Sumathi&Mathematics										
COURSE OBJECTIVES :-											
➤ Learners will be familiarized with certain concepts in Integral calculus, ordinary Differential Equations and Laplace Transforms. ➤ To direct the students to develop problem solving skills based on the concepts of vector differentiation and vector integration.											
COURSE OUTCOMES (COs)											
CO 1	Gain knowledge in Bernoulli's formula										
CO 2	Understand the concept of equations with constant coefficients										
CO 3	Apply suitable ideas in Vector differential operator∇										
CO 4	Analyze the algorithm in inverse Laplace transforms										
CO 5	Evaluate the problems in Stoke's and Green's theorems										
CO 6	Create an real time application of surface and volume integrals										
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	PSO 2	PSO3
2	C01	H	M	-	-	-	-	M	H		
	C02	M	H	-	-	-	-	M			
	C03	H	M	-	-	-	-	M			
	C04	H	H	-	-	-	-	M			
	C05	M	H	-	-	-	-	M			
	C06	H	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								

UNIT- I : BASIC STATISTICS

Measure of central tendency, Preparing frequency distribution table, Mean, Mode, Median, Measure of dispersion, Range, Variance and standard deviations, Correlation and regression.

UNIT- II : MATHEMATICAL LOGIC

Propositions, Logical connectives and compound statements, Truth values and truth table, Statement pattern and Logical equivalence, Tautology, contradiction, Contingency, validity of arguments, Predicates.

UNIT- III : INTRODUCTION TO NUMBERS AND SEQUENCES

Natural number, Whole number, Integers, Rational numbers, Irrational numbers, Real numbers, Complex numbers, Prime integers, Decimal number system, Binary number system, Sequences, Types of sequence and series.

UNIT- IV : COMBINATORIES

Review of permutations and combinations, Mathematical Induction, Pigeon hole principle, Principle of Inclusion and Exclusion, Generating function, Recurrence relations.

UNIT- V : GRAPH THEORY

Definition and types of graphs, Incidences and degree of vertices, Isomorphism of graphs, Connected and Disconnected graphs, walk, Paths and circuits, Directed graph, Tree, Elementary results(Properties or Theorems) of graphs, Connected graphs and Trees(Without Proof).

TEXT BOOK:

1. "Discrete Mathematical Structures", R.M.Somasundaram, Prentice-Hall of India Pvt.Ltd (August 15, 2004)

REFERENCES:

1. Gupta S.P and Kapoor V.K., "Fundamentals of Mathematical Statistics", Sultan Chand and Sons, New Delhi, 1995.
2. Graybill, "Introduction to Statistics", Mc Graw Hill.
3. "Graph Theory with Applications to computer science", Narsing Deo.
4. "Discrete Mathematics", P.Sivarama Krishna Das and Vijayakumari, Viji's Academy, 2012.
5. "Basic Mathematics", Mittal and Agarwal.

Course Coordinator

HOD

BCA2L1	PROGRAMMING IN C++ LAB			L	T	P	C				
	Total Contact Hours – 30			0	0	4	2				
	Prerequisite course – Computer Applications / Mathematics Studied in Higher Secondary Studies.										
	Course Coordinator Name &Department :- Ms. N.Mathimagal/BCA										
COURSE OBJECTIVES :-											
Learners will be familiar with the basic programming in C++ concepts and to gain knowledge to create real time application.											
COURSE OUTCOMES (COs)											
CO1	Implement the basic concept of object oriented programming										
CO2	Ability to implement virtual and friend functions.										
CO3	Develop the programs for Stack and Queue										
CO4	Analyze and implement the expressions for real time applications										
CO5	Perform the Linked list operations.										
CO6	Ability to use different searching and sorting methods for real time applications.										
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low											
1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PS01	PS02	PS03
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	L								
	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								

S.NO	LIST OF PROGRAMS	
1.	Functions Using	i). Call by Value
		ii). Call by Reference.
		iii). Recursive Call.
		iv). Returning different Data Types.
2.	In-line function, Overloaded function and Default arguments.	
3.	Operator overloading (Unary and Binary).	
4.	Class and All types of Constructors	
5.	Static function and Array of objects with static data	
6.	Friend function and Friend class	
7.	i). Simple and Multilevel inheritance	
	ii). Implementing derived class constructors.	

8.	i). Function overriding
	ii). Creating objects using Pointers
9.	Virtual functions, pure virtual functions and Abstract class.
10.	Dynamic polymorphism
11.	Function Template and Class Template
12.	I/O Streams with text file and data file.

Course Coordinator

HOD

BCI204	ENVIRONMENTAL STUDIES					L	T	P	C	
	Total Contact Hours – 30					2	0	0	2	
	Prerequisite course –Higher Secondary studies									
	Course Coordinator Name &Department:- – Mrs. S. Vinitha / 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 a biotic ecosystem.										
COURSE OUTCOMES (COs)										
C01	Gain the knowledge about the environmental impact and importance of natural Resources									
C02	Understand about the Ecosystem, Biodiversity and its conservation									
C03	Apply its properties and uses of Hydrocarbons and Alkynes									
C04	Analyze the impact of population and Urbanization to affect the system of habitat loss									
C05	Evaluate the Social issues by our conservation act									
C06	Create the organic environmental approach to protect our habitat for the next generation.									
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 01	PS 02
2	C01	2	3	3	3	1	1	3		
	C02	3	3	1	2	2	3	3		
	C03	3	2	2	2	3	2	3		

	CO4	3	2	3	1	1	3	3		
	CO5	2	3	3	2	3	1	3		
	CO6	3	3	2	2	3	3	3		
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Profession al Core	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

NATURAL RESOURCES:

The multidisciplinary nature of Environmental Studies;

Definition, scope and importance. Need for public awareness.

Natural resources: Renewable and Non-renewable resources;

Natural resources and associated problems.

Forest resources: Use and over exploitation, deforestation, case studies, timber extraction, mining, dams and their effects on forests and tribal people.

Water resources: Use and over utilization of surface and ground water, floods, drought, conflicts over water, dams – benefits and problems.

Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case study. Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies. Land resources: Land as resources, land degradation, man-induced landslides, soil erosion and desertification. Role of individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

UNIT-II

ECOSYSTEM :

9

Concepts of an ecosystem-structure and function of and ecosystem-producers, consumers and decomposers-energy flow in ecosystem-ecological-Succession-Food chains, food webs and ecological pyramids-introduction, types, characteristics features, structure and function of the following ecosystem – Forest ecosystem Grass land ecosystem, Desert ecosystem, Aquatics ecosystem(Ponds, stream,lakes,rivers,oceans,estuaries)

UNIT-III

BIODIVERSITY AND ITS CONSERVATION:

9

Introduction – Definition: genetic, species and ecosystem diversity- Biogeographical classification of India- Value of Biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, national, local levels –India as a mega diversity nation –Hotspots of wildlife conflicts- Endangered and endemic species of India- Conservation of biodiversity In-Situ and Ex-Situ conservation of biodiversity.

ENVIRONMENTAL POLLUTION:

Definition, causes, effects and control measures of – Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, and Nuclear hazards. Solids waste Management: causes effects and control measures of urban and industrial wastes –Role of an individual in earth quake, cyclone and landslides.

UNIT-IV

SOCIAL ISSUES AND THE ENVIRONMENT:

9

From unsustainable to sustainable development, urban problems related to energy. Water conservation, rain water harvesting, watershed management, resettlement and rehabilitation of people, its problems and concerns. Case studies. Environmental ethics: Issues and possible solutions. Climate change, holocaust. Case studies. Water land reclamation- Environment Protection Act- Air(Prevention and control of pollution) Act –Wildlife protection act- Forest conservation Act- Issues involved in enforcement of environmental legislation – Public awareness.

UNIT-V

HUMAN POPULATION AND THE ENVIRONMENT:

9

Population growth, variation among nations- population explosion- family welfare Programme- Environment and human health. Human values- value Education –HIV/AIDS. Women and child welfare- Role of Information Technology in Environment and Human health –Case studies.

TEXT BOOKS

1. Sharma.B.K. and Kaur, *Environmental Chemistry*, Goel Publishing House, Meerut, 1994.
2. De.A.K., *Environmental Chemistry*, New Age International (p) It., , New Delhi, 1996.
3. Kurian Joseph & R. Nagendran, *Essential of Environmental Studies*, Pearson Education, 2004.

REFERENCE BOOKS

1. Dara S.S., *A Text Book of Environmental Chemistry and pollution control*, S.Chand & Company Ltd.,New Delhi, 2004.
2. Jeyalakshmi.R, *Principles of Environmental Science*, 1st Edition, Devi Publications, Chennai 2006.
3. Kamaraj.P & Arthanareeswari.M, *Environmental Science – Challenges and Changes*, 1st Edition, Sudhandhira Publications, 2007.
4. Arivalagan.K, Ramar.P & Kamatchi.P, *Principles of Environmental Science*, 1st Edition, Suji Publications, 2007.

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 ● To enable the students to understand the Social values. ● To provide knowledge on the features forlife. ● To acquire the knowledge on Humanrights. ● To impart the knowledge on Environment and Ecologicalbalance. ● To educate the knowledge on Socialevils..					
COURSE OUTCOMES (COs)					
CO1	Recall the basic concept of human values, Social Value role of medias, Self-introspection – Self esteem				
CO2	Understand the duties and responsibilities of individuals and role of media				
CO3	Apply Salient features for life, : Truth, commitment,, honesty and integrity, forgiveness and love and also positive creative thinking				
CO4	Demonstrate Universal declaration of Human rights, peace and nonviolence – Dr. APJ Abdul Kalam’s ten points for enlightened citizenship.				

CO5	Analyze living and nonliving environmental balance, Ecological balance and conservations and enrichment										
CO6	Manipulate the awareness on Corruption, crime, terrorism, Alcoholism, Drug addiction, Dowry										
1	COs/Po s	P01	P02	P03	P04	P05	P06	P07	PS 01	PS02	PS03
2	CO1	H	M	M					H		
	CO2	H	H	H		L					
	CO3	M	H	M	M						
	CO4	H	M	L							
	CO5	H	H	M		M					
	CO6	M	M	L							
3	Categor y	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)	
		☒						✓			
	Approva l	Academi c Council Meeting									

UNIT-I: Value Education - Definition - relevance to present day - Concept of Human Values - self introspection - Self esteem.

UNIT-II: Family values - Components, structure and responsibilities of family - Neutralization of anger - Adjustability - Threats of family life - Status of women in family and society - Caring for needy and elderly - Time allotment for sharing ideas and concerns.

UNIT-III: Ethical values - Professional ethics - Mass media ethics - Advertising ethics - Influence of ethics on family life - psychology of children and youth - Leadership qualities - Personality development.

UNIT-IV: Social values - Faith, service and secularism - Social sense and commitment - Students and Politics - Social awareness, Consumer awareness, Consumer rights and responsibilities - Redressal mechanisms.

UNIT-V: Effect of international affairs on values of life/ Issue of Globalization - Modern warfare - Terrorism. Environmental issues - mutual respect of different cultures, religions and their beliefs.

Reference Books:

1. T. Anchukandam and J. Kuttainimathathil (Ed) Grow Free Live Free, Krisitu Jyoti Publications, Bangalore (1995)
2. Mani Jacob (Ed) Resource Book for Value Education, Institute for Value Education, New Delhi 2002.
3. DBNI, NCERT, SCERT, Dharma Bharti National Institute of Peace and Value Education, Secunderabad, 2002.
4. Daniel and Selvamony - Value Education Today, (Madras Christian College, Tambaram and ALACHE, New Delhi, 1990)
5. S. Ignacimuthu - Values for Life - Better Yourself Books, Mumbai, 1991.
6. M.M.M.Mascaronhas Centre for Research Education Science and Training for Family Life Promotion - Family Life Education, Bangalore, 1993.

Course Coordinator

HOD

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.சித்ரா கண்ணு&தமிழ்த்துறை					
COURSE OBJECTIVES :- காப்பியஇலக்கியம்மற்றும்நீதிஇலக்கியத்தைஅறியச்செய்தல்							
COURSE OUTCOMES (COs)							
C01	ஐம்பெரும்காப்பியங்களைபற்றிஅறிவர்						
C02	பிற்காலகாப்பியங்களைபற்றிஅறிவர்						
C03	முக்காலநீதிஇலக்கியங்களைபற்றிஅறிவர்						
C04	பிற்காலநீதிஇலக்கியங்களைபற்றிஅறிவர்						
C05	காப்பியமற்றும்நீதிஇலக்கியவரலாற்றைபற்றிஅறிவர்						
C06	காப்பியம்மற்றும்நீதிஇலக்கியங்களில்தெளிவானஅறிவைப்பெறுவர்						
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low							

1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PS01	PS02	PS03
2	C01	H	M						H	M	M
	C02	H	M								
	C03	H	M								
	C04	H	M								
	C05	H	M								
	C06	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

சிலப்பதிகாரம்-இளங்கோவடிகள்- அடைக்கலக்காதை - 115-148, 201-219
மணிமேகலை- சீத்தலைச்சாத்தனார்-ஆபுத்திரன்திறம்அறிவித்தகாதை-1 - 115
சீவகசிந்தாமணி- திருத்தக்கத் தேவர்- குணமாலையார்இலம்பகம்- 851 - 860

9

அலகு2

கம்பராமாயணம்- **கம்பர்**- அயோத்தியகாண்டம்- கங்கைப்படலம் - 10
தேம்பாவணி- வீரமாமுனிவர்- நாட்டுப்படலம் - 10
சீறாப்புராணம்-உமறுப்புலவர்--மானுக்குப்பிணைநின்றபடலம்- 1- 10

9

அலகு3

திருக்குறள் - திருவள்ளுவர் - கல்வி - 1 - 10
நாலடியார் - பொருட்பால் - நட்பாராய்தல் - 1 - 10
இனியவைநாற்பது - பூதஞ்சேந்தனார் - 1 - 10

9

அலகு4

மூதுரை-அவ்வையார்- 1- 10 நன்னெறி- சிவப்பிரகாசர் - 8,12,18,24,39
புதியஆத்திசூடி - பாரதியார் - 1- 25

9

பாடநூல்கள்

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

Course Coordinator

HOD

BAL30X	Hindi	L	T	P	C
	Total Contact Hours – 45	3	0	0	3
	Prerequisite course – Hindi as second language in Grade 12				
	Course Coordinator Name & Department:- Dr. K. MustakHusain / Department of Hindi				

COURSE OBJECTIVES: -

To understand and improve the skills in the Language of Hindi

COURSE OUTCOMES (COs)

CO1	Remember of Ramayana in Panchavati part
CO2	Understand the history of Hindi literature
CO3	Apply the concept of Hindi grammatical speech
CO4	Analyze and develop the translation skills
CO5	Evaluate and develop the unseen passage skills
CO6	Create the skills in Hindi language

Mapping of Course Outcomes with Program outcomes (POs)

(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Po s	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO 2	PSO 3
2	CO1	H	M								
	CO2	H	M								

	CO3	H	M						H		
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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 POETRY - PANCHAVATI	09
UNIT II HISTORY OF HINDI LITERATURE - Aadi Kaal and Bhakthi Kaal - general knowledge of the trends of the difference streams	09
UNIT III ALANKAR – Anupras – Yamak - Slesh - VakrokthiUpama – Rupak – Drishtanth - Virodhabas.	09
UNIT IV TRANSLATION - HINDI – ENGLISH	09
UNIT V COMPREHENSION	09

Text Books:

By MaithilisharanGupt, AnuvadhAbhyas – III

Reference Books:

Publisheres - Dakshin Bharath Hindi Prachar Sabha, Chennai- 17

CourseCoordinator

HOD

BAL30X	Française					L	T	P	C		
	Total Contact Hours – 45					3	0	0	3		
	Prerequisite course – French as second language in Grade 12										
	Course Coordinator Name & Department:- Ms. Tushita Naidu K / Département De Française										
COURSE OBJECTIVES :-											
Développer les aspects techniques de la langue et des nuances grammaticales variées pour interpréter le sujet.											
COURSE OUTCOMES (COs)											
CO1	Transmettre les différents aspects qui composent la langue.										
CO2	Pour apprendre certains faits, procédures, pratiquer certaines structures grammaticales et pratiquer des stratégies de communication.										
CO3	Pour apprendre la culture des natifs de la langue.										
CO4	Analyser les différences entre la grammaire de base et avancée.										
CO5	Se souvenir de l'interdépendance entre les conjugaisons										
CO6	Comprendre les restrictions grammaticales.										
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	PS01	PS02	PS03
2	CO1	H	M						H		
	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								

UNIT I Vivement demain!	9
Le future- La comparaison des qualities, des quantities et des actions	
UNIT II Le Tu as du boulot?	9
Le pronom (en)-Le pronom (Y)-Expression de la condition	
UNIT III -Qu'en pensez - vous?	9
Le subjonctif (employ lie a quelques verbs)- Expression de la quantite (poids et mesure- evaluation-restriction)	
UNIT IV - C'est tout un programme!	9
Les propositions relatives introduites par (qui, que, ou)-Les adverbs (place, formation des adverbs en-ment)- La forme ((en + participe present))	
UNIT V On se retrouve !	9
Emploi et conjugaison des quatre temps de l'indicatif quatre temps de l'indicatif:--passe recent-- Present -Passe compose-Imparfait et future	

TEXT BOOKS:

A2 ECHO- J. GIRARDET, J. PECHEURB CLE PUBLICATION.

BEH301	ENGLISH- III						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite course – + 2 level English										
	Course Coordinator Name & Dept: Mrs. B.JANUA SHERLY – English										
COURSE OBJECTIVES:- To enhance the reading, writing, listening and speaking of the English language skills..											
COURSE OUTCOMES (COs)											
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	PO 5	PO6	PO7	PS 01	PSO 2	PS 03
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)	Professiona I 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 - 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

Course Coordinator

HOD

BCA301	COMPUTER ARCHITECTURE						L	T	P	C	
	Total Contact Hours – 60						3	1	0	4	
	Prerequisite course – Computer Science/ Mathematics Studied in Higher Secondary studies										
	Course Coordinator Name &Department :- Ms.S.Anupriya/BCA										
COURSE OBJECTIVES :-											
Learners will be familiar with the basic concepts of Computer Architecture and to understand the working of computer Systems & its basic principles.											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge in basics of Computer and instruction sets										
CO2	To understand the concept of Pipeline and its types										
CO3	Apply the concept to design a hardware component										
CO4	Analyze the various Input/ Output Operations & its data transfer										
CO5	Understand the architecture design of a computer & its type of memory										
CO6	Used to design real time application using different computer architecture										
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low											
1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PS01	PS02	PS03
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	M	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: Central Processing Unit: General

General registers and stack organization – instruction formats- Addressing modes-
Data transfer and manipulations – Programmed control - RISC

Unit 2: Pipelining:

Arithmetic, Instruction and Risc pipelining – Vector processing, Array processor.

Unit 3: Computer Arithmetic :

Addition and Subtraction – Multiplication and Division Algorithms- floating Point on decimal arithmetic operations.

Unit 4: Input/Output Organization :

Peripheral Devices – I/O interfaces – asynchronous data transfer – modes of transfer – priority interrupt – DMA – I/O processors – Serial Communications.

Unit 5: Memory Organization :

Memory hierarchy – Main memory – Auxillary memory – associative, cache and virtual memory – interconnection structures – Inter-processor arbitration.

Books For Study:

1. Morris Mano – Computer System Architecture Third Edition – PHI – 1994.
2. J.P.Hayes – Computer system Architecture – Mc-Grawhill – 1988.

Reference Books:

1. V C. Hamacher, Z .G. Vraesic, S. G. Zaky, "Computer Organization", Tata McGraw Hill. 1996.
2. Vincent P Heuring Harry F Jordan, "Computer system Design and Architecture", Addison Westey, 1999.
3. David A. Patterson and John L. Henessy, "Computer Organization and Design", Harcourt as/s PTE Ltd, 2nd edition 1999.
4. Thomas c Bartee, "Computer Architecture and Logic Design", International Edition 1991, McGraw Hill.

BCA302	VISUAL PROGRAMMING						L	T	P	C	
	Total Contact Hours – 60						3	1	0	4	
	Prerequisite course –Computer Science/ Mathematics Studied in Higher Secondary studies										
	Course Coordinator Name &Department:-Ms.V.Ramya/BCA										
COURSE OBJECTIVES:- Learners create and develop simple application program that connect with database using visual Basic. Learners develop practical, professional-quality programs using appropriate Visual Basic programming methods.											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge in basic concepts of Visual Programming										
CO2	Express the use of the event-driven model										
CO3	Generalize knowledge of user interface design										
CO4	Analyze to implement applications using an object-oriented methodology										
CO5	Validate to perform operations and store results										
CO6	Comprehend an application using visual programming concepts.										
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	PS01	PS02	PS02
2	CO1	2	3	1	1	2	3	3			
	CO2	3	2	1	1	1	2	3			
	CO3	3	2	2	1	1	1	3			
	CO4	2	1	1	2	1	2	3			
	CO5	3	3	1	1	1	1	3			
	CO6	3	3	1	1	2	1	3			
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core	Core Elective (CE)	Non-Major Elective (NE)	Open Elective	Any other	Project/Term Paper/ Seminar/ Internship(PR)	
					✓						

4	Approval	Academic Council Meeting
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UNIT 1:

Customizing a form/ writing simple programs/ tool box/ creating controls/ name property/ command button/ access keys/ image controls / text boxes/ labels / message boxes/ grid/ edit tools/ variables/ data types/ strings /numbers

UNIT 2:

Displaying information/ determinate loops /indeterminate loops/ conditionals/ **built in functions/ functions and procedures**

UNIT 3:

Lists /arrays/ sorting and searching/ records/ control arrays/ combo boxes/ grid control/ projects with multiple forms/ do events and sub main/ error trapping.

UNIT 4:

VB objects/ dialog boxes/ common controls / menus/ MDI forms / **testing / debugging / optimization**/ working with graphics

UNIT 5:

Monitoring mouse activity/ **file handling/ file system controls**/file system objects / com /ole/automation/DLL servers / ole drag and drop

REFERENCE BOOKS

1. Gary Cornell / visual basic 6 from the ground up / TMH
2. Noel Jerke / visual basic complete ref / TMH

BCA303	FINANCIAL ACCOUNTING							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – +2										
	Course Coordinator Name &Department:-Dr S.Kamaraj – Commerce & Economics										
COURSE OBJECTIVES:- Understand the role of accounting and its limitations. Understand what economic information is conveyed in financial statements.											
COURSE OUTCOMES (COs)											
CO1	Describe the fundamentals of Basic Accounting Concepts and Conventions										
CO2	Discuss the concept of Accounting Equations , Journal- Ledger- Trial Balance										
CO3	Utilize the Profit & loss account and Balance Sheet										
CO4	Examine the Bank Reconciliation Statement ,Rectification of Errors										
CO5	Explain the Methods of Depreciation										
CO6	Formulate Cash Voucher, Cash Memo, Debit note ,Credit note										
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	PS01	PS02	PS03
2	C01	H							H		
	C02	H									
	C03		M	H							
	C04	H		M							
	C05	H									
	C06	H									
3	Category	Humanities & Social Studies(HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core	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:

Book-Keeping & Accounting: Meaning, Internal & External Uses of Accounting Information, Accounting Concepts & Conventions, Accounting Procedure:- Transactions, Types of Accounts, Rules of Accounting, Source Documents:- Cash Voucher, Petty Cash Voucher, Cash Memo, Receipt, Debit Note, Credit Note, Paying Slips, Withdrawals, Cheque.

Unit-2:

Journal & Ledger: Journal, Subsidiary Books, Cash Book, Ledger Posting.

Unit-3:

Final Accounts: Preparation of Trial Balance, Preparation of Final Accounts of Sole Traders & Partnership Firms.

Unit-4:

Errors & Reconciliation : Definition of Errors – Classification of Errors - Bank Reconciliation Statement.

Unit 5:

Depreciation:, Methods of Depreciation: Straight Line Methods, Reducing Balance Method, Change in Depreciation Method.

Reference Books :

1. Advance Accountancy:- M.C. Shukla & T.S. Grewal
2. Advance Accountancy:- S.C. Jain & K.L. Narang
3. Advance Accountancy:- S.M. Shukla
4. Advance Accountancy:- Maheshwari
5. Advance Accountancy:- R.L.Gupta

BCA3L1	VISUAL PROGRAMMING LAB					L	T	P	C	
	Total Contact Hours – 30					0	0	4	2	
	Prerequisite course –Computer Science/ Mathematics Studied in Higher Secondary studies									
	Course Coordinator Name &Department:-Ms.P.Jennifer/BCA									
COURSE OBJECTIVES: Learners use the graphical user interface programming language which has a bulk of inbuilt user friendly tools for understanding programming language concepts and helps to enhance the intellectual skills of learners.										
COURSE OUTCOMES (COs)										
C01	Ability to Perform a program using the development tools									
C02	Ability to handle and analyze fundamental computer programming operations									
C03	Examining, creating, and debugging programming projects using an IDE.									
C04	Validating user input through various input tools									
C05	Manipulate programs that include multiple forms and basic menu environment.									
C06	Comparing and contrasting source code and executable results									
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low										
1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PS 01	PS 02
2	C01	2	3	1	2	1	1	3		
	C02	3	3	2	1	1	2	3		
	C03	3	3	2	1	1	1	3		
	C04	3	2	1	1	2	1	3		
	C05	2	3	2	1	2	1	3		
	C06	3	2	1	2	1	2	3		

3	Category	Humanities& Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Profession al Core	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Anyother	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

S.NO	LIST OF PROGRAMS
1.	SDI
2.	MDI
3.	Drawing inside View Windows, Device Context
4.	Message Map
5.	Event Handling
6.	Graphics Devices, Colors and Fonts
7.	Dialog Controls
8.	Static and Dynamic Controls
9.	Creating Pop-Up menus
10.	Tool Bar and Status Bar

அலகு -1**9**

தமிழ்எழுத்துஅறிமுகம் - உயிரெழுத்து - மெய்யெழுத்து - பெயர், முறை, வடிவம், ஒலிஅளவு (மாத்திரை) - சுட்டுவினாஎழுத்துக்கள் - எழுத்துக்களைகண்டறியும்பயிற்சி

அலகு-2**12**

உயிர்மெய்எழுத்துக்கள் - எண்ணிக்கை, பெயர், முறை, வடிவம், ஒலிஅளவு (மாத்திரை) - எழுத்துக்களைஅகரவரிசைப்படுத்துதல் - எழுத்துவேறுபாடுஅறியும்பயிற்சி

அலகு-3**12**

சொல்லமைப்பு - ஒரேழுத்துச்சொற்கள், பலஎழுத்துச்சொற்கள் - சொல்வகை - பெயர்வினை - சொற்பொருள்வேறுபாடுஅறிதல் - சொற்களைஉருவாக்கும்பயிற்சி

அலகு-4**12**

தொடர்அமைப்பு - சொற்கள்தொடராகஅமையும்முறை - தொடர்வேறுபாடு - செய்தித்தொடர், வினாத்தொடர், உணர்ச்சித்தொடர், ஏவல்தொடர்- சொற்களைதொடரில்பயன்படுத்தும்பயிற்சி

பாடநூல்கள்

- 1.ஆறுமுகநாவலர்,"தமிழ்இலக்கணம்", 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 –							0	0			
	Prerequisite course – Tamil Under Part 1											
	Course Coordinator Name& Department :முனைவர்.ம.சித்ரா கண்ணு & தமிழ்த்துறை											
COURSE OBJECTIVES :- பண்டைத்தமிழரின்நாகரிகமும்பண்பாடும்பற்றிஅறியச்செய்தல்												
COURSE OUTCOMES (COs)												
C01	தமிழரின்அரசியல், தொழில், சமூகஅமைப்புபற்றிஅறிவர்											
C02	தமிழர்திருமணமுறை, குடும்பவாழ்வுபற்றிஅறிவர்											
C03	தமிழரின்உணவு, உடை, உறைவிடம்பற்றிஅறிவர்											
C04	தமிழரின்கல்வி, வானியல், விளையாட்டு, மகளிர், விழாக்கள்பற்றிஅறிவர்											
C05	சங்ககாலமருத்துவம், கட்டடக்கலைப்பற்றிஅறிவர்											
C06	சங்ககாலதமிழரின்நாகரிகம்பண்பாடுபற்றிதெளிவானஅறிவைபற்றிஅறிவர்											
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low												
1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PS01	PS02	PS03	
2	C01	M			H				H	M	M	
	C02	M			H							
	C03	M			H							
	C04	M			H							
	C05	M			H							
	C06	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									

அலகு1

நாகரிகமும்பண்பாடும்-

சங்ககாலத்துஅரசியல்நிலை-

சங்ககாலத்தொழிற்பிரிவினரும்சமூகஅமைப்பும்

அலகு2

பண்டைத்தமிழர்திருமணமுறை, நல்லறம் - குடும்பவாழ்வுபற்றியதமிழர்கொள்கை -
பண்டையத்தமிழரின்உணவு, உடை, உறையுள்

அலகு3

பண்டைத்தமிழரின்கல்விநிலை - பண்டைத்தமிழரின்வானியல்அறிவு-
பண்டைத்தமிழரின்விளையாட்டும்பொழுதுபோக்கும்

அலகு4

மகளிர்நிலை - சங்கத்தமிழரின்சமயவாழ்வு - சங்ககாலவிழாக்கள்

அலகு5

இந்தியநாகரீகத்தில்தமிழ்ப்பண்பாட்டுக்கூறுகள் - மருத்துவக்கலை -
தமிழகக்கோயில்கட்டிடக்கலைவளர்ச்சி

பாடநூல்கள்

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

பார்வைநூல்கள்

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

Course Coordinator

HOD

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.சித்ரா கண்ணு&தமிழ்த்துறை				
COURSE OBJECTIVES :- சங்கஇலக்கியத்தைப்பற்றிஅறியச்செய்தல்					
COURSE OUTCOMES (COs)					

C01	எட்டுத்தொகையில்தந்தறிணை, குறுந்தொகை, கலித்தொகைஇலக்கியங்களைஅறிவர்										
C02	எட்டுத்தொகையில்தநானூறு, பதிற்றுப்பத்துஇலக்கியங்களைஅறிவர்										
C03	பத்துப்பாட்டுஇலக்கியத்தில்தொருநராற்றுப்படை, பெரும்பாணாற்றுப்படைபற்றிஅறிவர்										
C04	பத்துப்பாட்டில்தெடுநல்வாடை, பட்டினப்பாலை, முல்லைப்பாட்டுபற்றிஅறிவர்										
C05	எட்டுத்தொகை, பத்துப்பாட்டுஇலக்கியவரலாற்றைஅறிவர்										
C06	சங்கஇலக்கியத்தைப்பற்றியஉயரியசிந்தனையைப்பெறுவர்										
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	PS01	PS02	PS03
2	C01	H	M						H	M	M
	C02	H	M								
	C03	H	M								
	C04	H	M								
	C05	H	M								
	C06	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,	

அலகு4	-	170 - 184	9
நெடுநல்வாடை	-	1 - 25	
பட்டினப்பாலை	-	106 - 158	
முல்லைப்பாட்டு	-	1 - 28	

அலகு5 9
எட்டுத்தொகைவரலாறு- பத்துப்பாட்டுவரலாறு

பாடநூல்கள்

1. வேங்கடராமன், "நற்றிணைமூலமும்உரையும்", உ.வே.சாநூல்நிலையம், 2013
2. புலியூர்க்கேசிகன், "குறுந்தொகைமூலமும்உரையும்", சாரதாபதிப்பகம், 2010
3. புலியூர்க்கேசிகன், "கலித்தொகைமூலமும்உரையும்", சாரதாபதிப்பகம், 2015

பார்வைநூல்கள்

1. புலியூர்க்கேசிகன், "புறநானூறுமூலமும்உரையும்", சாரதாபதிப்பகம், 2010
2. ஒளவைச.துரைசாமிப்பிள்ளை, "பதிற்றுப்பத்துஉரை", சாரதாபதிப்பகம், 2008
3. கதிர்முருகு, "பத்துப்பாட்டுமூலமும்உரையும்", சாரதாபதிப்பகம், 2010
4. ச.வே.சுப்ரமணியம், "சங்கஇலக்கியம்", மணிவாசகர்பதிப்பகம், 2006

Course Coordinator

HOD

BAL40X	Hindi	L	T	P	C
	Total Contact Hours – 45	3	0	0	3
	Prerequisite course – Hindi as second language in Grade 12				
	Course Coordinator Name & Department:- Dr. K. Mustak Husaain / Department of Hindi				

COURSE OBJECTIVES: -

To understand and improve the skills in the Language of Hindi

COURSE OUTCOMES (COs)

CO1	Remember the skills of the leadership
CO2	Understand and develop the skills to overcome the mistake
CO3	Apply the concept of Hindi essay writing
CO4	Analyze and develop the translation skills
CO5	Evaluate the unseen passage skills
CO6	Create and develop the Hindi language skills

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low											
1	COs/Po s	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PS01	PS02	PSO 3
2	CO1	H	M						H		
	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								

UNIT I DRAMA – Andher Nagari	09
UNIT II NOVEL - GABAN - Premchand	09
UNIT III GENERAL ESSAY	09
UNIT IV TRANSLATION - HINDI – ENGLISH	09
UNIT V COMPREHENSION	09

Text Books:

By Bharathendu Harischandra, Veerendra Kumar Mishra, Anuvadh Abhyas – III

Reference Books:

UNIT 1 - Publisher – Vani Prakashan, New Delhi – 110 002.

UNIT II – Publisher - Rajkamal Prakashan, New Delhi – 110 002

UNIT III – Aadarsh Nibnandh, Vinodh Pustak Mandir, Hospital Road, Agra - 282002

UNIT IV - Dakshin Bharath Hindi Prachar Sabha, Chennai- 17

UNIT V - Dakshin Bharath Hindi Prachar Sabha, Chennai- 17

Course Coordinator

HOD

BAL40X		Française					L	T	P	C	
		Total Contact Hours – 45					3	0	0	3	
		Prerequisite course – French as second language in Grade 12									
		Course Coordinator Name &Department:- Ms. Tushita Naidu K / Département De Française									
COURSE OBJECTIVES :-											
Initier les étudiants aux niveauxavancés de la langue.											
COURSE OUTCOMES (COs)											
CO1	Pour apprendre la culture des natifs de la langue dans la configuration avancée.										
CO2	Comprendre la structure grammaticaleintégraleenfrançais.										
CO3	Encourager le développement de compétencesenlinguistique										
CO4	Évaluerl'ensemble des compétencesorales et écrites										
CO5	Se souvenir de la construction du langage										
CO6	Pour améliorer la maîtriseavancée de la langue										
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	PS01	PS02	PS03
2	CO1	H	M						H		
	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								

UNIT I Vousplaisantez!

9

Le conditionnel present -expression de l'hypothese-demandes polies-suggestions et conseils

UNIT II On s'entend bien!

9

Les constructions du discours rapport-Les constructions (faire + verbe)-et (laisser + verb)

UNIT III A vos risqué et perils!

9

Le subjonctif Present- La construction passive pourmettreenvaleurl'object direct de l' action

UNIT IV C'est tout un programme!

9

Les pronom possessives -Les adjectifs et les pronomsindefinis-Les pronomdemonstratifs:
Les constructions --celui+de

UNIT V C'est la fete !

9

Les formes de l'appréciation : trop/ pas assez –si-Les constructions verbe+verbes

TEXT BOOKS:

A2 ECHO- J. GIRARDET, J. PECHEURB CLE PUBLICATION.

BEH401	ENGLISH- IV							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite course – + 2 level English										
	Course Coordinator Name & Dept. :Ms.E.REKHA - English										
COURSE OBJECTIVES:- To focus on the balanced development of the English language communication skills.											
COURSE OUTCOMES (COs)											
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 01	PS02	PS 03
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	Approval	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

BCA401	OPERATING SYSTEMS						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course – Computer Science/ Mathematics Studied in Higher Secondary studies									
	Course Coordinator Name & Department :- Ms.V.Brindha/BCA									
COURSE OBJECTIVES :-										
Learners can know about essential part of any computer system with the help of an operating system. The purpose of this course is providing a clear understanding of the concepts that underlie operating systems.										
COURSE OUTCOMES (COs)										
CO1	Remember the concepts to gain knowledge about an operating system and the role it plays									
CO2	Understand the high-level structure of operating systems, applications, and the relationship between them.									
CO3	Applying various knowledge of the services provided by operating systems. Exposure to some details of major OS concepts.									
CO4	Analyzing about the behaviour of the different scheduling, memory management and file systems.									
CO5	Evaluate to understand clearly the concept of Virtual memory and learn about techniques to manage and recovery from the deadlock.									
CO6	Used to create different types of I/O system.									
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
2	CO1	3	2	2	1	1	2	3		
	CO2	2	3	1	2	2	2	3		
	CO3	3	2	3	1	3	3	2		
	CO4	2	2	2	3	2	2	3		
	CO5	2	2	2	1	1	1	3		
	CO6	3	3	3	2	2	2	2		
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:

Introduction: Views – Goals – Types of system – OS structures – Components – Services – System Structure – Layered Approach – Virtual Machines – System Design and Implementation. Process Management: Process – Process Scheduling – Cooperating Process – threads – Inter-process communication CPU Scheduling: CPU schedulers – Scheduling Criteria – Scheduling Algorithms.

UNIT – 2:

Process Synchronization: Critical- Section Problem – Synchronization Hardware – Semaphores – Classical Problems of synchronizing – Critical Region – Monitors. Deadlock: Characterization – Methods for Handling Deadlocks – Deadlocks Prevention – Avoidance – Detection – Recovery.

UNIT – 3:

Memory Management: Address Binding – Dynamic Loading and Linking – Overlays – Logical and Physical Address Space – Contiguous Allocation – Internal & External Fragmentation. Non-Contiguous Allocation. Paging and Segmentation Schemes – Implementation – **Hardware-Protection – Sharing – Fragmentation.**

UNIT – 4:

Virtual Memory: Demand paging – Page Replacement – Page Replacement Algorithms – Thrashing. File system:

File concepts – Access Methods – Directory Structures – Protection Consistency Semantics –

File system structures – Allocation Methods – Free Space management

UNIT – 5:

I/O System: Overview – I/O Hardware – Application I/O Interface – Kernal I/O Subsystem – Transforming I/O Requests to Hardware Operations – Performance.

Secondary Storage Structures: Protection – Goals – Domain – Access matrix – The Security Problem –

Authentication – Threats – Threat Monitoring – Encryption.

Books for study

1. Silberschatz P.B Galvin, Gange., "Operating System Concepts", 6th Edn., Addison –Wesley Publishing Co.,2002.

Reference:

1. H.M. Deital, An Introduction to Operating System, second edition, Addison Wesley, 1990.

BCA402	PROGRAMMING IN JAVA					L	T	P	C		
	Total Contact Hours - 60					3	1	0	4		
	Prerequisite course – Computer Science / Mathematics Studied in Higher Secondary Studies.										
	Course Coordinator Name &Department :- Ms.V.Ramya/BCA										
COURSE OBJECTIVES:-											
Learners will be familiar with the basic programming in JAVA concepts and the ability to write a computer program to solve specified problems using Java structure.											
COURSE OUTCOMES (COs)											
CO1	Remember the basic concepts of object-oriented programming										
CO2	Understand the classes and objects										
CO3	Gain knowledge to create packages										
CO4	Used to create Java SDK environment to create, debug and run simple Java programs.										
CO5	Apply the concept of network programming										
CO6	Examine a event driven programming using applets										
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low											
1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PS01	PSO2	PSO3
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	L								
	CO4	M	-								
	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/TermPaper/ Seminar/ Internship (PR)	
					✓						

4	Approval	Academic Council Meeting
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UNIT – 1:

Introduction to Java – Features of Java – Object Oriented Concepts – Lexical Issues – Data Types – Variables – Arrays – Operators – Control Statements.

UNIT – 2:

Classes – Objects – Constructors – Overloading method – Static and fixed methods – Inner Classes – String Class – Inheritance – Overloading methods – Using super – Abstract class.

UNIT – 3:

Packages – Access Protection – Importing packages – Exception Handling – Throw and Throws – Thread – Synchronizing – Messaging – Runnable Interface – Inner thread Communication – Deadlock – Suspending, Resuming and stopping threads – Multithreading.

UNIT – 4:

I/O streams – File Streams – Applets-String Buffer-Char Array-Java Utilities-Code Documentation.

UNIT - 5:

Networks basics-Select Programming-Proxy Servers-TCP/IP Sockets-Net Address-URL-Datagrams-Working with windows using AWT Classes-AWT Controls-Layout Managers and Menus.

REFERENCES:

1. Cay S.Horstmann, Gary Cornell-Core Java 2 Volume 1 – Fundamentals,5th PHI,2000.
2. P.Naughton and H.Schildt – Java2 (The Complete References)-Third Edition,TMH 1999.
3. K.Arnold and J.Gosling- The Java Programming Language – Second Edition,Addison Wesley,1996.

Course Coordinator

HOD

BCA403	COST & MANAGEMENT ACCOUNTING					L	T	P	C	
	Total Contact Hours – 60					3	1	0	4	
	Prerequisite course – +2									
	Course Coordinator Name &Department:-Ms.G.Anandhi -Commerce									
COURSE OBJECTIVES:- To understand the role of accounting and its limitations. Understand what economic information is conveyed in financial statements										
COURSE OUTCOMES (COs)										
CO1	List out the cost accounting& Management Accounting concept, Stores records									
CO2	Report the ABC Analysis, EOQ, Material store records									
CO3	Practice the Administration, Selling overheads, Machine hour rate									
CO4	Analyze funds flow &Cash flow statement .									
CO5	Estimate the concept of staffing functions in the organization and Ratio									
CO6	Formulate the Budget, Absorption of over heads, methods of pricing methods									
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low										
1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PSO1	PSO2
2	CO1	3	3	2	1	3	3	3		
	CO2	1	3	1	3	3	1	2		
	CO3	2	2	2	2	3	3	2		
	CO4	3	3	2	3	1	2	1		
	CO5	3	1	3	1	2	1	3		
	CO6	3	2	3	3	3	3	1		

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

Unit 1:-

Principles of Accounting: Principles of double entry – Assets and Liabilities – Accounting records and systems – Trial balance and preparation of financial statements - Trading, Manufacturing, profit and Loss Accounts, Balance Sheet including adjustments (Simple problems only)

Unit 2:-

Analysis and Interpreting Accounts and Financial Statements: Ratio analysis - Use of ratios in interpreting the final accounts (trading accounts and loss a/c and balance sheet) - final accounts to ratios as well as ratios to final accounts.

Unit 3:

Break-even analysis and Marginal Costing: Meaning of variable cost and fixed cost Cost Volume Profit analysis – calculation of breakeven point, Profit planning, sales planning and other decision – making analysis involving break - even analysis - Computer Accounting and algorithm. (differential cost analysis to be omitted)

Unit 4:-

Budget/Forecasting: preparation of and characteristics of functional budgets, Production, sales, Purchases, cash and flexible budgets.

Unit 5:

Project Appraisal : Method of capital investment decision making: payback method, ARR METHOD- DISCOUNTED CASH FLOWS – NET PRESENT VALUES – INTERNAL RATE OF RETURN – SENSITIVITY ANALYSIS – COST OF CAPITAL.

Reference Books:-

1. Shukla M.C. & T.S. Grewal, 1991, Advanced Accounts, S.Chand & Co. New Delhi.
2. Gupta R.L. & M. Radhaswamy, 1991, Advanced Accounts Vol. II, Sultan Chand & Sons, New Delhi.
3. Man Mohan & S.N. Goyal, 1987, Principles of Management Accounting, Arya Sahithya

- Bhawan.
4. Kuchhal, S.C., 1980, Financial Management, Chaitanya, Allahabad.
 5. Hingorani, N.L. & Ramanthan, A.R, 1992, Management Accounting, 5th edition, Sultan Chand, New Delhi.

Course Coordinator

HOD

BCA4L1	PROGRAMMING IN JAVA LAB						L	T	P	C	
	Total Contact Hours – 30						0	0	4	2	
	Prerequisite course – Computer Applications / Mathematics Studied in Higher Secondary Studies.										
	Course Coordinator Name &Department :- Ms.V.Ramya/BCA										
COURSE OBJECTIVES :- Ability to develop application using java SDK environment,AWT and Applet											
COURSE OUTCOMES (COs)											
CO1	Comprehend a simple java program using OOPs concepts										
CO2	Ability to use an interface.										
CO3	Examine packages and apply exception handling in real time application										
CO4	Implement the concept of thread										
CO5	Understand applications using AWT and Applet.										
CO6	Ability to handle Frames & Layout										
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	PS01	PS02	PS03
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	-								
	CO4	M	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								

S.NO	JAVA PROGRAMS
1.	Finding area and Perimeter of a circle. Use Buffered Reader Class.
2.	Substring Removal from a String. Use String Buffer Class
3.	Determining the order of numbers generated randomly using Random Class
4.	Implementation of Point Class for Image Manipulation
5.	Usage of Calendar Class and manipulation
6.	String Manipulation using Char Array
7.	Database Creation for storing e-mail addresses and manipulation
8.	Usage of Vector Classes
9.	Implementation Thread based applications & Exception Handling.
10.	Application using synchronization such as thread based,Class based and synchronized
11.	Statements.
	APPLET

12.	Working with Frames and various controls
13.	Working with Dialogs and Menus.
14.	Working with Panel and Layout.
15.	Incorporating Graphics.
16.	Working with Colors and Fonts.

Course Coordinator

HOD

BCA4E2	BASIC TAMIL – II					L	T	P	C		
	Total Contact Hours – 45					3	0	0	3		
	Prerequisite course – Basic Tamil - I										
	Course Coordinator Name & Department :- பூரீதேவி&தமிழ்த்துறை										
COURSE OBJECTIVES :- தமிழ்மொழியின்அடிப்படைக்கூறுகள்பற்றிஅறியச்செய்தல்											
COURSE OUTCOMES (COs)											
CO1	தமிழ்மொழியின்சொல்வகை, திணை, பால்பாகுபாடுபற்றிஅறிவர்										
CO2	அடுக்குத்தொடர், இரட்டைக்கிளவி, ண,ன,ர,ற,ள,ழவேறுபாடுபற்றிஅறிவர்										
CO3	பத்திகளைசுருக்கியும், விரிவாக்கிஎழுதும்அறிவைப்பெறுவர்										
CO4	சொற்களையொன்று உரையாடுவதுபற்றிபெறுவர்										
CO5	கட்டுரை, கடிதம்எழுதும்அறிவைப்பெறுவர்										
CO6	தமிழ்மொழியில்சரளமாகபேசும்எழுதும்திறனைப்பெறுவர்										
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	PS01	PS02	PS03
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

12

- 1.1 தமிழ்மொழிஅறிமுகம்
- 1.2 சொல்வகைகள்
- 1.3 திணை, பால்பாகுபாடு

அலகு-2

12

- 2.1 அடுக்குத்தொடர், இரட்டைக்கிளவி
- 2.2 ஒருஓர்வேறுபாடு
- 2.3 ண்,ன்,ர,ற,ள,ழவேறுபாடு

அலகு-3

12

- 3.1 பத்தியிலிருந்துவினாக்களுக்குரியவிடைகளைகண்டறியும்பயிற்சி
- 3.2 சுருக்கிவரைதல்
- 3.3 விரிவாக்கிஎழுதுதல்

அலகு-4

9

- 4.1 உரையாடல்
- 4.2 கட்டுரை
- 4.3 மடல்வரைதல்

பாடநூல்கள்

1. மருதூர்அரங்கராசன், "தவறின்றித்தமிழ்எழுத", ஐந்திணைப்பதிப்பகம், 2012
2. ஞா. தேவநேயப்பாவாணர், "உயர்தரக்கட்டுரைஇலக்கணம்", கௌராபதிப்பகம், 2013
3. க. கயிலாயநாதன், "தமிழ்மொழிவிளக்கம்", முல்லைநிலையம், 2006

பார்வைநூல்கள்

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

Course Coordinator

HOD

BCA4E1	SPECIAL TAMIL – II					L	T	P	C		
	Total Contact Hours –						0	0			
	Prerequisite course – SPECIAL TAMIL – I										
	Course Coordinator Name& Department :முனைவர்.ம.சித்ரா கண்ணு & தமிழ்த்துறை										
COURSE OBJECTIVES :- நாட்டுப்புறவாழ்வியலைபற்றி அறியச்செய்தல்											
COURSE OUTCOMES (COs)											
CO1	தாலாட்டு மற்றும் குழந்தைப்பாடல்கள் பற்றி அறிவார்										
CO2	தொழிற்பாடல், காதல்பாடல், கொண்டாட்டப்பாடல்கள் பற்றி அறிவார்										
CO3	சங்ககாலமக்களின் விடுகதை, நம்பிக்கை, சடங்குகள் பற்றி அறிவார்										
CO4	பழமொழிகள், நாட்டுப்புறமருத்துவம், சமயவழிபாடுகள் பற்றி அறிவார்										
CO5	நாட்டுப்புற இலக்கியவரலாறு பற்றி அறிவார்										
CO6	வாய்மொழி இலக்கியம் மூலம் சங்ககாலமக்களின் வாழ்வியலை அறிவார்										
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	PS01	PS02	PS03
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 9
விடுகதைகள் - நம்பிக்கைகள்- சடங்குகள்

அலகு4 9
பழமொழிகள்- நாட்டுப்புறமருத்துவம் - சமயவழிபாடுகள்

அலகு5 9
நாட்டுப்புறஇலக்கியவரலாறு

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

BCA501	COMPUTER NETWORKS					L	T	P	C	
	Total Contact Hours - 60					3	1	0	4	
	Prerequisite course - Computer Science / Mathematics Studied in Higher Secondary studies									
	Course Coordinator Name &Department :- Ms. V.Ramya/BCA									
COURSE OBJECTIVES :- Learners will gain knowledge in computer networks and concentrates on building a firm foundation for understanding Data Communications and Networks.										
COURSE OUTCOMES (COs)										
CO1	Understand the layers of OSI and TCP/IP networks.									
CO2	Identify the solution for the error control and flow control problems.									
CO3	Understand the working principles of IP layer and its routing algorithms.									
CO4	Analyze the functionalities of transport layer protocols and its congestion control mechanism.									
CO5	Apply the functionalities of application layer protocols.									
CO6	Analyze the different types of network devices and their functions									
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	PS01	PS02
2	CO1	2	1	1	1	2	3	2		
	CO2	2	3	1	2	1	3	2		
	CO3	3	1	2	1	2	1	1		
	CO4	1	2	3	2	3	2	3		
	CO5	1	3	2	3	1	2	3		
	CO6	3	2	3	3	2	1	1		
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
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Unit 1:

Introduction – Network Hardware – Software – Reference Models – OSI and TCP/IP models – Example networks: Internet, ATM, Ethernet and Wireless LANs - Physical layer – Theoretical basis for data communication - guided transmission media

Unit 2:

Wireless transmission - Communication Satellites – Telephones structure –local loop, trunks and multiplexing, switching. Data link layer: Design issues – error detection and correction.

Unit 3:

Elementary data link protocols sliding window protocols – Data Link Layer in the Internet - Medium Access Layer – Channel Allocation Problem – Multiple Access Protocols.

Unit 4:

Network layer design issues Routing algorithms Congestion control algorithms – IP protocol – IP Address – Internet Control Protocol.

Unit 5 :

Transport layer design issues Connection management Addressing, Establishing & Releasing a connection – Simple Transport Protocol – Internet Transport Protocol (TCP) - Network Security: Cryptography.

Text Books:-

1. S.Tanenbaum, 2003, Computer Networks, Fourth Edition, Pearson Education, Inc, (Prentice hall of India Ltd), Delhi.

Reference Books:-

1. B. Forouzan, 1998, Introduction to Data Communications in Networking, Tata McGraw Hill, New Delhi.
2. F. Halsall, 1995, Data Communications, Computer Networks and Open Systems, Addison Wessley.
3. D. Bertsekas and R. Gallagher, 1992, Data Networks, Prentice hall of India, New Delhi.
4. Lamarca, 2002, Communication Networks, Tata McGraw Hill, New Delhi.

Course Coordinator

HOD

BCA502	SOFTWARE ENGINEERING					L	T	P	C		
	Total Contact Hours – 60					4	0	0	4		
	Prerequisite course – Computer Science/ Mathematics Studied in Higher Secondary studies										
	Course Coordinator Name & Department :- Dr.S.Thirunirai Senthil/BCA										
COURSE OBJECTIVES :- Helps the learners to understand theories, methods, and technologies applied for professional software development.											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge about the fundamentals of Software Engineering.										
CO2	Understand the Planning of a software Project										
CO3	Applying various Software Cost Estimation Techniques										
CO4	Analyze the various software design techniques										
CO5	Comprehend the Coding and testing part of the project.										
CO6	Understand the Software Quality Assurance and software maintenance tools										
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	L								
	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:

Introduction to Software Engineering : Definitions – Size Factors- Quality and Productivity Factors – Managerial Issues- Planning a software Project: Defining the Problem – Developing a Solution – Strategy – **Planning the Development Process – Planning an Organization Structure –** Other Planning Activities.

UNIT 2:

Software Cost Estimation : Software cost factors – Software Cost Estimation Techniques – Staffing – Level Estimation – Estimating Software Maintenance Costs – The Software Requirements Specification – Formal Specification Techniques – Languages and Processors for Requirements Specification.

UNIT 3:

Software design: Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – **Design Techniques – Detailed Design Considerations – Real-Time and** Distributed System Design – Test Plans – Milestones, Walkthroughs, and Inspections.

UNIT 4:

Implementation issues : Structured Coding Techniques – Coding Style – Standards and Guidelines – Documentation guidelines – Type checking – Scooping Rules – Concurrency Mechanism.

UNIT 5:

Quality Assurance – Walkthroughs and Inspections – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification: Enhancing Maintainability during Development – Managerial aspects of Software Maintenance – Source Code Metrics – **Other Maintenance Tools and Techniques.**

REFERENCE:

1. R.S.Pressman,Software Engineering , Fourth Ed , McGraw Hill,1997.

Course Coordinator

HOD

BCA503	PROGRAMMING IN ASP .NET					L	T	P	C		
	Total Contact Hours - 60					3	1	0	4		
	Prerequisite course –Computer Science/ Mathematics Studied in Higher Secondary studies										
	Course Coordinator Name & Department :- Ms.S.Anupriya/BCA										
COURSE OBJECTIVES :-											
Learners will be familiar with basics of the ASP .NET. Learners will understand the design and implementation of the complete applications over the web											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge in developing and creating ASP .Net Applications										
CO2	Understand the usage of web controls and forms										
CO3	Apply development products of Microsoft Visual Studio.Net® products										
CO4	Analyze the implementation and connect the automated system to a database stored on a web server.										
CO5	Analyze how to link and publish Visual Studio.Net® applications to reflect a web application.										
CO6	Examine an real time application using ASP .NET										
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	PS01	PS02	PS03
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	L								
	CO4	M	L								
	CO5	H	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								

UNIT I INTRODUCTION TO .NET FRAMEWORK

Genesis of .Net – Features of .Net - .Net binaries – Microsoft Intermediate Language – Meta Data - .Net types and .net name spaces – Common Language Runtime – Common Type System – Common Language Specification - .Net Applications using command line compiler and visual studio .net IDE.

UNIT II BASICS OF ASP. NET

Introducing ASP .NET – Creating and deploying ASP .NET applications – Web forms – Web controls – working with events – Rich web controls – Custom web controls – Validation controls – Debugging ASP .NET pages.

UNIT III ADVANCED ASP .NET

ASP .NET configuration – Business objects – HTTP Handlers – Caching in ASP .NET – ASP .NET security – Localizing ASP .NET applications – Deployment projects.

UNIT IV BUILDING WEB SERVICES

Introduction to web services – Web services Infrastructure – SOAP – Building a web service – Deploying and publishing web services – Finding web services – Consuming web services.

UNIT V ADO .NET

Basics of ADO .NET – Changes from ADO – Data Table – Data Views – Data Set – Data Relation Type – ADO .NET Managed Providers – OIADB and SQL Managed Providers – OIADB Data Adapter Type.

TEXT BOOKS:

1. Andrew Troelsen – “C# and the .Net Platform” – Apress – 2001.(Unit I and II)
2. Mridula Parihar, et. al. – “ASP .NET Bible” – Wiley-dreamtech India Pvt. Ltd. – 2002

REFERENCE BOOKS:

1. David S. Platt – “Introducing .Net” – Microsoft Press – 2002.
2. Alex Homer et. al. – “Professional ASP .NET 1.1” – Wiley-dreamtech India Pvt. Ltd. – 2004.
3. Rebecaa M. Riordan – “ADO .Net step by step” - Microsoft Press.

Course Coordinator

HOD

BCA5E4	WEB TECHNOLOGY					L	T	P	C		
	Total Contact Hours - 60					4	0	0	4		
	Prerequisite course – Computer Science/ Mathematics Studied in Higher Secondary studies										
	Course Coordinator Name &Department :- Ms.V.Ramya /BCA										
COURSE OBJECTIVES :-											
Learners will be familiar with the basic concepts of web technology and Understand the various steps in designing a creative and dynamic website.											
COURSE OUTCOMES (COs)											
CO1	Remember the basic internet concepts										
CO2	Gain knowledge to design dynamic and interactive web pages										
CO3	Ability to create Events and functions in java script										
CO4	Apply Dynamic HTML to create website										
CO5	Understand the fundamentals of XML										
CO6	Apply to the website by connecting with data base for real time application .										
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low											
1	COs/Po s	P01	P02	P03	P04	P05	P06	P07	PSO 1	PSO2	PSO3
2	C01	H	L							H	
	C02	H	L								
	C03	H	L								
	C04	H	-								
	C05	H	L								
	C06	M	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:

Internet Basic – Introduction to HTML – List Creating Table – Linking document – Frames - Graphics to HTML Doc – Style sheet – style sheet basic – Add style to document – Creating style sheet rules – Style sheet properties – Font – Text – List – Color and Background color – Box – Display properties.

UNIT – 2:

Introduction to JavaScript – Advantage of JavaScript – JavaScript syntax – Data type – Variable – Array – Operator and Expression – Looping Constructor – Function – Dialog box.

UNIT – 3:

JavaScript document object model – Introduction – object in HTML – Event Handling – Window object – Document object – Browser Object – Form Object – Navigator object – Screen object – Build in object – User defined object – Cookies.

UNIT – 4:

ASP.NET Languages structure – Page event, Properties & Compiler Directives. HTML server controls – Anchor, Tables, Forms, Forms, Files. Basic web server Controls – Label, Textbox, Button, Image, Links, Check & Radio button, Hyperlink. Data list Web server controls – Check box list, Radio button list, Drop down list, List box, and Data grid, Repeater.

UNIT – 5:

Request and Response Objects, Cookies, Working with Data – OLEDB connection class, Command class transaction class, data adaptor class, data set class. Advanced Issues – Email, Application Security – Authentication, IP Address, Secure by SSL & Client Certificates.

Reference Books:-

1. Bayross, Web Enable Commercial Application Development Using HTML, DHTML, JavaScript, Perl CGI, BPB Publications.

2. Jaworski, Mastering JavaScript, BPB Publications, 1999
3. T. A Powell, complete Reference HTML (Third Edition), TMH, 2002.
4. G. Buczek, ASP.NET Developers Guide, TMH, 2002.

Course Coordinator

HOD

BCA5E4	COMPUTER GRAPHICS						L	T	P	C	
	Total Contact Hours - 60						4	0	0	4	
	Prerequisite course – Computer Science/ Mathematics Studied in Higher Secondary studies										
	Course Coordinator Name &Department :- Ms.V.Ramya /BCA										
COURSE OBJECTIVES :- Learners will begin to understand what visual communications are and how they have developed over history											
COURSE OUTCOMES (COs)											
CO1	Remember the general software architecture of programs that use 3D computer graphics.										
CO2	Gain knowledge to design hardware system architecture for computer graphics										
CO3	Ability to use a current 3D graphics API (e.g., OpenGL or DirectX).										
CO4	Ability to use the underlying algorithms, mathematical concepts, supporting computer graphics										
CO5	Understand the fundamentals of Composite 3D homogeneous matrices for translation, rotation, and scaling transformations										
CO6	Apply to the algorithms, mathematical concepts for real time application .										
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low											
1	COs/Po s	P01	P02	P03	P04	P05	P06	P07	PSO 1	PSO2	PSO3

2	C01	H	L							H	
	C02	H	L								
	C03	H	L								
	C04	H	-								
	C05	H	L								
	C06	M	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:

Introduction to graphic devices - picture representation, display devices , display adapters, Types of printers , Plotters & input devices

UNIT 2:

Transformations - Basic 2D & 3D transformations - translation , scaling , rotation , reflection, shearing, Multiple transformations, Rotation about an axis parallel to a coordinate axis, Rotation about an arbitrary axis in space, Affine and perspective Geometry , Orthographic projections and Axonometric projections

UNIT 3:

Raster Scan Graphics - Bresenham's line and circle drawing algorithms, scan conversion, RLE, Frame buffer, Scan converting polygons - Edge fill and Seed fill algorithms, Anti aliasing and Half toning

UNIT 4:

Clipping and Display file Compilation - Sutherland - Cohen line clipping algorithm, Windowing and View porting - Segmented display file, structure and compilation. - Hidden Surface and hidden Line Removal - Backface removal algorithm, Z- buffer, Warnock algorithm, Hidden line elimination.

UNIT 5:

Plane Curves and Space Curves - Curve Representation, Non-parametric and parametric curves, representation of space curves, Cubic Spline, Parabolic Blended curves, Bezier curves and B-spline curves.

Recommended Text Books

1. D. F. Rogers, J. A. Adams, 2002, Mathematical elements for Computer Graphics, 2nd Edition, Tata McGraw-Hill, New Delhi.
2. D. F. Rogers, 2001, Procedural elements for Computer Graphics, 2nd Edition, Tata McGraw-Hill, New Delhi.

Reference Books

1. W.M. Neumann and R. F. Sproull, Principles of Interactive Computer Graphics, Tata McGraw-Hill, New Delhi.
2. D. Hearn and M. P. Baker, 2004, Computer Graphics (C Version), 2nd Edition, Pearson Education.
3. S. Harrington, 1989, Fundamentals of Computer Graphics, Tata McGraw-Hill, New Delhi.
4. Foley, Van Dam, Feiner, Hughes, 2000, Computer Graphics, Addison Wesley, Boston.

Course Coordinator

HOD

BCA5E4	Major Elective I : DATA MINING AND DATA WAREHOUSING	L	T	P	C
	Total Contact Hours – 60	4	0	0	4
	Prerequisite course –Computer Science/ Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name &Department :- Ms.S.Anupriya/BCA				
COURSE OBJECTIVES :- Learners will be familiar with the concepts of data ware house and data mining, which gives a complete description about the principles, used, architectures, applications, design and implementation of data mining and data ware housing concepts.					
COURSE OUTCOMES (COs)					
CO1	Gain knowledge in mathematical foundations of data mining tools				
CO2	Understand how to gather and analyze large sets of data to gain useful business				
CO3	Understand and implement classical models and algorithms in data warehouses and data mining.				
CO4	Characterize the kinds of patterns that can be discovered by association rule mining, classification and clustering. Analyzing and demonstrating basic data mining algorithms, methods, and tools				
CO5	Master data mining techniques in various applications like social, scientific and environmental context.				
CO6	Develop skill in selecting the appropriate data mining algorithm for solving practical 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	P01	P02	P03	P04	P05	P06	P07	PS01	PS02	PS03
2	C01	H	L						H		
	C02	H	L								
	C03	H	L								
	C04	H	L								
	C05	H	L								
	C06	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 Data Warehouse

Data Warehouse roles and structures – What can a data warehouse do? The Cost of Warehousing data – Data Stores, Warehouses and Marts – The Data Warehouse environment – Data warehouse characteristics – The Data Warehouse architecture – Metadata, Metadata Extraction – Implementing the Data Warehouse – Designing and building the Data Warehouse – The data warehouse project plan – Data warehouse architecture, specification and development- Data Warehouse project success factors.

UNIT II Introduction to Data Mining:

Basic Data Mining tasks – Data mining versus knowledge discovery in data bases – Data Mining issues – Data Mining Metrics – Social implications of data mining - Data Mining from a database perspective – Data Mining Techniques – Introduction – A statistical perspective on Data Mining – Similarity measures – Decision trees – Neural networks – Genetic algorithms.

UNIT III Classification

Introduction – Statistical based algorithms – Distance based algorithms – Decision tree based algorithms – Neural networks based algorithms – Rule based algorithms – Combining Techniques.

UNIT IV Clustering

Introduction – Similarity and distance measures – Outliers – Hierarchical algorithms – Partitional algorithms – Clustering large data bases – Clustering with categorical attributes – Association Rules – Introduction – Large Item – sets – Basic Algorithms.

UNIT V Web Mining, Spatial Mining, Temporal Mining

Web Mining – Introduction – Web Content Mining – Web Structure Mining – Web Usage Mining. Spatial Mining – Introduction – Spatial Data: Overview – Spatial Data Mining primitives – Generalization and Specialization – Spatial Rules – Spatial Classification algorithm – Spatial Clustering Algorithms. Temporal Mining – Introduction – Modeling temporal events.

REFERENCE BOOKS:

1. Margaret H.Dunham. "Data Mining Introductory and Advanced Topics". Pearson Education – 2003.
2. George M. Maracas'. "Modern Data Warehousing, Mining and Visualization: Core concepts", Pearson Education – 2003.

Course Coordinator

HOD

BCA5L1	PROGRAMMING IN ASP .NET LAB		L	T	P	C
	Total Contact Hours – 30		0	0	4	2
	Prerequisite course – Computer Science/ Mathematics Studied in Higher Secondary studies					
	Course Coordinator Name & Department :- Ms.S.Anupriya/BCA					
COURSE OBJECTIVES :- Learners will gain ability to design and implement the complete applications over the web						
COURSE OUTCOMES (COs)						
CO1	Implement the basic concept of console applications like string manipulation, exception handling.					
CO2	Understand the technical code to implement windows applications					
CO3	Apply the programs using predefined functions					
CO4	Analyze Web Applications					
CO5	Develop applications that connect database					
CO6	Examine web pages using ASP .NET					
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low						

1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PS01	PS02	PS03
2	C01	H	L							H	
	C02	H	L								
	C03	H	-								
	C04	H	L								
	C05	M	L								
	C06	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									

S.NO	ASP.NET PROGRAMS
1.	Working with MSIL, Metadata and Namespace
2.	Usage of CLR, CTS and CLS.
3.	.Net application using command line compiler.
4.	.Net application using visual studio .net IDE.
5.	Simple ASP .Net Applications.
6.	Creating web forms application projects.
7.	Usage of web controls.
8.	Working with events
9.	Usage of Rich web controls.

10.	Usage of validation controls
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Course Coordinator

HOD

BCA5L2	SOFTWARE DEVELOPMENT LAB					L	T	P	C		
	Total Contact Hours – 30					0	0	4	2		
	Prerequisite course – Computer Science/ Mathematics Studied in Higher Secondary studies										
	Course Coordinator Name & Department :- Ms.S.Anupriya/BCA										
COURSE OBJECTIVES :- Learners will gain basic concepts in information system and the benefits with these systems in modern society											
COURSE OUTCOMES (COs)											
CO1	Implement the basic concept of Microsoft office applications										
CO2	Understand the technical code to implement windows applications										
CO3	Apply the programs using predefined functions										
CO4	Analyze Tables and Manipulations										
CO5	Develop applications that connect design templates										
CO6	Examine web pages										
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low											
1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PS01	PSO	PS03

										2	
2	CO1	H	L							H	
	CO2	H	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									

S.No	NAME OF THE PROGRAMS TOPICS	WORD PROCESSING - (MS-WORD PROGRAMS)
1.	Text Manipulation	1. Change the font size and type – Aligning and justification of text – Underlining the Text
		2. Indenting the Text i. Prepare a Bio-data, ii. Prepare a Letter.
2.	Usage of Numbering, Bullets, Footers and Headers	1. Usage of Spell checks and Find and Replace
		2. Prepare a document in news paper format
		3. Prepare a document with bullets and footers and headers.
3	Tables and Manipulations	1. Creations, Insertion, Deletion (Columns & Rows) and usage of Auto Format
		2. Create a mark sheet using table and find out the total marks.
		3. Create a calendar and Auto format it
4	Picture Insertion and alignment	1. Prepare a greeting card
		2. Prepare a handout
5	Creation of documents using templates Creation of Templates	1. Prepare a letter using any template
		2. Prepare two data using various kinds of templates
6	Mail Merge concepts	1. Prepare a business letter for more than one company using mail merge

		2. Prepare an invitation to be sent to specific addresses in the data source
7	Copying text and pictures from Excel	1. Draw a chart in Excel and paste it on word
		2. Import a picture from Excel and edit the picture
	ELECTRONIC WORK SHEET – (MS-EXCEL PROGRAMS)	
8.	Usage of Formulae and built in functions	
9.	Describe the types of functions	
10.	File manipulations	
11.	Data sorting – Ascending and descending	
12.	Worksheet preparation	
13.	Mark list Preparation for a student	
14.	Individual Pay Bill Preparation	
15.	Electricity Bill preparation	
16.	Inventory Report Preparation	
17.	Invoice Report Preparation	
18.	Drawing Graphs	
19.	Usage of Auto formatting	
	PRESENTATION SOFTWARE – (MS-POWERPOINT PROGRAMS)	
20.	Creating presentation using Blank presentation	
21.	Creating presentation using Auto content Wizard	
22.	Customizing background of slide master	
23.	Working with Graphs and Objects	
24.	Exercises on slide transition and animation	
25.	Usage of Design templates	

Course Coordinator

HOD

BCA601	DATABASE TECHNOLOGY		L	T	P	C
	Total Contact Hours – 60		3	1	0	4
	Prerequisite course – Computer Science/ Mathematics Studied in Higher Secondary studies					
	Course Coordinator Name & Department :- Ms.S.Anupriya/BCA					
COURSE OBJECTIVES:- Learners can easily know about the information of the database technology is an essential part of any computer system. The purpose of this course is providing a clear understanding of the concepts that underline Database Technology						
COURSE OUTCOMES (COs)						
CO1	Remember the fundamental elements of relational database management					
CO2	Understand the basic concepts of relational data model, entity-relationship model, Relational database design, relational algebra and SQL.					
CO3	Apply various ER-models to represent simple database application scenarios					
CO4	Analyze the ER-model to relational tables, relational database and formulate SQL					

	queries on data.										
C05	Examine to improve the database design by normalization.										
C06	Used to apply the database system architecture.										
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low											
1	COs/Po s	P01	P02	P03	P04	P05	P06	P07	PS01	PS02	PS03
2	C01	H	L						H		
	C02	H	L								
	C03	H	L								
	C04	M	L								
	C05	H	L								
	C06	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

Database concepts / basic concepts / constraints / keys ER diagram / reduction or ER schema / UML/ design of an ER database schema / relational model / relational algebra / views / relational database / SQL / structure / set notation / sub queries / join relation / DDL / DML / embedded SQL,QBE.

UNIT 2

Integrity & security / domain constraints / referential integrity / assertion / triggers / authorization in SQL / relational database design / 1, 2, 3, 4, BCNF normal forms /

decomposition

UNIT 3

Object relational data model / nested relations / complex types / inheritance / reference / types / querying with complex / types / functions & procedures / object oriented versus object relational / intro to xml concepts.

UNIT 4:

Storage and file structure / physical storage media / file organization, data dictionary storage, query processing / selection operation / sorting / join operation transaction / concepts / state / atomicity and amiability / Serialisability / transaction definition in sql / concurrency control / protocols / protocols / deadlock handling

UNIT 5

Database system architecture / centralized & client server architecture / server system architecture / case study / oracle.

Text Book:

1. A. Silberschatz, H.F. Korth and S. Sudharshan, 2006, Database System Concepts, 5th Edition, Tata McGraw Hill, New Delhi.

REFERENCE BOOKS:

1. Silbersehatz, h.f. korth and sudharshan / database system concepts / iv ed / mcgraw hill
2. Jeffrey .d. ullman / principles of database systems / galgotia
3. C.J.date / an introduction to database system / 3

Course Coordinator

HOD

BCA602	SOFTWARE TESTING	L	T	P	C
	Total Contact Hours - 60	3	1	0	4
	Prerequisite course -- Computer Science / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name &Department :- Dr.S.Thirunirai Senthil/BCA				
COURSE OBJECTIVES :- Learners will gain knowledge in fundamental concepts of software testing					
COURSE OUTCOMES (COs)					
CO1	Gain knowledge in software testing methods.				
CO2	Have an ability to design and conduct a software test process for a software project.				
CO3	Have an ability to identify the needs of software test automation and				

	develop a test tool to support test automation.									
C04	understand and identify various software testing problems, and solve these problems by designing and selecting software test models									
C05	Gain skills to communicate with their teammates to conduct their practice-oriented software testing projects									
C06	Create Test planning and process documents									
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	PS01	PS02
2	CO1	3	3	2	3	1	1	3		
	CO2	2	3	2	1	3	2	3		
	CO3	3	2	1	3	2	1	2		
	CO4	3	1	3	3	3	3	2		
	CO5	1	2	2	2	1	1	1		
	CO6	2	1	1	1	3	2	2		
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

Software testing – Role of software testing – A structural approach to testing – Test strategy – **Methods for developing test strategy Testing methodologies.**

UNIT II Life Cycle Testing Approach

Test Plan – Requirements testing – Walk through test tool – Risk Matrix test tool – Testing for requirements phase and design phase – Design renew test tool – Test data and volume test tools.

UNIT III Installation

Installation phase testing – Tools for acceptance test – Software acceptance process –

Software maintenance – Methodologies for testing – Training and change installation.

UNIT IV Testing Methods

Tools and techniques – Cost estimate – For testing – Testing phase of life cycle – Point accumulation tracking system – Performance analysis of testing – Inspection plan and test plan documents.

UNIT V Testing Strategies

Rapid Prototyping – Spiral testing – Tool Selection Processes – Structural system Testing – documentation of test results – Test effectiveness evaluation – Test measurement process – Test metrics.

TEXT BOOKS:

1. William Perry, "Effective Methods for Software Testing", John Wiley & Sons, USA, 1995.
2. Ron Patton, "Software Testing", Techmedia.

Course Coordinator

HOD

BCA6E7	NETWORK PROGRAMMING	L	T	P	C
	Total Contact Hours - 60	4	0	0	4
	Prerequisite course Computer Science / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name &Department :- Ms.V.Ramya/BCA				
COURSE OBJECTIVES :- Learners will understand the use of client/server architecture in application development and use elementary and advanced socket system calls					

COURSE OUTCOMES (COs)										
C01	Gain knowledge in networking.									
C02	Understand the network protocols									
C03	Be familiar with several common programming interfaces for network communication.									
C04	Apply advanced knowledge of programming for network communications.									
C05	Understand and evaluate knowledge of the TCP/UDP Sockets.									
C06	Ability to create an application using sockets and network programming									
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	PS01	PS02
2	C01	2	3	1	3	1	1	3		
	C02	1	3	2	1	3	2	1		
	C03	3	2	3	3	2	1	2		
	C04	3	1	3	2	3	3	2		
	C05	1	2	3	2	1	2	1		
	C06	2	1	1	2	3	2	2		
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 Network Programming:

OSI model, Unix standards, TCP and UDP & TCP connection establishment and Format, Buffer sizes and limitation, standard internet services, Protocol usage by common

internet application.

UNIT-II: Sockets :

Address structures, value – result arguments, Byte ordering and manipulation function and related functions Elementary TCP sockets – Socket, connect, bind, listen, accept, fork and exec function, concurrent servers. Close function and related function.

UNIT-III : TCP client server :

Introduction, TCP Echo server functions, Normal startup, terminate and signal handling server process termination, Crashing and Rebooting of server host shutdown of server host.

UNIT – IV: I/O Multiplexing and socket options:

I/O Models, select function, Batch input, shutdown function, poll function, TCP Echo server, getsockopt and setsockopt functions. Socket states, Generic socket option.

UNIT- V : Elementary UDP sockets:

Introduction UDP Echo server function, lost datagram, summary of UDP example, Lack of flow control with UDP, determining outgoing interface with UDP. Elementary name and Address conversions: DNS, gethost by Name function, Resolver option.

TEXT BOOKS:

1. UNIX Network Programming, Vol. I, Sockets API, 2nd Edition. - W.Richard Stevens, Pearson Edn. Asia.
2. UNIX Network Programming, 1st Edition, - W.Richard Stevens. PHI.

REFERENCES:

1. UNIX Systems Programming using C++, T CHAN, PHI.
2. UNIX for Programmers and Users, 3rd Edition Graham GLASS, King abls, Pearson Education
3. Advanced UNIX Programming 2nd Edition M. J. ROCHKIND, Pearson Education.

BCA6E7	C#					L	T	P	C	
	Total Contact Hours – 60					4	0	0	4	
	Prerequisite course - Computer Science / Mathematics Studied in Higher Secondary studies									
	Course Coordinator Name &Department :- V.Brindha/BCA									
COURSE OBJECTIVES :- Learners will gain practical knowledge to use the features of Dot Net Framework along with the features of C#										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge to Implement simple console application programs using C#									
CO2	Understand to develop applications using OOPs concepts									
CO3	Create dynamic web pages.									
CO4	Design window based applications using various controls									
CO5	Develop web based applications by connecting a database with Data control									
CO6	Create and deploy web based applications using web controls									
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	PS01	PS02
2	CO1	2	1	1	1	2	3	2		
	CO2	2	3	1	2	1	3	2		
	CO3	3	1	2	1	2	1	1		
	CO4	1	2	3	2	3	2	3		
	CO5	1	3	2	3	1	2	3		
	CO6	3	2	3	3	2	1	1		
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 : The .net Framework:

Introduction, common language runtime, common type system, common language specification, the base class library, the .net class library, Intermediate language, Just in time compilation, garbage collection, assemblies, web services, COM, localization.

UNIT –II : C# Basics:

Introduction, data types, identifiers, variables, constants, C# statements, OOPs concept, array and strings, operators, control statements, classes and objects, access modifiers, overloading, inheritance, overriding, interfaces.

UNIT –III :

Visual studio IDE features, introduction to Window forms, components, control: textbox, label, linklabel, status bar, checkedlistbox, combobox, listbox, listview, radiobutton, button, panel, groupbox, dialog box, menu control, properties, methods, events of controls.

UNIT –IV :

ADO.net, the component model, creating database connection, database command, data repeater, connecting to data sources, choosing a .net data provider, manage a connection, building command objects, executing commands, building datasets and datatables, data adapter .

UNIT- V:

Case Study.

Text Book:

1. C# Programming for beginners By Mahesh Chand

Reference Books:

1. The Complete Visual C# Programmer's Guide
2. A Programmer's Introduction to C# 2.0, Third Edition
3. C# and the .NET Platform, Second Edition.

BCA6E7	OPEN SOURCE SOFTWARE					L	T	P	C	
	Total Contact Hours – 60					4	0	0	4	
	Prerequisite course - Computer Science / Mathematics Studied in Higher Secondary studies									
	Course Coordinator Name &Department :- V.Brindha/BCA									
COURSE OBJECTIVES :- Learners will have an overview of the historical and modern context and operation of free and open source software (FOSS) communities and associated software projects.										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge to install and run open-source operating systems									
CO2	Understand to gather information about Free and Open Source Software projects from software releases and from sites on the internet									
CO3	Create and modify one or more Free and Open Source Software packages.									
CO4	Ability to use a version control system and to interface with version control systems used by development communities									
CO5	Ability to contribute software to and interact with Free									
CO6	Create and deploy Open Source Software development projects.									
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	PS01	PS02
2	CO1	2	1	1	1	2	3	2		
	CO2	2	3	1	2	1	3	2		
	CO3	3	1	2	1	2	1	1		
	CO4	1	2	3	2	3	2	3		
	CO5	1	3	2	3	1	2	3		
	CO6	3	2	3	3	2	1	1		
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: History and Emergence of Open Source Software:

The philosophy of OSS, Richard Stallman, The Cathedral and the Bazaar (CatB),

commercial software vs OSS, free software vs freeware. Open source development models. Application Programming Interface (API). GNU Project, Free Software Foundation.

Unit 2: Community Building:

Importance of Communities in Open Source Movement. JBoss Community. Developing blog, group, forum, social network for social purpose. **Open Standards:** National Information Standards Organization (NISO), The Digital Library Federation (DLF). The Dublin Core Metadata Initiative. MARC standards, Resource Description and Access (RDA). Open Archives Initiative. OAI-PMH. Search / Retrieval via URL (SRU), SRW/CQL. Java Platform, Enterprise Edition (Java EE).

Unit 3: Open Source Licenses:

GNU General Public License (GPL) version 2,3, GNU Lesser General Public License (LGPL) version 2.1,3, GNU Affero General Public License (AGPL) version 3, Apache License, Version 2.0, Artistic License 2.0, etc.

Unit 4: Operating System:

The Linux operating system and its use both for desktops and as server software. **Webserver:** Apache HTTP Server and its flavors. WAMP server (Windows, Apache, MySQL, PHP). Open Source MySQL. Apache, MySQL, PHP, JAVA as development platform.

Unit 5: Open Source Software:

Category of Open Source Software. OSS for podcasts, RDBMS, online social networks, etc. open source bibliometric softwares like pajek, ucinet, etc

References

- 1) <http://directory.fsf.org/GNU/>
- 2) <http://www.diglib.org>
- 3) <http://www.entirelyopensource.com/>
- 4) <http://www.niso.org/>
- 5) The Dublin Core Metadata Initiative <<http://dublincore.org/>>
- 6) MARC standards <<http://www.loc.gov/marc/>>
- 7) Resource Description and Access (RDA) <<http://www.rdaonline.org/>>
- 8) WAMP server (Windows, Apache, MySQL, PHP)
<<http://www.wampserver.com/en/>>
- 9) Open Source MySQL <<http://www.mysql.com/>>
- 10) Search / Retrieval via URL (SRU) <<http://www.loc.gov/standards/sru/>>

Course Coordinator

HOD

BCA6L1	NETWORK PROGRAMMING LAB	L	T	P	C
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		Total Contact Hours - 30				0	0	4	2		
		Prerequisite course - Computer Science / Mathematics Studied in Higher Secondary studies									
		Course Coordinator Name &Department :- Ms.S.Surya/ Dept of CS									
COURSE OBJECTIVES :-											
Learners will understand the use of client/server architecture in application development and use elementary and advanced socket system calls											
COURSE OUTCOMES (COs)											
CO1	Implement simple networking concepts										
CO2	Identify the application using Client Server Communication										
CO3	Implement programs using TCP and UDP based sockets.										
CO4	Compare interaction between Echo Server and Echo Client										
CO5	Apply protocols in real time programs.										
CO6	Examine the application to retrieve Remote Data File & RPC										
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	PS01	PS 02	PS 03
2	CO1	H	L						H	M	
	CO2	H	-								
	CO3	H	-								
	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									

S.NO.	LIST OF PROGRAMS
1.	IP Address of Local Machine
2.	Ping Server
3.	Echo Server and Echo Client
4.	Client Server Communication Using Object
5.	Time and Date Server
6.	TCP Server
7.	UDP Server
8.	Chat Server
9.	Address Resolution Protocol
10.	Multiple Client Handling
11.	Retrieving Remote Data File
12.	Remote Procedure Call

Course Coordinator

HOD

BCA6L1	C# Lab						L	T	P	C	
	Total Contact Hours - 30						0	0	4	2	
	Prerequisite course - Computer Science / Mathematics Studied in Higher Secondary studies										
	Course Coordinator Name &Department :- Dr.S.Brintha Rajakumari /Dept of CS										
COURSE OBJECTIVES :-											
Learners will gain practical knowledge to use the features of Dot Net Framework along with the features of C#											
COURSE OUTCOMES (COs)											
CO1	Implement simple console application programs using C#										
CO2	Develop applications using OOPs concepts										
CO3	Design dynamic web pages.										
CO4	Design window based applications using various controls										
CO5	Analyze web based applications by connecting a database with Data control										
CO6	Apply concept to deploy web based applications										
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	PS01	PS 02	PS 03
2	CO1	H	L							M	L
	CO2	H	L								
	CO3	M	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									

S.NO.	LIST OF PROGRAMS
Console Applications	
1	Classes and Objects
2.	Jagged Array
3.	Overloading
4.	Overriding
5.	Interface
6.	Structure
7.	Constructor
8.	Sealed Class
9.	Delegates
10.	Exception Handling
WebBased Applications	
11.	Navigation Control
12.	Validation Control
13.	Login Control
14.	Repeater Control
15.	Data Control

Course Coordinator

HOD

BBA011	BUSINESS PROCESS OUTRSOURCING - MANAGEMENT					L	T	P	C		
	Total Contact Hours – 30					2	0	0	2		
	Prerequisite course – +2 studied in Higher Secondary Studies										
	Course Coordinator Name &Department: -Ms.D.K.Sowmiyalakshmi, Business Administration										
COURSE OBJECTIVES: - To familiarize the students with the basic fundamentals of BPO. To impart knowledge on types of BPO and call centers . To enable the students on the concept Health care BPO & Transaction BPO.											
COURSE OUTCOMES (COs)											
CO1	Underline the basic fundamentals of BPO.										
CO2	Discuss the awareness about the models of BPO.										
CO3	Initiate the concept of Health Care BPO.										
CO4	Identify the elements of Transaction processing BPO.										
CO5	Evaluate the career opportunities in BPO.										
CO6	Formulate the challenges faced by BPO industry.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PS01	PS02	PS03
2	CO1	H	H						H	M	L
	CO2	M	L								
	CO3	L	H								
	CO4	H	H								
	CO5	H	H								
	CO6	M	L								
3	Category	Part 1 Tamil/Linguistic Study	Part II Linguistic English	Part III Core	Part III Substream	Part IV Basic/ Advanced Tamil/ EVS/VE/ SBE/ Soft Skill	Part III Project	Part V Extension Activity			
						✓					
4	Approval	Academic Council Meeting									

BPO MANAGEMENT

Unit I

Business Process Outsourcing – Basics – Benefits of BPO – Growth Drivers – BPO Models and Types of Vendors – Offshore BPO – Evolution Destinations – Challenges of Off shoring – BPO Companies in India.

Unit II

BPO Industry – Employment Opportunities – Employee Structure – Skill Set Required – Compensation Levels – Contact Centre BPO – Types of Call Centres – Technology – Components and working of a Call center – Issues and Problems – Case Study – Intelenet Global.

Unit III

Healthcare BPO – Structure of the American Healthcare Sector – Activity Profile – Future Trends and Threats – Case Study – Cbay Systems. Transaction Processing BPO - Elements of Back – Office Services – Financial Services – Insurance – Case Studies – Datamatics – Hinjuja TMT. Human Resource BPO – Reasons for outsourcing HR – Activities involved in HR BPO – HR Outsourcing Trends – Career in HR BPO – Emerging BPO Domains – Media and Entertainment BPO – Publishing BPO.

Text Books:-

Business Process Outsourcing Sarika Kulkarni Jaico Publishing House, Delhi 2005

Reference Books:-

BPO DIGEST Deepak Shikapur Ameya (Inspiring Books) 2004.

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:- 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) (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 O 3					
2	C01	H	L									H							
	C02	M	L																
	C03	H	-																
	C04	H	L																
	C05	M	L																
	C06	H	L																
3	Category	Humanities & Social Studies (HS)		Basic Sciences (BS)		Engg Sciences (ES)		Profession al 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:- 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	C01	H	L						H		
	C02	H	L								
	C03	H	-								
	C04	H	L								
	C05	M	-								
	C06	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.

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 :- 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) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	L								
	CO4	H	-								
	CO5	M	L								
	CO6	H	L								
3	Category	Part I Tamil/English	Part II	Part III Core	Part III	Part III	Part IV Basic/	Part V			
							✓				
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

Course Coordinator

HOD

BCA003	MULTIMEDIA							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:- 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.											
COURSE OUTCOMES (COs)											
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) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PS 01	PS 02	PS 03
2	C01	H	L						H		
	C02	M	L								
	C03	H	-								
	C04	H	L								
	C05	M	L								
	C06	H	L								
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)	
									✓		
4	Approval	Academic Council Meeting									

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										
COURSE OBJECTIVES :- Learners familiar with the basic concepts of Microprosser, Controller, Server and to demonstrate the traditional imperative design of CPUs, cards,PCs and BIOS.											
COURSE OUTCOMES (COs)											
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) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PS0 1	PS0 2	PS0 3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	M	L								
	CO5	H	-								
	CO6	H	L								
3	Category	Part 1 Tamil/Linguistic Study	Part II Linguistic English	Part III Core	Part III Substream	Part III Project	Part IV Basic/ Advanced Tamil/ EVS/VE/ SBE/ Soft Skill	Part V Extension 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

Course Coordinator

HOD

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: - 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	P03	P04	P05	P06	P07	PS 01	PS 02	PS 03
2	C01	H	L							H	
	C02	M	L								
	C03	H	-								
	C04	H	-								
	C05	H	-								
	C06	H	-								
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Profession al Core	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.

Course Coordinator

HOD

BSC001	ANIMATION						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:- The learner will have the knowledge about the use of animation, digitized sound, video control, and scanned images.											
COURSE OUTCOMES (COs)											
C01	Gain knowledge of basic concepts of Animations										
C02	Analyze the use of Netscape to access the Course Home Page and Tips and Tricks. .										
C03	Discussthe basic instructional design principles in the development of stacks..										
C04	Identify the basicFormulate a working definition of interactive multimedia.										
C05	Demonstrate the competence in using the authoring program Hyper Studio.										
C06	Test real time application using a basic 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	P03	P04	P05	P06	P07	PS O 1	PS O 2	PS O3
2	C01	H	L						H		
	C02	M	L								
	C03	H	-								
	C04	H	L								
	C05	M	L								
	C06	H	L								
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Profession al 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									

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.

BSC002	COMPUTER HARDWARE AND NETWORKING					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 familiar with the basic concepts of Microprocessor,Controller, Server and to demonstrate the traditional imperative design of CPUs,cards,PCsand BIOS.											
COURSE OUTCOMES (COs)											
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) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low											
1	COs/Pos	P01	P02	P03	P04	P05	P06	P07	PS01	PS 02	PS 03
2	C01	H	-						H		
	C02	H	L								
	C03	H	L								
	C04	M	-								
	C05	H	L								
	C06	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									

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) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low										
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PS01	PS02
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								

Course Coordinator

HOD

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 STRUCTUES:-

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. Course Coordinator

HOD

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) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low										
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PS01	PS02
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