

Academic Course Description

BHARATH UNIVERSITY Faculty of Engineering and Technology Department of Mechanical Engineering BBT102 BIOLOGY FOR ENGINEERS First Semester, 2015-16 (Odd Semester)

Course (catalogue) description

Understand the basic concepts of basics in biology, human and plant system.

Compulsory/Elective course : Compulsory for all branches

Credit & contact hours : 2 & 30

Course Coordinator : Dr.Srilatha

Instructors :

Name of the instructor	Class handling	Office location	Office phone	Email (domain:@ bharathuniv.ac.in)	Consultation
Ms.Priya	All First Year Students	FIRST YEAR MAIN BULIDING		Priya1981@gmail.com	9.00-9.50 AM
MR.PRADEEP SARAVANAN	All First Year Students	FIRST YEAR MAIN BULIDING		asstprofpradeep2015@gmail.com	11.00 – 12.30 pm

Relationship to other courses:

Pre –requisites : The student will understand the concepts in the basic science

Assumed knowledge : The students will have to understand the fundamentals of biological systems and its applications towards industries to solve the problems in the real life.

Following courses : Nil

Computer usage: Nil

Professional component

General	-	30%
Basic Sciences	-	20%
Engineering sciences & Technical arts	-	60%
Professional subject	-	100%

Broad area : Life, Biodiversity, Immune Systems, diseases and bioproducts

Test Schedule

S. No.	Test	Tentative Date	Portions	Duration
1	Cycle Test-1	August 1 st week	Session 1 to 14	2 Periods
2	Cycle Test-2	September 2 nd week	Session 15 to 28	2 Periods
3	Model Test	October 2 nd week	Session 1 to 45	3 Hrs
4	University Examination	TBA	All sessions / Units	3 Hrs.

Mapping of Instructional Objectives with Program Outcome

This course emphasizes:	Correlates to program outcome		
	H	M	L
1. To understand the basics of living cells and biomolecules	b,c,m,d,j	a,f,k	e,g
2. To illustrate the importance of microbes in the biodiversity	b,c,f	a,d,g,h	j,m
3. To demonstrate the genetics involved in the Immune System	a,d,e	b,g,n	j,k
4. To explain in detail about the human diseases	a,d,e,n	b,g,h,k	f,j
5. To develop the bioproducts using various bio techniques to solve the problems faced in the real life world	n,k,e	a,b,c,m,g	j,k

H: high correlation, M: medium correlation, L: low correlation

Draft Lecture Schedule

Session	Topics	Problem solving (Yes/No)	Text / Chapter
UNIT I INTRODUCTION TO LIFE			
1.	Characteristics of living organisms and its classification	No	[T1, R2]
2.	Cell theory	No	
3.	Prokaryotic and eukaryotic cells	No	
4.	Biomolecules and its types with functions	No	
UNIT II BIODIVERSITY			
5.	Basic concepts in plant system	No	[T1, T2 & R3]
6.	Mechanisms in photosynthesis and nitrogen fixations	No	
7.	Basic concepts in animal system	No	
8.	Study of various systems and its functions	No	
9.	Basic concepts in the microbial systems	No	
10.	Types of microbes and its economic importance	No	
UNIT IV HUMAN DISEASES			
11.	Causes, symptoms, diagnosis, treatment and prevention of diabetes	No	[T2 & R2]
12.	Cancer	No	
13.	Hypertension	No	
14.	Influenza	No	
15.	AIDS	No	
16.	Hepatitis	No	
UNIT V BIOLOGY AND ITS INDUSTRIAL APPLICATIONS			
17.	Transgenic plants and animals	No	[T3, R1 & R3]
18.	Stem cell and tissue engineering	No	
19.	Bioreactors , biopharming	No	
20.	Recombinant vaccines, cloning and drug discovery	No	
21.	Neural networks	No	
22.	Bioremediation, biofertilizers biocontrol, biosensors	No	
23.	Biofilters, biosensors, biopolymers, bioenergy, biochips, biomaterials	No	
24.	Biomedical instrumentation	No	

Teaching Strategies

The teaching in this course aims at establishing a good fundamental understanding of the areas covered using:

- Formal face-to-face lectures
- Tutorials, which allow for exercises based on grammar and allow time for students to come up with the answers after understanding the grammatical rules.
- Writing sessions, which support the formal lecture material and also provide the student with listening, speaking, reading and writing skills.
- Group discussions and seminar to enhance the speaking skills.
- **Evaluation Strategies**

Cycle Test – I	-	5%
Cycle Test – II	-	5%
Model Test	-	10%
Attendance	-	5%
Seminar / Assignments / online tests / Quiz	-	5%
Final exam	-	70%

Prepared by: Mr.Pradeep saravanan, Assistant professor

BBT102 BIOLOGY FOR ENGINEERS

Addendum

ABET Outcomes expected of graduates of B.Tech / MECH / program by the time that they graduate:

- a) The ability to apply knowledge of mathematics, science, and engineering fundamentals.
- b) The ability to identify, formulate and solve engineering problems.
- c) The ability to design a system, component, or process to meet the desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- d) The ability to design and conduct experiments, as well as to analyze and interpret data
- e) The ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- f) The ability to apply reasoning informed by the knowledge of contemporary issues.
- g) The ability to broaden the education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- h) The ability to understand professional and ethical responsibility and apply them in engineering practices.
- i) The ability to function on multidisciplinary teams.
- j) The ability to communicate effectively with the engineering community and with society at large.

k) The ability in understanding of the engineering and management principles and apply them in project and finance management as a leader and a member in a team.

l) The ability to recognize the need for, and an ability to engage in life-long learning.

Program Educational Objectives

PEO1: PREPARATION:

Mechanical Engineering graduates are enthusiastic to provide strong foundation in mathematical, scientific and engineering fundamentals necessary to analyze, formulate and solve engineering problems in the field of Mechanical Engineering.

PEO2: CORE COMPETENCE:

Mechanical Engineering graduates have competence to enhance the skills and experience in defining problems in the field of Mechanical Engineering and Technology design and implement, analyzing the experimental evaluations, and finally making appropriate decisions.

PEO3: PROFESSIONALISM:

Mechanical Engineering graduates made competence to enhance their skills and embrace new thrust areas through self-directed professional development and post-graduate training or education.

PEO4: PROFICIENCY:

Mechanical Engineering graduates became skilled to afford training for developing soft skills such as proficiency in many languages, technical communication, verbal, logical, analytical, comprehension, team building, inter personal relationship, group discussion and leadership skill to become a better professional.

PEO5: ETHICS:

Mechanical Engineering graduates are morally merged to apply the ethical and social aspects of modern Engineering and Technology innovations to the design, development, and usage of new products, machines, gadgets, devices, etc.

BEE101-BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

Course Teacher	Signature
Ms.Priya MR.PRADEEP SARAVANAN	

Course Coordinator

HOD/MECH

Dr.Srilatha

