

BHARATHIAR UNIVERSITY, COIMBATORE.
M. Sc. BIOTECHNOLOGY DEGREE COURSE (AFFILIATED COLLEGES)
(For the candidates admitted from the academic Year 2017 - 2018 & onwards)
SCHEME OF EXAMINATIONS

Sem.	Study Components Course title		Ins. Hrs/ week	Exam				Credit
				Dur.	CIA	Un. exam	Total	
I	Paper I	Molecular Biology and Genetics	4	3	25	75	100	4
I	Paper II	Biochemistry	5	3	25	75	100	4
I	Paper III	Applied Microbiology	4	3	25	75	100	4
I	Paper IV	Bioinstrumentation & Biostatistics	4	3	25	75	100	4
I	Practical I		5	-	-	-	-	-
I	Practical II		4	-	-	-	-	-
I	Elective paper I		4	3	25	75	100	4
II	Paper V	Immunology & Immunotechnology	5	3	25	75	100	4
II	Paper VI	Genetic Engineering	4	3	25	75	100	4
II	Paper VII	Plant Biotechnology	4	3	25	75	100	4
II	Paper VIII	Animal Biotechnology	4	3	25	75	100	4
II	Practical I		5	6	40	60	100	4
II	Practical II		4	6	40	60	100	4
II	Elective paper II		4	3	25	75	100	4
II	Industrial Training		-	-	-	-	-	-
III	Paper IX	Bioprocess Technology	4	3	25	75	100	4
III	Paper X	Pharmaceutical Biotechnology	4	3	25	75	100	4
III	Paper XI	Genomics & Proteomics	4	3	25	75	100	4
III	Paper XII	Bio-entrepreneurship	4	3	25	75	100	4
III	Practical III		5	-	-	-	-	-
III	Practical IV		5	-	-	-	-	-
III	Elective Paper III		4	3	25	75	100	4
III	Industrial Training		-	-	50*	-	50*	2
IV	Project		16**	-	-	-	200***	8
IV	Practical III		5	6	40	60	100	4
IV	Practical IV		5	6	40	60	100	4
IV	Elective Paper IV		4	3	25	75	100	4
Total							2250	90

* Industrial Training has to be undergone during II semester vacation period.

Mark shall be given based on training report and presentation

** Sixteen hours should be allotted for Project Guidance to the respective guides. As per the university norms 16 hours of project guidance should be considered equivalent to 8 hrs of teaching while calculating the workload of respective guides.

*** For Project report – 160 marks, Viva-voce – 40 marks.

List of Group Elective papers (Colleges can choose any one of the Group papers as electives)

Paper/ Sem	GROUP A	Group B
I	Occupational health and industrial safety	Plant system Physiology
II	Bioethics, biosafety and IPR	Animal System Physiology
III	Biotechniques	Developmental Biology
IV	Conservation biology	Evolution and behavior

PROJECT GUIDELINS

- 1) Project is pertain to the field of Biotechnology
- 2) Three review meetings should be conducted at regular intervals in the presence OF HOD and respective guide. The review should evaluate for a maximum of 30 marks.

Review	Maximum Marks
I Review	30
II Review	30
III Review	30
Dissertation evaluation by External Examiner	70
Viva-voce	40

The syllabus for the following paper furnished below be followed for the candidates admitted from the academic year 2017-18 onwards and there is no change in the syllabi of remaining papers.

PAPER XII - BIO-ENTREPRENEURSHIP

Objectives:

The objectives of this course are to teach students about concepts of entrepreneurship including identifying a winning business opportunity, gathering funding and launching a business, growing and nurturing the organization and harvesting the rewards.

Student Learning Outcomes:

Students should be able to gain entrepreneurial skills, understand the various operations involved in venture creation, identify scope for entrepreneurship in biosciences and utilize the schemes promoted through knowledge centres and various agencies.

UNIT I

Basics of Bioentrepreneurship

Introduction to bioentrepreneurship – Biotechnology in a global scale, Scope in Bioentrepreneurship, Importance of entrepreneurship. Meaning of entrepreneur, function of an entrepreneur, types of entrepreneur, advantages of being entrepreneur. Innovation – types, out of box thinking, opportunities for Bioentrepreneurship. Entrepreneurship development programs of public and private agencies (MSME, DBT, BIRAC, Startup and Make in India). Patent landscape, IP protection and commercialization strategies.

UNIT II

Management, Accounting and Finance

Management principles of Henry Fayol. Business plan preparation: business feasibility analysis by SWOT, socio-economic costs benefit analysis, Sources of financial assistance – making a business proposal, approaching loan from bank and other financial institutions, budget planning and cash flow management, basics in accounting practices - balance sheet, P&L account, double entry book keeping, estimation of income, expenditure and Income tax. Collaborations and partnerships, information technology for business administration and expansion.

UNIT III

Knowledge Centre and R&D

Knowledge centers - Universities, innovation centre, research institutions and business incubators. R&D - technology development and upgradation, assessment of technology development, managing technology transfer, industry visits to successful bio-enterprises, regulations for transfer of foreign technologies, quality control, technology transfer agencies, Understanding of regulatory compliances and procedures (CDSCO, NBA, GLP, GCP & GMP)

UNIT IV

Medium & Small Scale Industry

Definition, characteristics, need and rationale, objectives, scope and advantages of small scale industries. Types of bioindustries – Pharma, Agri and Industry. Biofertilizers production - Azospirillum, Azolla, Cyanobacteria and its applications. Biopesticides production - Bacterial, fungal, viral and plant insecticides. Sericulture. Apiculture. Dairy farming. Single Cell Protein-Production and applications. Vermicomposting and its applications. Mushroom cultivation and its application. Ancillary and tiny industries

UNIT V

Marketing and Human Resource Development

Assessment of market demand for potential product(s) of interest, Market conditions, segments, prediction of market changes, identifying needs of customers including gaps in the market. Branding issues, developing distribution channels – franchising policies, promotion, advertising, branding and market linkages. Marketing of agro products. Recruitment and selection process, leadership skills, managerial skills, organization structure, training, team building and teamwork.

TEXT BOOKS:

1. “Principles of Management”, PC Tripathi, PN Reddy,–Tata Mc Graw Hill.
2. “Dynamics of Entrepreneurial Development & Management” Vasant Desai Himalaya Publishing House.
3. “Entrepreneurship Development – Small Business Enterprises” Poornima M, Charanthmath Pearson Education – 2005.
4. “Entrepreneurship and Business of Biotechnology”, S. N. Jogdand, Himalaya Publishing Home, 2007.
5. “Entrepreneurship and small Business Management”, C. B. Gupta and S. S. Khanka, 1996.

REFERENCE BOOKS:

1. “Management Fundamentals”, Robert Lusier – Concepts, Application, Skill Development” Thomson .
2. “Entrepreneurship Development” S S Khanka , S Chand & Co .
3. “Management”, Stephon, Robbins, Pearson Education , 17th Edition (2003).