KONGUNADU ARTS AND SCIENCE COLLEGE (Autonomous)
COIMBATORE- 641 029.
M.Sc. BOTANY
Curriculum & Scheme of Examination under CBCS
(Applicable to Students Admitted from the Academic Year (2016-2017)

Semester	Subject Code	Title of the Paper	Instruction hours /cycle	Exam Marks			Duration of Exam (hours)	Credits
				CIA	ESE	Total		
I	15PBO101	C.P.1 - Plant diversity -I	6	25	75	100	3	4
	15PBO102	C.P.2 - Plant diversity – II	6	25	75	100	3	4
	16PBO103	C.P.3 - Developmental Biology	6	25	75	100	3	4
	16PBO1E1	Major Elective I	6	25	75	100	3	5
		C.Pr.1 - Plant Diversity - I, II. & Developmental biology	6					
II	15PBO204	C.P.4- Bioinformatics	6	25	75	100	3	5
	15PBO205	C.P.5 - Cytology, Genetics, Plant Breeding and Biostatistics.	6	25	75	100	3	4
	15PBO206	C.P.6 - Ecology, Bioenergetics and Natural Resource Management.	6	25	75	100	3	4
	16PBO2E2	Major Elective II	6	25	75	100	3	5
	16PBO2CL	C.Pr.1- Plant diversity-I , II. & Developmental biology		40	60	100	4	4
	15PBO2CM	C.Pr.2 - Cytology, Genetics, Plant Breeding and Biostatistics, Ecology, Bioenergetics and Natural Resources Management.	4	40	60	100	4	4
	15PBO2CN	C.Pr.3 – Bioinformatics	2	40	60	100	4	4
III	15PBO307	C.P.7 - Taxonomy and Biosystematics	7	25	75	100	3	4
	15PBO308	C.P.8 - Biotechnology & Nanobiology	7	25	75	100	3	4
	15PBO309	C.P.9 – Pharmocognosy.	6	25	75	100	3	4
	16PBO3N1	Non major Elective I	6	25	75	100	3	5
	15PBO3CO	C.Pr.4 – Taxonomy and Biosystematics, Biotechnology and Nanobiology.	4	40	60	100	4	4
IV	15PBO410	C.P.10 –Biochemistry & Biophysics	7	25	75	100	3	4
	16PBO411	C.P.11 –Plant Physiology	7	25	75	100	3	4
	16PBO4N2	Non major Elective II	6	25	75	100	3	5
	16PBO4CP	C.Pr.5 - Plant Physiology, Biochemistry & Biophysics.	4	40	60	100	4	3
	15PBO4Z1	Project Work & Viva – Voce	6	40	160	200	-	6
		Total				2200		90

C. P. 8. BIOTECHNOLOGY AND NANOBIOLOGY

Objectives:

- To know the principles employed in the production of bioproducts.
- To have the comprehensive understanding about the tools available for the production of biogoods.
- To have a basic knowledge on Nanobiology.

UNIT I

Scope and importance of biotechnology. Isolation, sequencing and synthesis of genes. Gene transfer methods in plants – *Agrobacterium* mediated gene transfer, Ti plasmid. Transgenic plants, edible vaccines. Biosensors and biochips.

UNIT II

Isolation and culturing of microorganisms for the production of organic acids (ethanol) and antibiotics (*Penicillium*) by microbial fermentation. Biotechnology in paper industry, biohydro-metallurgy and biomineralisation, biofertilizers, bioinsecticides and application of genetically engineered bacteria.

UNIT III

Genetic engineering: Gene cloning, DNA sequencing methods, Green Fluorescence Protein, hybridoma and monoclonal antibodies. Intellectual Property Rights (IPR), Intellectual Property Protection (IPP) and patenting of biological materials. Molecular probing, DNA finger printing, Hybridization technology.

UNIT IV

Definition – Historical aspects, classification of nanomaterials, Nature and nanotechnology. Properties of nanoparticles – Increased surface, Targeting photonic quantum properties, increased strength. Principle, mechanism and applications – SEM, AFM, TEM. Types of nanoparticles - Metallic, Semiconductors and Polymeric types. Common nanoparticles – Carbon nanotubes, bucky balls. Methods of synthesis of nanoparticles – top down approach and bottom up approach.

UNIT V

Application of nanoscience and nanotechnology in agriculture, drug delivery, cancer chemotherapy, Anti – AIDS drugs, Artificial blood, medical implants, and environmental applications.

TEXTBOOKS

1. Gupta, P.K. 1998. Biotechnology and Genetics. Rastogi Publications, Meerut.
2. Gregory, L. Timp. 1998. Nanotechnology (1st Ed.). American Institute of Physics.
Bharat Bhusan. 2006. Hand Book of Nanotechnology. (1st Ed.).Springer.

REFERENCES

1. Callow, J.A., Ford Lloyd, B.V. and Newbury, H.J. 1997. Biotechnology and Plant Genetics Resources: Conservation and Use. CAB International, Oxon, UK.
2. Gupta, P.K. 1998. Elements of Biotechnology. Rastogi Publications.

3. Ignachimuthu, S. 1995. Basic Biotechnology. Tata Mc Graw-Hill Publishing Company Ltd., Madras.
4. Kartha, K.K. 1985. Cryopreservation of plant cells and organs. CRC Press Boca Raton, Florida, USA.
5. Santharam, S. and J.F. Montgomery 1999. Biotechnology, Biosafety and Biodiversity. Oxford and IBH Publishing Co. New Delhi.
6. Meyyan, R.P. and V. Kumaresan. 2004. Genetics and Biotechnology. Saras Publication, Nagercoil.