KONGUNADU ARTS AND SCIENCE COLLEGE
(Autonomous)
Coimbatore – 641 029
DEPARTMENT OF BOTANY (PG)
CURRICULUM & SCHEME OF EXAMINATION UNDER CBCS
(APPLICABLE TO STUDENTS ADMITTED DURING THE ACADEMIC YEAR 2019-2020 AND ONWARDS)

Semester	Subject Code	Title of the Paper	Instruction hours /cycle	Exam Marks			Duration of Exam (hours)	Credits
				CIA	ESE	Total		
I	19PBO101	C.P.1 - Plant Diversity I	7	25	75	100	3	5
	19PBO102	C.P.2 - Plant Diversity II	7	25	75	100	3	5
	19PBO103	C.P.3 – Anatomy, Embryology of Angiosperms and Microtechniques	6	25	75	100	3	5
	19PBO1E1	Major Elective I	6	25	75	100	3	5
	19PBO1CL	C.Pr.1 - Plant Diversity I & II, , Anatomy, Embryology of Angiosperms and Microtechniques	4	40	60	100	4	2
		Total	**30**			**500**		**22**
II	18PBO204	C.P.4- Bioinformatics	6	25	75	100	3	4
	18PBO205	C.P.5 - Cell biology, Genetics and Plant Breeding	6	25	75	100	3	5
	19PBO206	C.P.6 - Ecology, Bioenergetics and Natural Resource Management	6	25	75	100	3	5
	19PBO2E2	Major Elective II	6	25	75	100	3	5
	19PBO2CM	C.Pr. 2 - Cell biology, genetics, plant breeding, ecology, bioenergetics and natural resources management	4	40	60	100	4	2
	18PBO2CN	C.Pr.3 - Bioinformatics	2	40	60	100	4	2
		Total	**30**			**600**		**23**
III	18PBO307	C.P.7 - Taxonomy and Biosystematics	7	25	75	100	3	5
	18PBO308	C.P.8 - Microbiology and Plant Pathology	7	25	75	100	3	5
	18PBO309	C.P.9 - Biophysics and Biostatistics	6	25	75	100	3	5
	18PBO3N1	Non major Elective I	6	25	75	100	3	5
	18PBO3CO	C.Pr.4 - Taxonomy and Biosystematics, Microbiology and plant pathology, Biophysics and Biostatistics	4	40	60	100	4	2
		Total	**30**			**500**		**22**
IV	19PBO410	C.P.10 - Biochemistry and Bioinstrumentation	7	25	75	100	3	5
	18PBO411	C.P.11 - Plant Physiology	7	25	75	100	3	5
	18PBO412	C.P. 12	6	25	75	100	3	5
	18PBO4N2	Non major Elective II	6	25	75	100	3	5
	18PBO4CP	C.Pr.5 - Biochemistry and Bioinstrumentation and Plant Physiology	4	40	60	100	4	2
	18PBO4Z1	Project Work & Viva - Voce		40	160	200	-	6
		Total	**30**			**600**		**23**
		Grand Total	**120**			**2200**		**90**

Major Elective Papers

(2 papers are to be chosen from the following 5 papers)

1. **Forest Resources and Utilization**
2. **Seed Technology**
3. **Mushroom Cultivation**
4. **Food Science and Nutrition**
5. **Biotechnology and Nanobiology**

Non-Major Elective Papers

(2 papers are to be chosen from the following 4 papers)

1. **Horticulture**
2. **Pharmacognosy**
3. **Medicinal Plants**
4. **Limnology**

Tally Table:

Part	Subject	No. of Subjects	Total Marks	Credits
I	Core - Theory / Practical / Project	18	1800	70
	Major Elective Paper	2	200	10
	Non - Major Elective Paper	2	200	10
	Grand Total	**22**	**2200**	**90**

Extra Credit Courses

Semester	Subject Code	Title of the Paper	Instruction hours /cycle	Exam Marks			Duration of Exam (hours)	Credits
				CIA	ESE	Total		
II	**18PBO2J1**	**JOC - Floriculture and Landscaping**	4	-	100	**100**	3	**2**
	18PBO2J2	**JOC - Food Processing and Preservation**	4	-	100	**100**	3	**2**

Diploma Courses

Biodiversity - Principles, Management and Conservation.

Semester	Subject Code	Title of the Paper	Instruction hours /cycle	Exam Marks			Duration of Exam (hours)	Credits
				CIA	ESE	Total		
I	18PDB101	C.P.1. Introduction to Biodiversity	2	25	75	100	3	2
	18PDB102	C.P.2 . Values, uses and loss of Biodiversity	2	25	75	100	3	2
	18PDB103	C.P.3. Conservation and management of Biodiversity	2	25	75	100	3	2
	18PDB1CL	C.Pr.1. Biodiversity	2	40	60	100	3	2
		Total	8			400		8
II	18PDB204	C.P.4. Biodiversity prospecting and indigenous knowledge system (IKS) and Biotechnology for Biodiversity	2	25	75	100	3	2
	18PDB205	C.P.5. Wildlife biology and conservation policies and law	2	25	75	100	3	2
	18PDB2Z1	Project	4	40	160	200	-	4
		Total	8			400		8
		Grand total	16			800		16

Note:

CBCS - Choice Based Credit System
CIA - Continuous Internal Assessment
ESE - End of Semester Examinations

25 % CIA is applicable to all subjects except JOC, ALC, COP and Diploma Courses, which are considered as extra credit courses.

PBO4

BLOOM'S TAXONOMY BASED ASSESSMENT PATTERN

K1 - Remember; **K2 -** Understanding; **K3 -** Apply; **K4 -** Analyze; **K5 -** Evaluate

1. Theory Examination: CIA I & II and ESE: 75 Marks

Knowledge Level	Section	Marks	Description	Total
K1 Q1 to 10	A (Answer all)	10 x 1 = 10	MCQ	75
K2 Q11 to 15	B (Either or pattern)	5 x 5 = 25	Short Answers	
K3 & K4 Q16 to 20	C (Either or pattern)	5 x 8 = 40	Descriptive / Detailed	

2. Practical Examination:

Knowledge Level	Section	Marks	Total
K3	Experiments	50	60
K4	Record Work	10	
K5			

3. Project Viva Voce:

Knowledge Level	Section	Marks	Total
K3	Project Report Viva - voce	120	160
K4		40	
K5			

Components of Continuous Internal Assessment

Components			Marks	Total
Theory	CIA I	75	(75+75 = 150/10) 15	25
	CIA II	75		
Assignment / Seminar			5	
Attendance			5	
Practical	CIA Practical		25	40
	Observation Notebook		10	
	Attendance		5	
Project	Review		30	40
	Regularity		10	

19PBO206

Programme Code: 05		**Title: M.Sc., BOTANY**		
Course Code: 19PBO206		**Core Paper: 6 - ECOLOGY, BIOENERGETICS AND NATURAL RESOURCE MANAGEMENT**		
Batch 2019-2020	**Semester II**	**Hours / Week 6**	**Total Hours 90**	**Credits 5**

COURSE OBJECTIVES

- To understand the structural and functional organization of the ecosystems.
- To know the causes of environmental deterioration and possible measures for their rejuvenation.
- To understand the natural calamities and disaster management.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Acquire and analyze interrelationships between living and non-living things.
K2	CO2	Understand the cyclic flow of the elements between organisms and the environment.
K3	CO3	Monitor and document the biodiversity changes and their management approaches through remote sensing techniques.
K3	CO4	Apply strategies for the conservation of natural resources.

SYLLABUS

UNIT I **(18 HOURS)**

Population and community Ecology - Ecology - concepts and applications, biotic community concepts, characteristics and structure of population, ecological variants, and methods of studying plant communities. Ecological niches, edge effect and ecotone.

UNIT II **(18 HOURS)**

Ecosystem ecology - Structural and functional characteristics of ecosystem, major ecosystems of world, biogeochemical cycle - cycling and reservoir pool, gaseous (nitrogen and carbon) and sedimentary pattern (sulphur and phosphorous) of cycling. Nutrient cycling and agricultural patterns in tropical and temperate regions. Plant indicators of conditions, uses and processes.

UNIT III **(18 HOURS)**

Bioenergetics - Energy dispersion, law of thermodynamics, concept and energy flow models, productivity concept, turn over - primary production processes in C_4 and CAM plants, adaptations in C_4 plants for efficient primary production. Productivity in different ecosystems, measurement of primary production.

UNIT IV **(18 HOURS)**

Environmental Pollution and Education - Air, water, soil, noise and radiation pollution - causes and possible control measures*. Climate change. Global warming, green house effect, ozone depletion, Acid rain. Environmental education-principles, Environmental education programmes in India. Environmental organizations and agencies, Man and Biosphere (MAB) and National and International organizations.

19PBO206

UNIT V **(18 HOURS)**

Natural Resource Conservation and Management - Biodiversity - International and National scenarios, importance. Ecological principles and applications in conservation of biodiversity. *ex situ* and *in situ* conservation of species. Biosphere reserves, sanctuaries, national parks, world hot spots. Remote sensing- principle, tools, concepts and applications-mapping of forest cover. Soil conservation - erosion and control. Water standards, quality and management. Surface water and ground water development. Water conservation and waste water reuse. Afforestation, deforestation and social forestry. Disaster Management - Bhopal tragedy and Tsunami.

***Self study**

Teaching Methods

Power Point presentation/Seminar/Quiz/Discussion/Assignment

TEXT BOOKS

1. Sharma, P.D. (2000). Ecology and Environment. Rastogi Publications, Meerut.
2. Kumar, H.D. (1994). General Ecology. Vikas Publishing Co. New Delhi.

REFERENCES

1. Odum, E.P. (1971). Fundamentals of Ecology. N.B.Saunders Co. Ltd. Philadelphia.
2. Krebs.(1985). Ecology. C.J, Haper & Row, New York.
3. Ambasht, R.S.(1988). Text book of plant ecology. Lanka Publishers, Varanasi.
4. Misra, K.C. (1980). Manual of plant ecology. Oxford and IBH Publishing Co., New Delhi.
5. Alan Wellburm. (1988). Air pollution and acid rain - the biological impact. Longman Scientific and technical, Singapore.
6. Varshney, C.K. (1989). Water pollution and Management. S.P. Printers, Noida.
7. Weaver and Clements. (1929). Plant Ecology. Tata McGraw Hill Publishing Co. New Delhi.
8. Sinha, R.K. and Dalbir Singh. (1997). Global Biodiversity. INA Shree Publishers, Jaipur.
9. Biology of Fresh Water (1981). By Mason, C.F. Longman, London.

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	H	S	H
CO2	H	S	H	H	M
CO3	H	S	M	H	S
CO4	S	M	H	S	H

S - Strong **H** - High **M** - Medium **L** - Low

19PBO2CM

Programme Code: 05		**Title: M.Sc., BOTANY**		
Course Code: 19PBO2CM		**Title: Core Practical: 2 - CELL BIOLOGY, GENETICS, PLANT BREEDING, ECOLOGY, BIOENERGETICS AND NATURAL RESOURCES MANAGEMENT**		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2020	**II**	**4**	**60**	**2**

COURSE OBJECTIVES

- To understand genetic analysis at the gene, genome and population level
- To find out the dominant species in the particular environment.
- To understand the structural and functional organization of an ecosystem.
- To identify the suitable species to particular zone/Region for better yield by plant breeding methods.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K3	CO1	Apply the basic principles of genetics and plant breeding for genetic improvement of plants.
K4	CO2	Analyze the physico-chemical nature of the soil.
K5	CO3	Determine the distribution of vegetation using quantitative ecological characters.

LIST OF PRACTICALS

I. CYTOLOGY, GENETICS, PLANT BREEDING

1. Ultra structure of cell organelles, nucleus, chromosome and its special types (electron microscopic photographs).
2. Study of mitosis and meiosis with different materials.
3. Simple problem in genetics - monohybrid cross, Dihybrid cross, Interaction of genes, Sex-determination, Sex-linked inheritance, Gene mapping, Population genetics.
4. Training in hybridization techniques using potted plants.

II. ECOLOGY

1. To determine the quantitative characters in the community by using quadrat methods.
   a) Frequency b) Abundance c) Density d) Basal cover e) IVI.
2. Synthetic characters: Similarity index, FICC, dominance index, diversity index.
3. Raunkiaer's life form classes and percentage distribution of species in vegetation.
4. Stratification, Zonation - Demonstration.
5. Soil analysis - Physical - bulk density, water-holding capacity, soil moisture. Chemical - nitrate and carbonate.
6. Mapping of tree species in vegetations.
7. Field visit - Report preparation on vegetation types, conservation measures undertaken in biosphere reserves/ national parks/ sanctuaries etc.

PBO22

19PBO2CM

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	M	H	S	H
CO2	H	S	M	H	S
CO3	H	M	S	H	M

S - Strong **H** - High **M** - Medium **L** - Low

18PBO307

Programme Code: 05		**Title: M.Sc., BOTANY**		
Course Code: 18PBO307		**Core Paper: 7 - TAXONOMY AND BIOSYSTEMATICS**		
Batch 2018-2019	**Semester III**	**Hours / Week 7**	**Total Hours 105**	**Credits 5**

COURSE OBJECTIVES

- To study about the classification and nomenclature of Angiosperms.
- To understand the theory and practices involved in plant systematics.
- To learn the striking affinities of different plant families.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Acquire knowledge both on ICN and APG.
K2	CO2	Differentiate various systems of classifications based on their natural and phylogenetic characters of flowering plants.
K3	CO3	Gain the proficiency skills by the use of keys and identify any unknown plant species using the manual of floras.
K3	CO4	Explore the uses of medicinal plants through traditional indigenous approaches.

SYLLABUS

UNIT I **(21 HOURS)**

Historical account of the classification of angiosperms up to the present day. Systems of classification- Detailed study of Bentham and Hooker, Bessey, Hutchinson, Cronquist and APG IV - merits and demerits. ICN- history, principles, typification, principles of priority and their limitations, effective and valid publication, author citation, retention, choice and rejection of names, names of hybrids.

UNIT II **(21 HOURS)**

Computer aided taxonomy (TROPICOS, IPNI, The Plant List - 2010). Taxonomic tools - flora, monograph, icons and journals. Keys - dichotomous keys and their uses. Botanic gardens. Sources of taxonomic information- embryology, cytology, chemotaxonomy. RET species-India, Tamil Nadu and IUCN criteria, 2012.

UNIT III **(21 HOURS)**

Description and economic importance of the following families - Menispermaceae, Polygalaceae, Caryophyllaceae, Portulacaceae, Oxalidaceae, Tiliaceae, Meliaceae, Vitaceae, Rhamnaceae, Sapindaceae, Rosaceae, Combretaceae, Onagraceae, Lythraceae and Aizoaceae.

UNIT IV **(21 HOURS)**

Description and economic importance of the following families - Oleaceae, Gentianaceae, Convolvulaceae, Boraginaceae, Bignoniaceae, Pedaliaceae, Nyctaginaceae, Aristolochiaceae, Loranthaceae, Orchidaceae, Dioscoreaceae, Commelinaceae, Araceae and Cyperaceae.

18PBO307

UNIT V **(21 HOURS)**

Biosystematics- aim and scope. Biosystematics categories. Phenotypic plasticity. Turreson's work. Population concept, speciation. Species and genus concept. Gene ecology. Numerical taxonomy, molecular taxonomy. Evolutionary relationship among taxa*.

*** Self study**

Teaching Methods

Power Point presentation/Seminar/Quiz/Discussion/Assignment

TEXT BOOKS

1. Subramaniam, N.S. (1997). Modern plant taxonomy. Vikas Publishing House, New Delhi.
2. Sharma, O.P. (1986). Plant taxonomy -Rastogi Publications, New Delhi.
3. Sivarajan, V.V. (1986). Introduction to principles of plant taxonomy. Oxford & IBH Pvt. Company.

REFERENCES

1. Lawrence, H.M. (1951). Taxonomy of vascular plants. Macmillan & Co.
2. Bennet, S.S.R. (1986). An introduction to plant nomenclature. International Book Distribution India.
3. Henry, A.N. and Chandra Bose. (1982). An aid to the International code of Botanical nomenclature. BSI, Calcutta.
4. Jain, S.K. and R.R. Rao. (1977). A hand book of field and herbarium methods. Today & Tomorrow Pvt. Ltd.
5. Pandey, B.P. (1997). Taxonomy of angiosperms. Chand & Co. Ltd., New Delhi.
6. Vasudevan Nair, R. (1997). Taxonomy of angiosperms. APH Publishing Corporation, New Delhi.
7. Sokal, S.R. & P.H. Sneath. (1973). Principles of numerical taxonomy. N.H. Freemen and Co.
8. Gurcharan Singh. (2004). Plant systematic - theory and practices. Oxford and IBH Publishers, New Delhi.
9. Naik, V.N. (1984). Taxonomy of Angiosperms. TATA Mc Graw Hill, New Delhi.

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	M	S	S
CO2	H	S	H	M	S
CO3	S	S	M	H	H
CO4	S	H	H	H	M

S - Strong **H** - High **M** - Medium **L** - Low

PBO55

Programme Code: 05	Title: M.Sc., BOTANY		
	Non-Major Elective: 1 - HORTICULTURE		
Batch	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**8**	**114**	**5**

COURSE OBJECTIVES

- To learn about the propagation methods of horticultural crops.
- To study about gardening, landscaping and their maintenances.
- To acquire knowledge about commercial floriculture and cut flower arrangements.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Demonstrate solutions for a wide spectrum of plant health issues.
K2	CO2	Understand the components and adornments of gardening.
K3	CO3	Develop employability skills in the landscape field.
K3	CO4	Gain hand's on training knowledge on Terrarium and Bonsai techniques.

SYLLABUS

UNIT I **(18 HOURS)**

Scope and importance - Divisions of horticulture - classification of horticultural crops - climate, soil and nutritional needs - Irrigation. Organic horticulture - definition, synonyms, principles, methods, merits and demerits.

UNIT II **(18 HOURS)**

Gardening and landscaping - Importance and scope of gardening - Gardens in India* - types - layout of a garden - Garden components and adornments - Special types of garden - principles and design - Water garden, bog garden, terrace garden, rockery garden, vertical garden, clock garden, colour wheels and temple garden. Terrarium and Bonsai techniques.

UNIT III **(18 HOURS)**

Asexual propagation - Advantages and disadvantages - Cuttings:- types, factors influencing rooting of cuttings - use of growth regulators in relation to horticulture - layering - types - Grafting and Budding - methods - factors for successful graft union - Stock scion relationship - Factors influencing the heeling of graft union.

UNIT IV **(18 HOURS)**

Pomology - Establishment of orchard***** - cultivation of Banana, Citrus - Olericulture - cultural aspects of vegetables - types of vegetable growing - Kitchen garden, Market garden, vegetable garden - Preservation of fruits and vegetables - ornamental floriculture - Cultivation of Jasmine and Rose - Extraction of jasmine concrete.

UNIT V **(18 HOURS)**

Bio-aesthetic planning, eco-tourism, theme parks, indoor gardening, therapeutic gardening, non-plant components, water scaping, xeriscaping and hardscaping.

***Self study**

Teaching Methods

Powerpoint presentation/Seminar/Quiz/Discussion/Assignment

TEXTBOOKS

1. Kumar, N.(1999). An introduction to horticulture.Rajalakshmi Publication, Nagarcoil.
2. Chaha, K.L. (2001). Handbook of horticulture. ICAR, New Delhi.
3. Prasad, S., U.Kumar. (2013). A handbook of Floriculture. Agrobios, Jodhpur.

REFERENCES

1. Bose, T.K., J. Kabir, P. Das and P.P. Joy. (2001). Tropical Horticulture. Naya Prakash Publications, Calcutta.
2. George Acquaach. (2003). Horticulture - Principles and practices.
3. Edwin Biles. (2003). The complete book of gardening. Biotech book, New Delhi.
4. Singh, S.P. (1999). Advances in Horticulture and Forestry - Scientific Publishers, Jodhpur.
5. Sharma, V.K. (2004). Advances in Horticulture: Strategies, Production, Plant Protection and Value Addition - Deep and Deep Publications, New Delhi.
6. Bhattacharjee, S.K. (2006).Advances in Ornamental Horticulture -Pointer Publications, Jaipur.
7. Desh Beer Singh and Poonam Wazir. (2002). Bonsai-An Art. Scientific Publishers, Jodhpur.

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	S	H	M	S
CO2	S	H	M	H	H
CO3	H	S	H	M	H
CO4	S	M	S	H	S

S - Strong **H** - High **M** - Medium **L** - Low

PBO57

Programme Code: 05	Title: M.Sc., BOTANY		
	Non-Major Elective: 2 - PHARMACOGNOSY		
Batch	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**6**	**90**	**5**

COURSE OBJECTIVES

- To apply the gained knowledge and advice the community on issues concerning the cultivation, harvesting and processing of medicinal plants and their products.
- To classify crude drugs based on their morphological, taxonomical, chemical or pharmacological characters.
- To know the methodology for component analysis of plants.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recollect the history on indigenous knowledge of Indian traditional systems of medicines.
K2	CO2	Acquire therapeutic and pharmaceutical knowledge of traditionally used medicinal plants.
K3	CO3	Apply knowledge on the exploitation of phytoconstituents for production of novel drugs.
K3	CO4	Train the cultivation and marketing strategies of medicinal plants.

SYLLABUS

UNIT I **(18 HOURS)**

Scope of Pharmocognosy and modern medicines. Indian medicinal system - AYUSH (Ayurvedha, Unani, Siddha and Homeopathy) - principles and diagnostic methods.

UNIT II **(18 HOURS)**

Morphological and histological studies and therapeutic and pharmaceutical uses of the following drugs; Bark:- *Cinnamomum zeylanicum;* Leaves:- *Rubus idoeus*, Flower:- *Syzygium aromaticum,* Fruit:- *Citrus limon,* Seed:- *Trigonella foenum-graecum*; Rhizome:- *Zingiber officinale*, Gum:- *Acacia senegal*, Gum resin:- *Commiphora* sp., Fixed oil:- *Ricinus communis*, Essential oil:- *Eucalyptus globules*.

UNIT III **(18 HOURS)**

Method of plant analysis: - Phytochemical tests and application of plant derived alkaloids, flavonoids, terpenoids, phenols and steroids. A general procedure for solvent extraction. Separation of the compounds by TLC technique.

UNIT IV **(18 HOURS)**

A brief account of medicinal plants and their chemical constituents, plants remedies for Diabetes, anti-fertility, rheumatism, drugs acting on central nervous system, cardiovascular and cancer, Potentiate plant derived drugs in market - Taxol, Camptothecin, Vincristine - source, morphology and properties.

UNIT V **(18 HOURS)**

Cultivation and role of medicinal Plants: - *Catharanthus roseus, Digitalis purpurea, Aloe vera, Withania somnifera* and *Papavar somniferum*. Recommendations for promoting traditional medicinal plants cultivation in India*.

***Self study**

Teaching Methods

Powerpoint presentation/Seminar/Quiz/Discussion/Assignment

TEXTBOOKS

1. Trease, G.E. and Evans, W.C. (1985). Pharmocognosy. (12th Ed.). English Language books Society, Baillie Tindall.
2. Wallis, T.E. (1985). Textbook of Pharmocognosy (5th Ed.). CBS Publishers & Distributors, New Delhi.

REFERENCE

1. Satoskar, R.S., S.D. Bhandarkar and Nimala N. Rege. (2005). Pharmocognosy and pharmacotherapueatics. (12th Ed.). Popular Prakashan Pvt., Ltd., Mumbai.
2. Jain, S.K. (1996). Ethnobotany in human welfare (Ed.). Deep Publishers, New Delhi.
3. Nadkarni, K.M. (1954). Indian Materia medica. Karnataka Printing Press, Mumbai.
4. James A. Duke. (1996). The Green Pharmacy. Scientific Publishers, Jodhpur.
5. Guha Bakshi, Sensararma and Pal. (2001). A Lexicon of Medicinal Plants in India. Nayaprokas, Kolkatta.
6. Shah, C.S. and J.S. Qadry. (1996). A Textbook of Pharmocognosy. Unique Offset Printers, Ahemedabad.

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	S	S	S
CO2	H	S	S	H	S
CO3	S	S	S	S	S
CO4	H	H	H	S	H

S - Strong **H** - High **M** - Medium **L** - Low

PBO59

Programme Code: 05	Title: M.Sc., BOTANY		
	Non-Major Elective: 3 - MEDICINAL PLANTS		
Batch	**Hours / Week**	**Total Hours**	**Credits**
2018-2019	**6**	**90**	**5**

COURSE OBJECTIVES

- To learn about the ethnobotanical knowledge and its traditional significance.
- To understand the role of governmental and non-governmental organizations and their recommended conservation strategies.
- To acquire key knowledge on herbal home remedies.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Recognize about the ethnobotanical signi0ficance of medicinal plants.
K2	CO2	Understand the traditional practices for curing various ailments.
K3	CO3	Implement knowledge on the ethnomedicinal plants for preventing life threatening diseases.
K3	CO4	Apply ethnopharmacological knowledge for the development of novel lead drugs.

SYLLABUS

UNIT 1 **(18 HOURS)**

Ethnobotany-definition - sub divisions-methodology-major tribes in southern India-regional studies-Ethnobotany in human welfare-food-medicine. Role of tribes in medicinal plants conservation-crop protection.

UNIT II **(18 HOURS)**

Sources of drugs - adulteration - collection and processing of vegetable drugs - role of growth regulators - drug deterioration and their control measures. Herbal home remedies in Tamil Nadu*.

UNIT III **(18 HOURS)**

Cultivation of medicinal plants - Medicinal plants in trade-cultivation practices and medicinal uses of *Cinchona officinalis, Mentha arvensis, Phyllanthus emblica, Cymbopogan martini, Rauvolfia serpentina, Allium sativum* and *Gloriosa superba.*

UNIT IV **(18 HOURS)**

Nutraceuticals and cosmeceuticals. Natural pesticides. Immuno modulators. Drugs from mineral origin.

UNIT II **(18 HOURS)**

Biopiracy - bioprospecting - recommendation for promoting traditional medicines in India. Role of NBA, AYUSH, NMPB, CDRI, FRLHT, NBRI, BSI - Role of biotechnology in medicinal plant conservations.

***Self study**

Teaching Methods

Powerpoint presentation/Seminar/Quiz/Discussion/Assignment

TEXTBOOKS

1. Purohit and Vyas. (2005). Medicinal plant cultivation- A scientific approach, Agrobios, Jodhpur.
2. Rajiv, K. Sinha & Shweta Sinha, (2001). Ethnobiology. Surabi Publications, Jaipur.

REFERENCES

1. Anonymous (1970). The pharmocopoea of India - Govt. of India, New Delhi.
2. Jain. S.K.(Ed.) (1996). Ethnobiology in human welfare. Deep. Pub. New Delhi
3. Jain, S.K. (1989). Methods and approaches in Ethnobotany, Society of Ethnobotanist, Lucknow.
4. Jain, S.K. (1987). A manual of Ethnobotany. Oxford publication, Jodhpur.
5. Trease G.e. and Evans, W.C. (1978). Pharmacognosy Bailliere Trinda, London.
6. Kokatae, C.K. A.P. Purohit and S.B Gokhale (2007). Pharmacognosy. Nirali Prakashan, Pune.
8. Jain, S.K. (Ed). (1981). Glimpses of Ethnobotany. Oxford & IBH Publications.

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	M	H	H
CO2	H	M	H	H	M
CO3	S	H	S	M	H
CO4	S	M	H	S	M

S - Strong **H** - High **M** - Medium **L** - Low

18PBO2J1

Programme Code: 05	Title: M.Sc., BOTANY	
Course Code: 18PBO2J1	JOC: 1 - Floriculture and Landscaping	
Batch 2018-2019	Total Hours 4	Credits 2

COURSE OBJECTIVES

- To know the latest development in the field of floriculture.
- To develop skills in the area of floriculture and landscaping.
- To create knowledge on self employment through and entrepreneur skills.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1	CO1	Acquire knowledge on cultivation of economic flowers.
K2	CO2	Understand the techniques involved in flower arrangement and decoration.
K3	CO3	Apply the knowledge on green house cultivation methods.
K3	CO4	Implement the acquired knowledge on commercial applications of dry flowers.

SYLLABUS

UNIT I

Floriculture - Global floriculture - Floriculture in India - Economic flowers - Rose, Jasmine, Crossandra, Chrysanthemum - Cultivation and uses.

UNIT II

Cut flowers - Significance of cut flower industry in India* - Export - Flower arrangement and decoration - dehydrated flowers, foliage and floral craft.

UNIT III

Green house cultivation of cut flowers -Green house technology - advantages - Green house cultivation of Orchids - Anthurium - Gerbera - Dahlia - Tuberosa - Gladioli.

UNIT IV

Landscape gardening - important principles in layout a garden - Aboriculture - Shrubs and climbers - annual, biennial herbaceous perennials - Ornamental palms - Succulents and Cacti.

UNIT V

Water garden, Rock garden, Roof garden, Vertical garden, Hydrophonics, Lawn, Bonsai - Horticultural shows.

***Self study**

18PBO2J1

Teaching Methods

Powerpoint presentation/Seminar/Quiz/Discussion/Assignment

TEXT BOOKS

1. Kumar, N. (1999). An introduction to horticulture. Rajalakshmi Publication, Nagarcoil.
2. T.K. Bose, R.G. Maity, R.S. Dhua and P.Das, (1999). Floriculture and Landscaping, Naya Prokash, Calcutta.
3. S.Prasad and U.Kumar. (2013). A handbook of Floriculture Agrobios (India),

REFERENCES

1. Roy Edwin Biles, (2003). The complete Book of Gardening. Biotech Books, Delhi - 35.
2. Bhattacharjee, S.K. (2006). Advances in Ornamental Horticulture. Pointer Publication, Jaipur.
3. Doesh Beer Singh and Poonam Wazir, (2002). Bonsai - An art. Scientific Publishers, Jodhpur.

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	H	M	H
CO2	S	M	H	H	M
CO3	H	S	M	H	H
CO4	S	H	M	S	M

S - Strong **H** - High **M** - Medium **L** - Low