

NALLAMUTHU GOUNDER MAHALINGAM COLLEGE (AUTONOMOUS)-POLLACHI

123	B.Com BI	Higher Corporate Accounting	19UBI409	2019
124	B.Com BI	Recent Trends in Banking	19UBI4N4	2019
125	B.Com BI	Indirect Taxation	19UBI514	2019
126	B.Com BI	Entrepreneurship Development	19UBI5S2	2019
127	M.A Tamil	Ikkala illakiyam	19PTM101	2019
128	M.A Tamil	Kappiyangal	19PTM310	2019
129	M.A Tamil	Thonmai illakiyam	19PTM414	2019
130	M.Sc. Botany	Microbiology and plant pathology	19PBY103	2019
131	M.Sc. Botany	Economic Botany	19PBY1E2	2019
132	M.Sc. Botany	Cytology, Genetics and Plant Breeding	19PBY207	2019
133	M.Sc. Botany	IPR and Bioethics	19PBY2E4	2019
134	M.Sc. Botany	Mushroom Cultivation & Medicinal Plant Trading	19PBY2N1	2019
135	M.Sc. Botany	Research Methodology	19PBY311	2019
136	M.Sc. Botany	Herbal Technology	19PBY3E6	2019
137	M.Sc Computer Science	Information Security and Cryptography	19PCS208	2019
138	M.Sc Computer Science	Data Analytics using Python Programming	19PCS207	2019
139	M.Sc Computer Science	Angular JS	19PCS313	2019
140	M.Sc. Chemistry	Major Elective-I-Polymer Chemistry	19PCY3E3	2019
141	M.Sc. Chemistry	Major Elective II: Nano Technology and Supra Molecular Chemistry	19PCY3E4	2019
142	M.Sc. Chemistry	Major Elective III : Medicinal Chemistry/Food Science and Technology/ Dye Chemistry	19PCY4E7/ 19PCY4E8/ 19PCY4E9	2019
143	M.Com (CA)	Entrepreneurship and Project Management	19PCC3E2	2019
144	M.Com (CA)	Strategic Management	19PCC3E4	2019
145	M.Com (CA)	Customer Relationship Management	19PCC4E6	2019
146	MSW	Communication for Social Work Practice	19PSW1E2	2019

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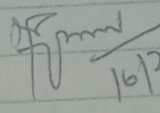
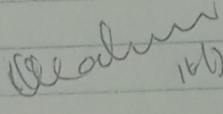
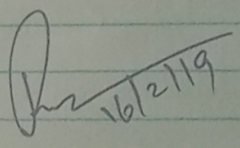
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Board of Studies meeting

Saturday - 16.02.2019

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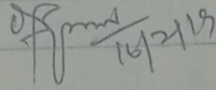
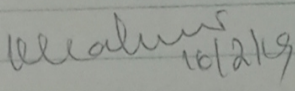
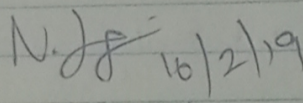
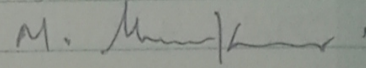
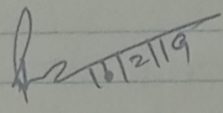
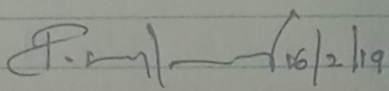
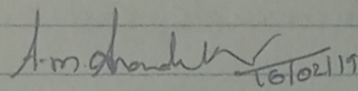
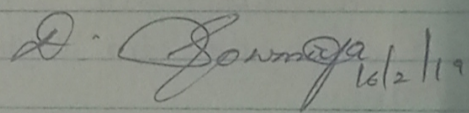
Sl. No	MEMBERS	SIGNATURE
1.	Dr. T. Pakimelazhagan (University expert) Professor, Department of Botany Bharathiyar University Coimbatore	 16/2/19
2.	Dr. K. Kalimuthu (Subject expert) Assistant Professor Department of Botany Government arts college, CBE.	 16/2/19
3.	Dr. N. Loganayagi (Industrial expert) Assistant manager Suguna foods Pvt Ltd, Herbal division Suguna life herbs, udumipet	N. J. S. 16/2/19
4.	Mr. M. Muthukumar (Alumni) Chemist, Quantum Confectionary Nayakkanpalayam Pollachi.	M. Muthukumar
5.	Dr. R. Rakkimuthu (Chairman) Asst. Professor & Head P& Research Department of Botany NAM college, Pollachi.	 16/2/19
6.	Dr. P. Sathish Kumar Asst. prof of Botany.	P. Sathish Kumar 16/2/19.
7.	Dr. A. M. Anandakumar Asst. prof of Botany.	A. M. Anandakumar 16/2/19.
8.	Ms. D. Sowmiya Asst. prof of Botany (Members)	D. Sowmiya 16/2/19

Minutes

The Resolutions made in the Board of Studies meeting on 16.02.2019 are as follows:-

- The Syllabi revised by the board will be introduced for the M.Sc., Botany programme for the Academic year 2019-2020 (2019-2021 Batch)
- The suggestions to rearrange the Microbiology & Plant pathology (Core-1) to Core-3.
- Add topics on microbial population of the plants.
- Add topics on Environment act and GIS.
- It is suggested to incorporate Biosynthesis of Aminoacids and plant hormones.
- The paper title Cytogenetics and plant breeding is changed to "Cytology, Genetics and Plant breeding"
- Add few topics on practicals in plant physiology.
- Non major elective title 'Mushroom cultivation' is to be changed as "Mushroom cultivation and Medicinal plant trading"
- The topics ~~Instrumentation~~ from Plant biochemistry and biophysics shifted to Research methodology & Bio statistics paper.
- Add few topics on IPR - Importance, types, Pattern filing procedures.

New :- Microbiology & Plant Pathology 19PBY103
 Course Economic Botany 19PBY1E2
 Introduced Cytology, Genetics and Plant breeding 19PBY207
 IPR and Bioethics 19PBY2E4
 Mushroom cultivation & Medicinal plant Trading 19PBY2N1
 Research Methodology 19PBY311
 Herbal Technology 19PBY3E6.

1. Dr. T. Paximelazhagan  16/2/19
2. Dr. K. Kalimuthu  16/2/19
3. Dr. N. Loganayagi  16/2/19
4. Mr. M. Muthukumar  16/2/19
5. Dr. R. Rakkimuthu  16/2/19
6. Dr. P. Sathishkumar  16/2/19
7. Dr. A. N. Anandakumar  16/2/19
8. Ms. D. Somiya  16/2/19

SCHEME OF EXAMINATION

Semester	Course Code	Course Title	Class hours /Week	Exam Hrs	Maximum marks			Credits
					Internal	External	Total	
I	19PBY101	Core - 1 Phycology, Mycology, Lichenology and Bryology	5	3	25	75	100	4
	19PBY102	Core - 2 Pteridophytes, Gymnosperms and Palaeobotany	5	3	25	75	100	4
	19PBY103	Core - 3 Microbiology and plant pathology	5	3	25	75	100	4
	19PBY104	Core - 4 Core Practical-I (for core papers 1, 2, 3)	9	4	40	60	100	4
	19PBY1E1/ 19PBY1E2	Elective -1 Ecology and Phytogeography/ Elective -2 Economic Botany	5	3	25	75	100	5
II	19PBY205	Core - 5 Anatomy and Embryology	5	3	25	75	100	4
	19PBY206	Core - 6 Plant physiology	5	3	25	75	100	4
	19PBY207	Core - 7 Cytology, Genetics and Plant Breeding	5	3	25	75	100	4
	19PBY208	Core - 8 Core Practical- II (for core papers 5,6,7)	9	4	40	60	100	4
	19PBY2E3/ 19PBY2E4	Elective-3 Horticulture/ Elective-4 IPR and Bioethics	4	3	25	75	100	5
	19PBY2N1	Non- Major Elective Mushroom Cultivation & Medicinal Plant Trading	1	3	-	100	100	2
III	19PBY309	Core - 9 Plant Systematics	5	3	25	75	100	4
	19PBY310	Core -10 Plant Biochemistry and Biophysics	5	3	25	75	100	4
	19PBY311	Core -11 Research Methodology	4	3	25	75	100	4
	19PBY3E5/ 19PBY3E6	Elective -5 Forestry/ Elective -6 Herbal Technology	4	3	25	75	100	5
	19PBY312	Core - 12 Core Practical - III (for core paper 9)	6	4	40	60	100	4
	19PBY313	Core - 13 Core Practical -IV (for core papers 10 and 11)	6	4	40	60	100	4
IV	19PBY414	Core - 14 Molecular Biology and Plant Biotechnology	5	3	25	75	100	5
	19PBY415	Core - 15 Bioinformatics and Cyber Security	5	3	25	75	100	4
	19PBY416	Core - 16 Core Practical -V (for core papers 14 and 15)	6	4	40	60	100	4
	19PBY4P1	Core - 17 Project Work and Viva -Voce	14	-	40	160	200	8
Total							2200	90

Programme code	M.Sc.	Programme Title : Master of Science in Botany		
Course Code: 19PBY103	Title : Core - 3 Microbiology and Plant Pathology		Batch	2019-2021
Hrs/Week: 5			Semester	I
			Credits	4

Course Objective

To introduce the microbial techniques and its role in the plant and human welfare

Course Outcomes (CO)

K1	CO1	Students will recollect the basics of microbiology
K2	CO2	One can understand the interaction of microorganism with the environment and food
K3	CO3	Apply the microbial culture in the manufacturing of value added products
K4	CO4	Analyze the plant diseases commonly occurring in crops

Unit	Content	Hrs
Unit I	Microbiology: History, scope and branches of microbiology - a general account, classification, growth and reproduction of bacteria (Bergys manual of classification), virus and protozoa.	13
Unit II	Microbiological Media: Media types - preparation- methods of sterilization- enumeration of microorganisms in soil, water and air - isolation of microorganisms from infected plant tissue - techniques of pure culture- maintenance and preservation of microbes- staining techniques - <i>*bacterial growth curve - nutritional types of microorganisms.</i>	13
Unit III	Food Microbiology: Single cell protein- fermented foods (pickles, silage, sausages and bread) - microbial spoilage of foods - food borne infections & intoxication - preservation of foods - preservation of milk and milk products - <i>* Food adulteration- identification of adulteration in foods.</i>	13
Unit IV	Industrial Microbiology: Fermenters - batch fermentation - continuous fermentation - industrial production of enzymes (cellulase, amylase and protease), amino acids (glutamic acid and L-Lysine), organic acids (lactic and citric acid) and biofuels (ethanol) - methods of cell and enzyme immobilization - applications of immobilized cells and enzymes - medicinal plants as antimicrobial agents.	13
Unit V	Pathology: Introduction to plant pathology – disease – concept, component and causes – classification of disease, brief account on general symptoms of plant disease – modes of infection and dissemination – defense mechanisms in plants- plant diseases: symptoms, causative organisms and control measures of following diseases: Blast disease of Paddy - Red rot of Sugar cane - Late blight of Potato - Bunchy top of Banana - TMV.	13

**Self study topics*

Power point presentations, Seminar and Assignment

Programme code	M.Sc.	Programme Title : Master of Science in Botany		
Course Code:	19PBY1E2	Title : Elective -2 Economic Botany	Batch	2019 - 21
			Semester	I
Hrs/Week:	6		Credits	5

Course Objective

To enable the students to study the economic importance of vegetables, fruits, spices, condiments, fibres, timber and oil yielding plants

Course Outcomes (CO)

K1	CO1	Understand the applied facet of botany
K2	CO2	Be familiar with the various commercial products of plant origin
K3	CO3	Understand the utility of different plant families
K4	CO4	To have a first- hand knowledge on economic Botany

Unit	Content	Hrs
Unit I	Cereals and legumes: Origin and History - Botanical description - Cultivation, Harvesting and uses of Cereals and Legumes: Wheat, Rice, Maize, Sorghum, Barley, Black gram, Red gram, Chick pea, Pigeon pea and Broad beans.	15
Unit II	Vegetables and fruits: Origin and History - Botanical description and economic importance of Vegetables and Fruits: Banana, Grapes, Citrus, Mango, Jack fruit, Potato, Cassava, <i>Dioscorea</i> and Tomato.	16
Unit III	Spices and condiments: Origin and History - Botanical description, Cultivation and uses of Spices and Condiments: Ginger, Pepper, Cardamom, Clove, Nut-Meg, Chilly, <i>Coriandrum</i> , Turmeric and All-spice.	15
Unit IV	Beverages plants, fibres and timber: Origin and History - Botanical description, Cultivation, Processing and uses of Beverages plants: Tea, Coffee and Cocoa. <i>Sugars and Starch:</i> Sugarcane and <i>Manihot</i> . Fibers and Timber: Cotton, Jute, Sunhemp, Teak, Rosewood, Ebony, Sal and Mahogany.	15
Unit V	Oil yielding plants: Origin and History - Botanical description – Harvesting - Extraction and uses of Fatty oils and Vegetable Fats: Sun flower, Soya bean, Peanut, Palm Oil, Coconut and Gingelly - Medicinal Plants: <i>Rauvolfia</i> , <i>Aconitum</i> , Jatamansi, Sathavari, Guggul, Basil, <i>Saraca</i> and Neem	17

*Self study topics

Power point Presentations, Group discussions, Seminar ,Quiz. Assignment, Case study

Programme code	M.Sc.	Programme Title: Master of Science in Botany		
Course Code: 19PBY207		Title : Core - 7 Cytology, Genetics and Plant Breeding	Batch	2019 - 21
			Semester	II
Hrs/Week:	6		Credits	4

Course Objective

To acquire knowledge on genetic traits and breeding techniques in plants

Course Outcomes (CO)

K1	CO1	Remember the principles of genetics
K2	CO2	Understand the role of genes in expression of characters
K3	CO3	Gain knowledge on chromosome structure and cell cycle
K4	CO4	Review the innovative techniques in plant breeding

Unit	Content	Hrs
Unit I	Cytology: Cell structure- organization of prokaryotic and eukaryotic cell - Cell wall - nucleus- mitochondria - Golgi bodies - lysosomes- endoplasmic reticulum- peroxisomes- plastids - vacuoles - structure and function of cytoskeleton - Chromosome: Structure and types - overview of mitosis and meiosis - regulations of cell cycle.	15
Unit II	Genetics: Mendelian and non Mendelian inheritance - interaction of genes, complementary genes, Epistasis, multiple factor inheritance - Sex-linked inheritance - theories of sex determination - Sex determination in plants - Linkage and crossing over - kinds of linkage – significance - types of crossing over mechanism- models for homologous recombination - Construction of genetic map - two point test cross- three point test cross.	16
Unit III	Classification of mutations - spontaneous and induced mutations – physical and chemical mutagens - molecular basis of gene mutation - chromosomal aberrations - epigenetics - genetic code - DNA as a genetic material. - gene regulatory mechanisms (prokaryotes & eukaryotes)	15
Unit IV	Plant Breeding: Introduction to breeding of cultivated plants - objectives of breeding - polyploidy and haploids in plant breeding – Selection – mass selection - pureline selection - clonal selection merits and demerits - <i>*Improvement of crop plants by pedigree method, bulk method, backcross method</i>	16
Unit V	Intervarietal, interspecific and intergeneric hybridization - heterosis - hybrid vigour - marker assisted breeding - <i>*national and international organizations for crop improvement</i> - Protection of Plant Varieties & Farmers' Rights Act, India - Dus - Germplasm - The role of IBPGR and NBPGR - germplasm conservation (Rice and Sugarcane).	16

**Self study topics*

Power point Presentations, Seminar and Assignment

Programme code	M.Sc.	Programme Title : Master of Science in Botany		
Course Code: 19PBY2E4		Title : Elective - 4 IPR and Bioethics	Batch	2019 - 21
Hrs/Week:	6		Semester	II
			Credits	5

Course Objective

To enable the students know the importance of Biosafety, Bioethics and IPR

Course Outcomes (CO)

K1	CO1	Remember the basic knowledge of IPR
K2	CO2	Understand the types of applications of IPR
K3	CO3	Apply the knowledge on patenting of the product
K4	CO4	Gain an insight into the biosafety and farmers rights

Unit	Content	Hrs
Unit I	Introduction to IPR: Different types of intellectual property rights (IPR) – definitions - Need for IPR - copyright – example of types - Berne convention and TRIPS agreement - related rights - performers, phonogram, producers and broadcasters.	16
Unit II	Types of IPR: Trade marks – list of signs, conditions and rights. geographical indications – benefits - patents - conditions for patenting, patent application and grant, duration - protection of new varieties of plants – characteristics of new plants for protection, plant breeders rights.	15
Unit III	Treaties and registration systems: WIPO Administered Treaties on International Registration Systems and the PCT - trademarks, Industrial Designs and Patents- three registration systems - madrid system, hague system and Lisbon system - Unfair competitions – acts of unfair competitions and categories of acts.	15
Unit IV	IPR Issues and Bioesefety: Emerging issues in intellectual property – Biotechnology, Traditional Knowledge, Genetic resources - Biosafety: Introduction, Bio safety guidelines - Steps involved in the release of transgenic crops and pharmaceuticals - Indian bio safety rules and regulations.	16
Unit V	Bioethics: Introduction - general issues related to environmental release of transgenic plants, animals and micro organism - ethical issues related to research in embryonic stem cell cloning - good laboratory practices (GLP) containments - IPR issues in Basmati rice and Turmeric	16

**Self study topics*

Power point Presentations, Group discussions, Seminar, Quiz, Assignment, Field study

Programme code	M.Sc.	Programme Title : Master of Science in Botany		
Course Code: 19PBY2N1		Title : Non Major Elective - 1 Mushroom Cultivation & Medicinal Plant Trading	Batch	2019 - 21
Hrs/Week:	1		Semester	II
			Credits	2

Course Objective

To impart mushroom cultivation skills and to promote entrepreneurship

Course Outcomes (CO)

K1	CO1	Keep in mind about the health benefits of mushroom
K2	CO2	Get the idea of the intricacies of mushroom cultivation
K3	CO3	Apply the mushroom cultivation technique in improving the economic status of society
K4	CO4	Evaluate the commercially significant mushroom production

Unit	Content	Hrs
Unit I	Introduction - morphology - types of mushroom - identification of edible and poisonous mushroom - nutritive and medicinal values - life cycle of common edible and medicinal mushrooms - <i>Pleurotus</i> , <i>Agaricus</i> , <i>Volvariella</i> , <i>Calocybe</i> and <i>Lentinus</i> .	3
Unit II	Cultivation - conditions for tropical and temperate countries, isolation - spawn production - growth media - spawn running and harvesting of mushrooms. Methods of cultivation (Hanging bag, bed and rack method) - prospects and scope of mushroom cultivation in small scale industry.	3
Unit III	Diseases and post harvest technology - harvesting - freezing, dry freezing, drying, <i>*packaging and marketing</i> - <i>*recipes from mushrooms</i> .	2
Unit IV	Historical account of medicinal plants usage in India - some important medicinal plants in India; any five folk healing practices and household remedies followed in India against five illness.	2
Unit V	Industrial uses of medicinal plants - processing of medicinal plants - constraints associated with medicinal plants - value added products. Trade in Medicinal plants: Medicinal Plants demand and supply - major importing countries and regions.	2

**Self study topics*

Power point Presentations, Group discussions, Seminar, Quiz, Assignment and Field visit

Programme code	M.Sc.	Programme Title : Master of Science in Botany		
Course Code: 19PBY311		Title: Core - 11 Research Methodology	Batch	2019 - 21
Hrs/Week:	5		Semester	III
			Credits	4

Course Objective

To provide the knowledge on research and interpretation

Course Outcomes (CO)

K1	CO1	Remember the basic knowledge on research
K2	CO2	Get the idea in the developing strong hypothesis and methodology for research
K3	CO3	Evaluate scientific findings through various statistical tools
K4	CO4	Execute the basic research activities using biophysical instruments

Unit	Content	Hrs
Unit I	Research Methodology: Research - introduction, objectives, types (fundamental, applied, qualitative and quantitative) and significance - selecting research problem - research design - needs and feature of a good design - Basic principles of experimental designs.	13
Unit II	Literature collection and citation: bibliography - bibliometrics (scientometrics): definition-laws - citations and bibliography - <i>*biblioscape</i> - <i>plagiarism</i> - project proposal writing - dissertation writing - <i>paper presentation (oral/poster)</i> - E-learning tools- monograph - introduction and writing- monograph for <i>Aloe vera</i> and <i>Ocimum sanctum</i> and Good Lab Practice (GLP) - Standards of procedure (SOP) - introduction and preparation - Research Institutions - National and International.	13
Unit III	Biostatistics: Bio statistics - definition - basic principles - variables - collection of data, sample, population and sampling techniques - primary and secondary data - tabulation and presentation of data - measures of central tendency - mean, mode, median and geometric mean - measures of dispersion - range, standard deviation and standard error - hypothesis testing - test of significance - test in large and small sample - t-test, f-test and chi square test - correlation and regression analysis.	13
Unit IV	Tools and applications of Excell and SPSS: measures of central tendency and dispersion - measures of significance - analysis of variance (ANOVA- single factor) - multivariate analysis - probability of distribution (binomial, poisson and normal) - cluster analysis.	13
Unit V	Basic principles and applications of pH meter, UV-visible spectrophotometer, centrifuge, lyophilizer, chromatography - TLC, GLC and HPLC, electrophoresis - Agarose gel electrophoresis and Polyacrylamide gel electrophoresis - PCR.	13

*Self study topics

Programme code	M.Sc.	Programme Title : Master of Science in Botany		
Course Code: 19PBY3E6		Title: Elective - 6 Herbal Technology	Batch	2019 - 21
Hrs/Week:	5		Semester	III
			Credits	5

Course Objective

To understand the components and role of forest ecosystem

Course outcomes (CO)

K1	CO1	Recollect the importance of herbal technology
K2	CO2	Understand various plant based drugs from ayurvedha, unani, homeopathy, siddha etc.
K3	CO3	Apply the knowledge to medicinal plant cultivation
K4	CO4	Review the the protection of biodiversity

Unit	Content	Hrs
Unit I	History, definitions and scope of herbals - traditional medicinal systems: ayurvedha, unani, homeopathy, siddha, naturopathy and yoga. definition of drug - classification of natural drugs, (alphabetical, morphological, pharmacological, chemical and chemo taxonomical).	13
Unit II	Pharmacognosy - definition and scope - drug adulteration, drug evaluation, chemical evaluation, physical evaluation and biological evaluation - phytochemical investigations - standardization and quality control of herbal drugs.	13
Unit III	Cultivation, collection and preparation of natural drugs - Detailed study of the following medicinal plants: <i>Plantago ovata</i> , <i>Hypericum perforatum</i> , <i>Digitalis purpurea</i> , <i>Terminalia chebula</i> , <i>Saraca indica</i> , <i>Olea eu ropoea</i> , <i>Strychnos nux vomica</i> . Women entrepreneurship development - marketing cultivated medicinal plants - National Medicinal Plants Board of India.	13
Unit IV	Neutraceuticals - classification, antioxidants, probiotics, prebiotics, spirulina, royal jelly, soya beans, garlic and cosmeceuticals. natural pesticides- pyrethrum, neem, derris; antibiotics, allergenic extracts.	13
Unit V	Ethnobotany – definition - traditional and folklore medicines - native medicine - major tribes of south india and their ethnobotanical and ethnobiological heritage - ethno medicines - ethnobotany and conservation of plants with special reference to india - mythology and conservation of ecosystems - conservation of selected plant species: sacred groves, forestry and unique ecosystems and their ethnobiological values, plants and animals in art, tradition and ethnography: ethnobotanical field methods.	13

**Self study topics*

Power point Presentations, Group discussions, Seminar, Quiz and Assignment.