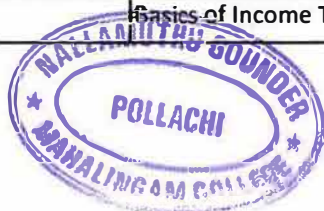


NALLAMUTHU GOUNDER MAHALINGAM COLLEGE (AUTONOMOUS)-POLLACHI

248	B.Com (E-Commerce)	Modern Banking	20UEC4A4	2020
249	B.Com (E-Commerce)	Investment Management	20UEC620	2020
250	B.COM(FINANCE)	Allied –I Business Economics	20UCF1A1	2020
251	B.COM(FINANCE)	CoreVII:Banking Law and Practice	20UCF307	2020
252	B.COM(FINANCE)	Core XIV - Principles of Insurance	20UCF514	2020
253	B.Com PA	Core XVI : Financial Services	20UPA516	2020
254	B.Com (BPS)	Supply Chain Management for Business Process Services	20UBP308	2020
255	B.COM IB	Sourcing & Procurement for International Business	20UIB6E5	2020
256	M.A Tamil	Ikkala illakiyam	20PTM101	2020
257	M.A Tamil	Bhakthi ilakkamum sitrilakkiamum	20PTM205	2020
258	M.A Tamil	Kaappiangal	20PTM205	2020
259	M.A Tamil	Thonmailakkiam	20PTM414	2020
260	M.Sc. Botany	Enterpreneurship Botany	20PBY2N1	2020
261	M.Sc. Botany	Plant ecology, tissue culture and Phytochemical techniques	20PBY315	2020
262	M.Sc Computer Science	Advanced Database Management System	20PCS103	2020
263	M.Sc Computer Science	Advanced Java Programming	20PCS207	2020
264	M.Sc Computer Science	Cloud and Big Data Analytics	20PCS209	2020
265	M.Sc Computer Science	Programming Lab -III : Advanced Java Programming	20PCS210	2020
266	M.Sc Computer Science	R Lab	20PCS314	2020
267	M.Sc Computer Science	Network Security and Cryptography	20PCS314	2020
268	M.Sc. Physics	Non Conventional Energy Sources	20PPS2N1	2020
269	M.Sc. Chemistry	Organic Chemistry I: Reactions and Mechanism	20PCY102	2020
270	M.Sc. Chemistry	Inorganic Chemistry III-Bioinorganic and Inner Transition Elements	20PCY412	2020
271	M.Sc. Chemistry	Phytochemical Techniques and health chemistry	20PCY414	2020
272	M.Com (CA)	Higher Corporate Accounting	20PCC101	2020
273	M.Com (CA)	Basics of Income Tax	20PCC2N1	2020

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Highlighted





PG & RESEARCH DEPARTMENT OF BOTANY
NALLAMUTHU GOUNDER MAHALINGAM COLLEGE
(Autonomous and Affiliated to Bharathiar University)
An ISO 9001:2015 Certified Institution
Pollachi - 642 001
Phone : 04259 - 234868, 234870



MINUTES OF BOARD OF STUDIES IN M.SC., BOTANY

M.Sc., Botany Board of studies meeting was held on 22.02.2020 in the PG Department of Botany Lab at 10.30 am. The Chairman welcomed the Board members Dr. T. Parimelazhagan- the university Nominee, Dr. P. Sundaramoorthy- Subject expert, Dr. R. Rathinasamy- Academic auditor, Dr. K. M. Aravinthan - Industrial expert, Mr. K. Sreenivasan - Alumni and faculty of PG Botany.

The board discussed the draft syllabus and recommended the following suggestions which were accepted unanimously.

1. The following course names were Changed

- Phycology, Mycology, Lichenology and Bryology was changed as Plant Diversity I
- Pteridophytes, Gymnosperms and Palaeobotany was changed as Plant Diversity II
- Microbiology and Plant Pathology was changed as Applied Microbiology and Plant Pathology
- Practical I, II, III, IV and V were changed as Laboratory course –I, II, III, IV and V
- Anatomy and Embryology was changed as Plant Anatomy and Reproductive Biology
- Plant systematics was changed as Taxonomy of Angiosperms

- Horticulture was changed as Horticulture and landscaping
- Forestry was changed as Forestry and Wood science
- Molecular Biology and Plant Biotechnology was changed as Plant Biotechnology and Nanobiology

2. The following New Courses were introduced

- Plant ecology, tissue culture and Phytochemical techniques – for Advanced Learners (Extra credit course) has been incorporated in Semester III
- Online comprehensive examination (Extra credit course) has been incorporated in Semester IV
- Two value added courses has been introduced for every semester
 1. Medicinal plants for Human Welfare
 2. Biological entrepreneurship

3. Internship has been incorporated in Semester III

4. The scheme, COs, methodology and evaluation pattern has been changed for final semester Project Viva -voce.

5. *Phytophthora* and *Rhizopus* type study, fossil fungi, alternation of generations in the life-cycle of bryophytes, fossil bryophytes has been included and *Neurospora* and *Fusarium* has been removed in Plant diversity paper I

6. Cordiales and taxaes has been included in the unit III of the paper Plant diversity II and Unit V -Palaeobotany has been entirely restructured

7. Isolation of microbes from industrial waste, concept of prebiotics and probiotics, biotechnology in relation to plant pathology and Agriculture terrorism has been included in the paper of Applied Microbiology and Plant Pathology.

8. In Ecology and Phytogeography paper, subject experts suggested to incorporate few topics like types of ecosystem, cause for loss of biodiversity, theories of succession, Environment Act, Disaster management and application remote sensing in ecological studies, types of ecosystem, altitudinal and longitudinal variation in vegetation and also suggested to remove the topic like adaptation of plants.
9. In Laboratory course I, *Ginkgo biloba*, fossils like Amber, Impression and Petrification has been incorporated.
10. Kranz anatomy has been included in the paper of Plant anatomy and Reproductive Biology
11. Radical scavenging activity has been included in plant physiology paper
12. Cytoplasm male sterility in plants and Double Haploid has been included in cytology, Genetics and Plant breeding paper
13. Removed Effect of varying concentrations of CO₂ on the rate of photosynthesis in Laboratory course II
14. Fruit and vegetable carving techniques has been included in Unit V of Horticulture and Landscaping paper
15. Plumbaginaceae, Orchidaceae family and Software's, mobile APPS for plant identification has been included in Unit IV and V of Taxonomy of Angiosperms respectively.
16. Scanning electron microscopy and Gas chromatography with mass spectrum has been included in Research methodology paper
17. Herbal technology paper Unit IV fully replaced
18. Silver Nanoparticle synthesis has been added in Plant biotechnology and Nanobiology paper

PG (2020-2022 BATCH)

S.No	Year	Sem	Paper Code	Paper Title	Changes	
					Removed (if any)	Added (if any)
1	2020	I	20PBY101	Plant Diversity I	<i>Neurospora</i> , <i>Fusarium</i> - Unit III <i>Fossombronia</i> , bryophytes classification (Proskauer 1957)- Unit V	Algae distribution in India-Unit I <i>Type study of Gracilaria</i> , <i>Caulerpa</i> –unit II fossil algae-Unit II <i>Rhizopus</i> and <i>Phytophthora</i> - Unit III fossil fungi - comparison of algae and fungi- Unit III Lichenology whole unit IV changed Bryophytes classification (Watson, 1955), alternation of generations in the life-cycle of bryophytes, <i>Notothylus</i> , <i>Sphagnum</i> and Fossil bryophytes- Unit V
2	2020	I	20PBY102	Plant Diversity II		Cordiales and taxales -unit III Unit V (Palaeobotany) has been entirely restructured
3	2020	I	20PBY103	Applied Microbiology and Plant Pathology		Economic importance of Microbes, Isolation of microbes from industrial waste, concept of prebiotics and probiotics, biotechnology in relation to plant pathology and Agriculture terrorism
4	2020	I	20PBY104	Laboratory course-I	<i>Ascobolus</i> <i>Marsilea</i>	<i>Phytophthora</i> <i>Penicillium</i> Impression, Petrification, Amber

5	2020	I	20PBY1E1	Elective -1 Ecology and Phytogeography/	adaptation of plants	Types of ecosystem, cause for loss of biodiversity, theories of succession, Environment Act, Disaster management and application remote sensing in ecological studies, types of ecosystem, altitudinal and longitudinal variation in vegetation
6	2020	I	20PBY1E2	Elective -2 Economic Botany	-	-
7	2020	II	20PBY205	Plant Anatomy and Reproductive Biology	-	Kranz anatomy
8	2020	II	20PBY206	Plant physiology	-	Radical scavenging activity
9	2020	II	20PBY207	Cytology, Genetics and Plant Breeding	-	Cytoplasmic male sterility in plants double haploid
10	2020	II	20PBY208	Laboratory course-II	Effect of varying concentrations of CO ₂ on the rate of photosynthesis	-
11	2020	II	20PBY2E3	Elective-3 Horticulture and Landscaping /	-	Fruit and vegetable carving techniques
12	2020	II	20PBY2E4	Elective-4 IPR and Bioethics	-	All unit changed
13	2020	II	20PBY2N1	Non- Major Elective Entrepreneurship Botany	-	New course introduced
14	2020	III	20PBY309	Taxonomy of Angiosperms	-	Plumbaginaceae, Orchidaceae, Software's, mobile APPS for plant identification
15	2020	III	20PBY310	Plant Biochemistry and Biophysics	-	

16	2020	III	20PBY311	Research Methodology	-	Scanning electron microscopy and Gas chromatography with mass spectrum
17	2020	III	20PBY3E5	Elective -5 Forestry and Wood science	-	
18	2020	III	20PBY3E6	Elective -6 Herbal Technology	Neutraceuticals - classification, antioxidants, probiotics, prebiotics, spirulina, royal jelly, soya beans, garlic and cosmeceuticals. natural pesticides- pyrethrum, neem, derris; antiobiotics, allergenic extracts.	<i>Withania somnifera</i> and <i>Coleus forskohlii</i> General methods of phytochemical and biological screening – Natural sources - Extraction - Purification and isolation of plant constituents - Alkaloids - glycosides - Volatile oils – Study of some herbal formulation techniques as drug cosmetics
19	2020	III	20PBY312	Laboratory course-III	-	Plumbaginaceae, Orchidaceae, Software's, mobile APPS for plant identification
20	2020	III	20PBY313	Laboratory course-IV	-	Silver Nanoparticle synthesis

New papers (Courses) introduced

S.No	Year	Sem	Paper Code	Paper Title	Changes	
					Removed (if any)	Added (if any)
1	2020	II	20PBY2N1	Non- Major Elective Entrepreneurship Botany	-	
2	2020	III	20PBY315	Extra Credit course: Plant ecology, tissue culture and Phytochemical techniques –(Advanced Learners)	-	

After a thorough discussion based on the suggestions/feedback received from the stakeholders, the department suggested the following new courses and classified the courses as skills development / Employability / Entrepreneurship.

Comprehensive year of syllabus revision 2018							Comprehensive year of syllabus revision 2020						
SE M	Course code	Name of the course	Old/ new	S D	E N	E M	SEM	Course code	Name of the course	Old/ new	S D	E N	E M
I	18PBY101	Microbiology	Old	✓		✓	I	20PBY101	Plant Diversity I (Phycology, Mycology, Lichenology and Bryology)	Old	✓	✓	
	18PBY102	Phycology, Mycology, Lichenology and Bryology	Old	✓	✓		I	20PBY102	Plant Diversity II (Pteridophytes, Gymnosperms and Palaeobotany)	Old	✓		
	18PBY103	Pteridophytes, Gymnosperms and Palaeobotany	Old	✓			I	20PBY103	Applied Microbiology and Plant Pathology	Old	✓	✓	✓
	18PBY1E1	Elective -1 Ecology and Phytogeography	Old			✓	I	20PBY104	Laboratory course-I (for core papers 1, 2, 3)	Old	✓		
	18PBY104	Core Practical-I (for core papers & elective -1)	Old	✓			I	20PBY1E1/ 20PBY1E2	Elective -1 Ecology and Phytogeography/ Elective -2 Economic Botany	Old Old			✓ ✓
II	18PBY205	Anatomy and Embryology	Old	✓			II	20PBY205	Plant Anatomy and Reproductive Biology	Old	✓		
	18PBY206	Plant physiology	Old	✓			II	20PBY206	Plant physiology	Old	✓		
	18PBY207	Cytogenetics and Plant Breeding	Old	✓	✓	✓	II	20PBY207	Cytology, Genetics and Plant Breeding	Old	✓	✓	✓
	18PBY208	Core Practical- II (for core papers)	Old	✓			II	20PBY208	Laboratory course-II (for core papers 5,6,7)	Old	✓		
	18PBY2E2	Elective -2 Horticulture	Old	✓	✓	✓	II	20PBY2E3/ 20PBY2E4	Elective-3 Horticulture and Landscaping / Elective-4 IPR and Bioethics	Old	✓	✓	✓
	18PBY2N1	Non- Major Elective -1A Mushroom cultivation	Old	✓	✓	✓	II	20PBY2N1	Non- Major Elective Entrepreneur Botany	New	✓	✓	✓
III	18PBY309	Plant Systematics	Old	✓	✓	✓	III	20PBY309	Taxonomy of Angiosperms	Old	✓	✓	✓
	18PBY310	Plant Biochemistry and Biophysics	Old	✓		✓	III	20PBY310	Plant Biochemistry and Biophysics	Old Old	✓		✓
	18PBY311	Research Methodology and Biostatistics	Old	✓	✓	✓	III	20PBY311	Research Methodology	Old	✓	✓	✓
	18PBY3E3	Elective -2 Forest Botany	New	✓	✓	✓	III	20PBY3E5/ 20PBY3E6	Elective -5 Forestry and Wood science / Elective -6 Herbal Technology	Old	✓ ✓	✓ ✓	✓ ✓
	18PBY312	Core Practical- III (Plant Systematics & elective -2)	Old	✓			III	20PBY312	Laboratory course - III (for core paper 9)	Old	✓		✓
	18PBY313	Core Practical –IV (Plant Biochemistry & Plant Biotechnology)	Old	✓		✓	III	20PBY313	Laboratory course –IV (for core papers 10 and 11)	Old	✓		✓
IV	18PBY414	Molecular Biology and Plant Biotechnology	Old	✓		✓	III	20PBY314	Internship	New		✓	✓
IV	18PBY415	Bioinformatics and Cyber security	Old	✓		✓	IV	20PBY414	Plant Biotechnology and Nanobiology	Old	✓		✓
IV	17PBY416	Core Practical -V (for core papers & elective -3)	Old	✓			IV	20PBY415	Bioinformatics and Cyber Security	Old Old	✓		
IV	17PBY4P1	Project Work and Viva - Voce	Old	✓	✓	✓	IV	20PBY4CE	Online-Comprehensive examination	New	✓		
							IV	20PBY416	Laboratory course -V (for core papers 14 and 15)	Old	✓		
							IV	20PBY4P1	Core - 17 Project Work and Viva -Voce	Old	✓		✓

Signatures of all the Board members

1. Dr. T Parimelazhagan.

University Nomin
Board of Studies in Botany
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI-642001

T. Parimelazhagan
22/02/2020

2. Dr. P. Sundaramoorthy

Subject Expert
Board of Studies in Botany (PG)
Nallamuthu Gounder Mahalingam College (Autonomous)
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P. Sundaramoorthy
22/02/2020

3. Dr. R. Rathinasamy -

Academic Auditor
Board of Studies in Botany (PG)
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI-642001

R. Rathinasamy
22/2/2020

4. Dr. K.M. Aravinthan

[Industrial Expert]

K.M. Aravinthan
22/02/2020
[Industrial Expert]

5. Mr. K. Sreenivasan

[Alumni]

K. Sreenivasan
22/02/2020
[Alumni]

6. Dr. R. Rakkimuthu

Chairman
Board of Studies in Botany (PG)
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI-642001

R. Rakkimuthu
22/02/2020

7. Dr. P. Sathishkumar

[Member]

P. Sathishkumar
22/02/2020
[Member]

8. Dr. A.M. Anandakumar

[Member]

A.M. Anandakumar
22/2/2020
[Member]

Comprehensive Syllabus Revision

Department: PG and Research Department of Botany

Year of Implementation: 2020

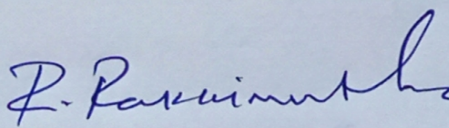
Sem	Course Code	Name of the course	old/new	% of Modification	Skill development	Entrepreneurship	Employability
I	20PBY101	Plant Diversity I	Old	25	✓	✓	-
I	20PBY102	Plant Diversity II	Old	15	✓	-	-
I	20PBY103	Applied Microbiology and Plant Pathology	Old	20	✓	✓	✓
I	20PBY104	Laboratory course-I	Old	10	✓	-	-
I	20PBY1E1	Elective -1 Ecology and Phytogeography/	Old	25	-	-	✓
I	20PBY1E2	Elective -2 Economic Botany	Old	0	-	-	✓
II	20PBY205	Plant Anatomy and Reproductive Biology	Old	5	✓	-	-
II	20PBY206	Plant physiology	Old	5	✓	-	-
II	20PBY207	Cytology, Genetics and Plant Breeding	Old	5	✓	✓	✓
II	20PBY208	Laboratory course-II	Old	0	✓	-	-
II	20PBY2E3	Elective-3 Horticulture and Landscaping /	Old	5	✓	✓	✓
II	20PBY2E4	Elective-4 IPR and Bioethics	Old	50	✓	✓	✓
II	20PBY2N1	Non- Major Elective Entrepreneurship Botany	New	100	✓	✓	✓
III	20PBY309	Taxonomy of Angiosperms	Old	10	✓	✓	✓
III	20PBY310	Plant Biochemistry and Biophysics	Old	0	✓		✓
III	20PBY311	Research Methodology	Old	5	✓	✓	✓

III	20PBY3E5	Elective -5 Forestry and Wood science	Old	0	✓	✓	✓
III	20PBY3E6	Elective -6 Herbal Technology	Old	20	✓	✓	✓
III	20PBY312	Laboratory course-III	Old	5	✓	-	✓
III	20PBY313	Laboratory course-IV	Old	5	✓	-	✓
III	20 PBY314	Internship	New	100	-	✓	✓
III	20PBY315	Extra Credit course: Plant ecology, tissue culture and Phytochemical techniques – (Advanced Learners)	New	100	✓	✓	✓
IV	20PBY414	Plant Biotechnology and Nanobiology	Old	0	✓	-	✓
IV	20PBY415	Bioinformatics and Cyber Security	Old	0	✓	-	-
IV	20PBY416	Core – 16 Laboratory course - V (for core papers 14 and 15)	Old	0	✓	-	-
IV	20PBY4P1	Core - 17 Project Work and Viva - Voce	Old	0	✓	-	✓
IV	20PBY4CE	Online-Comprehensive examination	New	100	✓	-	-
		Total		22.59			

Total percentage of syllabus change is 22.59


PRINCIPAL

Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District


4/3/2020

Dr. R. Rakkimuthu, M.Sc., Ph.D.,
Assistant Professor and Head,
PG & Research Dept. of Botany,
N.G.M. College (Autonomous)
Pollachi - 642 001.

SCHEME OF EXAMINATION

Semester	Course Code	Course Title	Class hours /Week	Exam Hrs	Maximum marks			Credits
					Internal	External	Total	
I	20PBY101	Core – 1 Plant Diversity I (Phycology, Mycology, Lichenology and Bryology)	6	3	30	70	100	4
	20PBY102	Core – 2 Plant Diversity II (Pteridophytes, Gymnosperms and Palaeobotany)	6	3	30	70	100	4
	20PBY103	Core - 3 Applied Microbiology and Plant Pathology	6	3	30	70	100	5
	20PBY104	Core - 4 Laboratory course-I (for core papers 1, 2, 3)	6	4	40	60	100	4
	20PBY1E1/ 20PBY1E2	Elective -1 Ecology and Phytogeography/ Elective -2 Economic Botany	6	3	30	70	100	4
II	20PBY205	Core - 5 PlantAnatomy and Reproductive Biology	6	3	30	70	100	4
	20PBY206	Core - 6 Plant physiology	6	3	30	70	100	4
	20PBY207	Core – 7 Cytology, Genetics and Plant Breeding	6	3	30	70	100	5
	20PBY208	Core - 8 Laboratory course-II (for core papers 5,6,7)	6	4	40	60	100	4
	20PBY2E3/ 20PBY2E4	Elective-3 Horticulture and Landscaping / Elective-4 IPR and Bioethics	5	3	30	70	100	4
	20PBY2N1	Non- Major Elective Entrepreneurship Botany	1	3	-	100	100	2
III	20PBY309	Core - 9 Taxonomy of Angiosperms	6	3	30	70	100	4
	20PBY310	Core -10 Plant Biochemistry and Biophysics	6	3	30	70	100	5
	20PBY311	Core -11 Research Methodology	6	3	30	70	100	4
	20PBY3E5/ 20PBY3E6	Elective -5 Forestry and Wood science / Elective -6 Herbal Technology	6	3	30	70	100	4
	20PBY312	Core – 12 Laboratory course - III (for core paper 9)	3	4	40	60	100	4
	20PBY313	Core – 13 Laboratory course –IV (for core papers 10 and 11)	3	4	40	60	100	4
	20 PBY314	Internship	-	-	-	-	40	2
IV	20PBY315	Extra Credit course:Plant ecology, tissue culture and Phytochemical techniques –(Advanced Learners)	-	2	-	-	-	(2)
	20PBY414	Core - 14 Plant Biotechnology and Nanobiology	6	3	30	70	100	5
	20PBY415	Core - 15 Bioinformatics and Cyber Security	6	3	30	70	100	4
	20PBY4CE	Online-Comprehensive examination	-	2	-	-	-	(2)
	20PBY416	Core – 16 Laboratory course -V (for core papers 14 and 15)	6	4	40	60	100	4
	20PBY4P1	Core - 17 Project Work and Viva -Voce	12	-	40	120	160	6
		Total					2200	90 + (4)

Programme code	M.Sc.	Programme Title : Master of Science in Botany		
Course Code: 20PBY2N1		Title : Non Major Elective - 1 Entrepreneurship Botany	Batch	2020 - 22
			Semester	II
Hrs/Week:	1		Credits	2

Course Objective

To impart mushroom cultivation, horticulture techniques and vermicompost making skills to promote entrepreneurship

Course Outcomes (CO)

K1	CO1	Apply the mushroom cultivation technique in improving the economic status of society
K2	CO2	Acquiring knowledge on Horticulture techniques and land scaping for self employment
K3	CO3	Acquire knowledge on floriculture to become
K4	CO4	Acquire knowledge on fruit and vegetable preservation
K4	CO5	Acquire knowledge on production of vermin-compost

Unit	Content	Hrs
Unit I	Introduction and scope of mushroom cultivation- Biology and cultivation of paddy straw and oyster mushroom- Nutritional value and uses –diseases- Postharvest technology- marketing, packing, storage and recipes	3
Unit II	History and importance of gardening - garden tools and implements- different types of gardens- Rockery, water garden, lawn formation and maintenance - Landscape layout gardening- nursery structure and maintenance.	3
Unit III	Vegetable carving and floral arrangement – importance of Green house – Bonsoi technique and topiary – floriculture- rose, chrysanthemum, Jasmine and cutflowers- cultivation and marketing bouquet making.	2
Unit IV	Food spoilage –causes – preservation of foods and vegetables- principles- different methods of preservatives – canning of fruits and vegetables – Mango, carrot, tomato and apple.- drying of fruits –Dates, Banana and Mango. Preparation of juices- Methods of canning, packing technology.	2
Unit V	Vermicomposting and organic farming -methods of organic farming – Vermicomposting- methods – preparation – Entrepreneurship –funding agencies for promoting green industries – Entrepreneurship development programme (EDP)- Need and importance.	2

*Self study topics

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

Text Books:

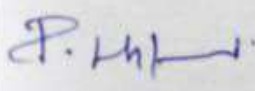
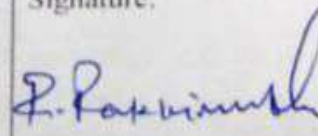
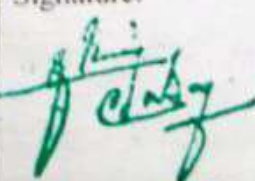
1. Hand book of mushroom cultivation, 1999, TNAU publication.
2. Tripathi, D. P. 2005. Mushroom Cultivation. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
3. Bansil. P.C. 2008. Horticulture in India. CBS Publishers and Distributors, New Delhi.
4. Steindraus, K.H. (ed.) 1983. Hand Book of Indigenous Fermented Food, Parcel Dekker Inc., New York.
5. Keshav Singh, 2014. Textbook of Vermicompost: Vermiwash and Biopesticides Astral International, New Delhi

Reference Books:

1. Alice, D., Muthusamy and Yesuraja, M. 1999. Mushroom Culture. Agricultural College, Research Institute Publications, Madurai.
2. Pathak, V. N. and Yadav, N. 1998. Mushroom Production and Processing Technology. Agrobios, Jodhpur.
3. Tewari Pankaj Kapoor, S. C. 1988. Mushroom Cultivation. Mittal Publication, New Delhi.
4. Bose, T.K., Maiti, R.G., Dhua, R.S. and Das, P. 1999. Floriculture and Landscaping. Naya Prokash, Calcutta
5. Prescott, Harley and Klein' S. 2008. Microbiology 7th edition, McGraw hill International Edition, New York.

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	M	M
CO2	H	M	M	H	M
CO3	M	M	M	M	M
CO4	M	M	M	H	H
CO5	M	L	H	L	L

H-High M-Medium L-Low

Course Designed by Name and Signature	Verified by HOD Name and Signature	Checked by CDC	Approved by COE
Name: Dr. P. Sathishkumar	Name: Dr. R. Rakkimuthu	Name: Mr. K. Srinivasan	Name: Dr. R. Muthukumaran
Signature: 	Signature: 	Signature: 	Signature: 

K. SRINIVASAN, M.C.A.
Co-ordinator
Curriculum Development Cell (CDC)
31 NGM College (Autonomous)
Pollachi - 642 001.

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Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.

Programme code	M.Sc.	Programme Title : Master of Science in Botany		
Course Code:20PBY315		Title : Faculty Research based course: Plant Ecology, tissue culture and Phytochemical techniques	Batch	2020 - 22
			Semester	III
			Credits	2

Course Objective

The primary goal of this course is to carry out research on the field of ecology, plant tissue culture and phytochemistry

Course Outcomes (CO)

K1	CO1	Students will keep in mind the ecosystem concepts and functions
K2	CO2	Gain the knowledge on basic tissue culture techniques
K3	CO3	Demonstrate the various aspects of extraction, isolation and Characterization of secondary metabolites
K4	CO4	Know the methods of screening of secondary metabolites for various biological properties

Unit	Content	Hrs
Unit I	Ecology: Principles of ecology - populations and their ecosystems, distribution, biotic communities and environmental relationships - density, frequency, abundance and relative indexes - quadrat method-Autecological studies - GCV and PCV of Plant communities - Soil analysis -Physical and chemical parameters	13
Unit II	Plant tissue culture: introduction to plant tissue culture - laboratory design and sterilization techniques - tissue culture media and preparation - concepts of tissue culture - initiation of plant tissue culture - micropropagation- callus culture - hardening methods	13
Unit III	Phytochemistry: Extraction of secondary metabolites (cold and hot) - Qualitative phytochemical analysis - alkaloids, flavonoids, glycosides, saponins, steroids, tannins, terpenoids, anthocyanins and phenols- Quantitative phytochemical analysis Alkaloids, flavonoids, glycosides, saponins, anthocyanins, and phenols.	13
Unit IV	Bioinstrumentation -AGE, Characterization of secondary metabolites and-TLC, Column chromatography, HPTLC, HPLC, LCMS/MS, GC/MS, UV, IR, ¹ H-NMR	13
Unit V	Biological studies of secondary metabolites: Estimation of antioxidant content (enzymatic and non-enzymatic) - antimicrobial activity (disc diffusion and agar well method) - cytotoxicity assay (MTT Assay)	13

Reference

1. Odum, E.P., 1975. Fundamentals of ecology, W.B. Saunders & Co., Philadelphia, USA.
2. Sharma P. D., 2005. Ecology And Environment, Rastogi Publications, India.
3. Rakkimuthu R., 2015. Title of the thesis: "In vitro propagation, phytochemical screening and biological activity of *Cocculushirsutus* (L.) Diels.
4. P. Sathishkumar, 2010. Title of the thesis: Evaluation of populations of the folklore medicinal plant, *Acacia caesia* (L.) Willd. in the Western Ghats of India for eco-morphological and phytochemical traits.

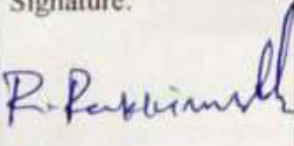
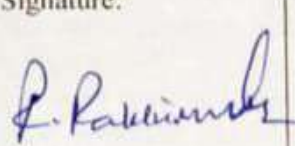
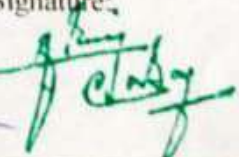
5. A.M. Anandakumar, 2010. Title of the thesis: Ecological, morphological, genetic and phytochemical variations between the populations of the medicinal plant, *Acalypha fruticosa* Forssk. Inhabiting lower Western Ghats, India.

Text Book

1. Satyanarayanan U., 2007. Biotechnology. Books and Allied (P) Ltd., Kolkata.
2. Harborne, 1998. Phytochemical methods, Springer Netherlands
3. Prasad and Prasad, 2000. Micro technique, EMKAY Publications.
4. Sadasivam, S. and Manickam, A. 2008. Biochemical Methods. New Age International Publishers, New Delhi.

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	H	H
CO2	H	H	H	H	H
CO3	H	H	H	H	H
CO4	H	H	H	H	H

H-High M-Medium L-Low

Course Designed by Name and Signature	Verified by HOD Name and Signature	Checked by CDC	Approved by COE
Name: Dr. R. Rakkimuthu Signature: 	Name: Dr. R. Rakkimuthu Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Muthukumaran Signature: 

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