TUMKUR UNIVERSITY

DEPARTMENT OF BOTANY

TUMAKURU-572103

SYLLABUS FOR I & II SEMESTER
B. Sc., BOTANY

UNDER GRADUATE (UG) PROGRAMME

FRAMED ACCORDING TO STATE EDUCATION POLICY (SEP) 2024

AUGUST 2024

PROCEEDINGS OF THE THE BOARD OF STUDIES IN BOTANY MEETING HELD ON 8TH AND 9TH AUGUST 2024 IN THE DEPARTMENT OF BOTANY, TUMKUR UNIVERSITY, TUMAKURU

The Chairman welcomed the committee members for the BOS meeting to discuss and finalize the SEP syllabus of I & II Semester, B.SC., Botany for the academic year 2024-25 and thereafter the agenda was taken up for discussion.

MINUTES OF THE BOS MEETING

1. Discussed and finalized the SEP syllabus Of I and II Semester B.Sc., Botany both (Theory &Practical) question paper pattern, blue print of question paper, Formative assessment and scheme of valuation for choice based credit system of SEP Programme.
2. The overall SEP Module for B.Sc., Botany was discussed, finalized and accepted with modification wherever necessary.
3. The Chairperson is authorized to change/ incorporate corrections as per the direction of University.

The meeting ended with a vote of thanks by the Chairman.

Professor & Chairman
Department of Botany
Tumkur University

Prof. SHALINI B.P
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09/8/2024

Proceedings of the Board of Studies in Botany meeting held on 8th and 9th August 2024 in the Department of Botany, Tumkur University, Tumakuru to discuss and finalize the syllabus of I and II Sem B.Sc., Botany (SEP) and other issues as per the agenda.

Members Present

SL.NO	NAMES	MEMBERS	SIGNATURE
1.	**DR. Shalini B.R** Professor & Chairman, Dept. of Botany, Tumkur University, Tumakuru.	Chairperson	
2.	**Chidanandaswamy B. M** Associate Professor, Dept. of Botany, Kalpataru First grade Science college, Tiptur	Vice Chairperson	
3.	**Dr. H. R. Raveesha** Professor, Dept. of Botany, Bangalore University,Bengaluru	Member	
4.	**Dr. Muralidhar. V . N** Associate Professor, Dept. of Botany, YER GFGC,Pavagada.	Member	
5.	**Dr. Poornima. D** Assistant Professor, Dept. of Biotechnology,UCST	Member	Absent
6.	**Dr. Geethanjali K.S** Assistant Professor, Dept. of Botany, Sri Siddagnaga Arts, Science and Commerce College, Tumakuru	Member	
7.	**Dr. Fathima Tu Zohara Jabeen** Assistant Professor, Dept. of Botany, Govt. First Grade College,Sira,	Member	Absent
8.	**Dr. Ramesh Babu H. N** Professor, Dept. of Botany, Sahyadri Science college, Shimoga	Member	Absent
9.	**Dr. Govindappa . M** Professor, Dept. of Botany, Davangere University, Davangere	Member	Absent

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COURSE PATTERN AND SCHEME OF EXAMINATION FOR B. Sc. AS PER SEP (2024-25 ONWARDS)															
SUBJECT: BOTANY (SUBJECT CODE: TUBOT)															
Sl. No	Semester	Course Code	Title of the Paper	Teaching hours	Hours/ Week		Examination pattern Marks / Paper				Duration of exam (hours)		Total marks / paper	Credits	
					Theory	Practical	Theory		Practical		Theory	Practical		Theory	Practical
							Max	IA	Max	IA					
1	I	BOTT-101	Microbial diversity and Phycology	56	4		80	20			3		100	4	
		BOTP-102	Microbial diversity and Phycology	56		4			40	10		3	50		2
2	II	BOTT-201	Mycology, Plant pathology, Bryophytes and Plant anatomy	56	4		80	20			3		100	4	
		BOTP-202	Mycology, Plant pathology, Bryophytes and Plant anatomy	56		4			40	10		3	50		2

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BOTANY- I SEMESTER (SEP): BOTT 101

Paper-1: MICROBIAL DIVERSITY AND PHYCOLOGY (THEORY)

Programme	**B.Sc (Botany)**
Course Title	**Paper-1: Microbial Diversity and Phycology (Theory)**
Course Code	**BOTT 101**
Total hours of Teaching for Paper	**56 Hours**
Number of Teaching Hours / week	**4 Hours**
Number of Credits	**4**
Formative Assessment	**20**
Summative Assessment	**80**

Course Outcome

1. Pupil will be able to understand the General characters, classification and Economic importance of Viruses, Bacteria, Cyanobacteria and Algae
2. Pupil will learn the Structure and Reproduction of various forms included in the syllabus
3. Pupil will acquire the basic knowledge of plant diseases mentioned in the syllabus and their management strategies

Units	Content	Teaching Hours / week
Unit-1	Brief account of Microbes from Soil, Water and Air, Brief account of Five kingdom classification (Whittaker) **Virus:** Discovery (Contributions of Iwanosky, W.M. Stanley), Status of Virus (Living and non-living characteristics), Structure, Symmetry, Classification and transmission of Virus. **TMV:** Structure and Replication of Bacteriophage (T_4): Structure and Replication, SARS-COV2: An account. Symptoms, control measure of Bunchy top of Banana, Yellow mosaic of Beans. **Mycoplasma:** General characters –little leaf of Brinjal. **Viroid and prions:** general account	**14 Hours**
Unit -2	**Bacteria:** Introduction and Discovery, Contributions of Leeuwenhoek, Louis Pasteur, Robert Koch, Structure of Bacterium and Chemistry of cell wall (gram + ve and -ve) Classification: Based on shape, flagellation. Nutrition: Autotrophs (Prototrophs, Chemotrophs and Heterotrophs) Reproduction: Binary fission, Endospore formation, Genetic Recombination (Conjugation,	**14 Hours**

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	Transduction and Transformation). Study of Rhizobium and its applications, Economic importance of Bacteria (Agriculture, Medicine and Industry) Actinomycetes: General Characteristics, Classification and its Importance. Citrus Canker, Mango leaf Spot	
Unit-3	**Cyanobacteria:** Occurrence and general, characteristics, Study of structure and reproduction in Nostoc, Scytonema and Spirulina. Economic importance of Cyanobacteria, (SCP, Biofertilizers, water bloom) **Phycology:** Occurrence, General Characteristics and Thallus organization. Classification (G.M.Smith), Pigmentation, Flagellation, Reserve food materials, Economic importance of algae as food and medicine	**14 Hours**
Unit-4	Phycology: Structure, Reproduction and life cycle of Chlamydomonas, Oedogonium, Chara, Diatom, Ectocarpus and Polyshiphonia	**14 Hours**

Pedagogy: Lectures, Demonstrations with live specimens, Charts, Permanent slides, Assignments, Seminars and field visits

Formative Assessment for Theory

Formative Assessment			
Assessment	**Components for IA**	**Marks Assigned**	**Total**
C1	Test-1	5	10
	Assignment	5	
C2	Test-2	5	10
	Seminar	5	
Total IA			**20**
Summative Assessment			
C3	Semester end Theory exam		**80**

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BOTANY- I SEMESTER (SEP): BOTT 101

Paper-1: MICROBIAL DIVERSITY AND PHYCOLOGY (THEORY)

Model Question Paper for Theory Examination

Time: 3Hrs. Max Marks: 80

Instruction: Draw neat labelled diagrams wherever necessary

Section–A

I. Answer any TEN of the following **10 X 2 =20**

1.
2.
3.
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10.
11.

Section –B

II. Answer any SIX of the following **6 X 5 =30**

1.
2.
3.
4.
5.
6.
7.

Section –C

III. Describe any THREE of the following **3X 10=30**

1.
2.
3.
4.

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BOTANY- I SEMESTER (SEP): BOTP 102

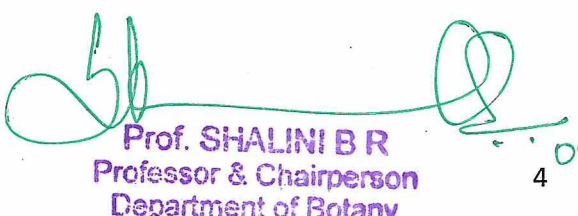
Paper-1: MICROBIAL DIVERSITY AND PHYCOLOGY (PRACTICAL)

Practical Syllabus

Sl No	Practical Syllabus	15 Units
1	Study of Microscope (Compound and Dissection), Mounting technique	1
2	Isolation of Microbes from Soil by Serial dilution method	1
3	Study of Plant diseases (Tobacco mosaic disease, Yellow Mosaic of Bean, Bunchy top of Banana and Little Leaf of Bringal, Citrus Canker and Leaf Spot of Mango)	1
4	Gram staining of Bacteria	1
5	Study of Nostoc, Scytonema, Spirulina	2
6	Study of Chlamydomonas, Oedogonium	2
7	Study of Chara, Diatom	2
8	Study of Ectocarpus	1
9	Study of Polysiphonia	2
10	Field Visit for Collection of Specimens	2

Formative Assessment for Practicals

Formative Assessment			
Assessment	**Components for IA**	**Marks**	**Total**
C_1	Test	5	**10**
C_2	Field Visit	5	
	Total IA for Practicals	**10**	
Summative Assessment			
C_3	Semester end Practical examination		**40**
	Grand Total		**50**



BOTANY- I SEMESTER (SEP): BOTP 102

Paper-1: MICROBIAL DIVERSITY AND PHYCOLOGY (PRACTICAL)

Practical Examination Model Question Paper

Time: 2hours **Max Marks: 40**

1. Identify and classify the specimens **A, B, C** with reasons 9
2. Comment on **D** 3
3. Stain the given material **E** by Gram staining, Leave the preparation for evaluation. 8
4. Identify the slides **F, G** and **H** with labelled diagram and reasons. 9
5. Prepare the temporary micro preparation of the material **I** sketch, Identify with reasons. Leave the preparation for evaluation. 7
6. Class record 5

Paper-1: MICROBIAL DIVERSITY AND PHYCOLOGY

Practical Examination Scheme of Valuation

1. **A, B, C** (A from Cyanobacteria, B & C from Algae)

   Identification and classifcation-1 mark, Reasons - 2 marks

2. **D** (Specimen from Viral / Bacterial diseases)
   Identification- 1 mark, Comment- 1 mark

3. **E** (Curd sample / Root nodules)
   Preparation-4 Marks, Procedure-3 Marks, Result-1 Mark

4. **F, G, H** (Slide F from Cyanobacteria G & H from Algae)
   Identification- 1 Mark, Labelled diagram-1 Mark, Reasons-1 Mark.

5. **I** (Cyanobacteria /Algae)
   Preparation-3 Marks, Identification, Labelled diagram-2 Marks, Reasons-2 Marks.

6. **Class Record-** 5 Marks

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Suggested readings

1. Chopra, G.L.1973.Text Book of Algae. S. Naginand Co. Jalandhar

2. Dutta, A.C.1998.Botany for Degree Students. Oxford University Press

3. Ganguli, H.C, Das,K.S. and Datta C. 1935. College Botany (Vol.II)

4. Pandey, B.P.2001.College Botany Vol.I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta. S. Chand and Company Ltd, New Delhi.

5. Pandey, B. P. 2007. Botany for Degree students: Diversity of Microbes, Cryptograms, Cell Biology and Genetics. S. Chand and Company Ltd, New Delhi.

6. Pelczar, M.J.2001. Microbiology.5thedition, Tata Mc Graw-Hill Co, New Delhi.

7. Presscott, L., Harley, J. and Klein, D. 2005. Microbiology 6thedition, Tata Mc Graw-Hill Co New Delhi

8. Sambamurthy, A.V.S.S.2006. A Text book of Plant Pathology I. K. International Pvt. Ltd., New Delhi

9. Sharma, O.P. 2006.A Text Book of Thallophyta. Mc Graw Hill Publishing Co New Delhi.

10. Singh, R. S.1984. Introduction to Principles of Plant Pathology Oxford and IBH Publication Co. Pvt. Ltd, New Delhi

11. Singh, V., Pande, P.C and Jain, D.K. 2006. A Text book of Botany Rastogi Publications Meerut

12. Smith G. M., 1955. Cryptogamic Botany: Algae, Fungi and Lichens Vol 1. McGraw-Hill Book Co New York

13. Srivastava, H. N.1998. Algae Pradeep Publications, Jalandar

14. Sundarajan, S.1998.College Microbiology. Vol 1.Vardhana Publications, Bangalore

15. Sundararajan, S. 1993. College Botany Vol I and II Himalaya Publishing Company, Bangalore.

16. Vashishta, B. R., Sinha A. K and Singh, V. P. 2008. Botany for Degree Students: Algae. S. Chand and Company Ltd, New Delhi.

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BOTANY- II SEMESTER (SEP): BOTT 201

Paper-2: MYCOLOGY, PLANT PATHOLOGY, BRYOPHYTES AND PLANT ANATOMY (THEORY)

Programme	**B.Sc (Botany)**
Course Title	**Paper-2: Mycology, Plant Pathology, Bryophytes and Plant Anatomy(Theory)**
Course Code	**BOTT 201**
Total hours of Teaching for Paper	**56 Hours**
Number of Teaching Hours / week	**4 Hours**
Number of Credits	**4**
Formative Assessment	**20**
Summative Assessment	**80**

Course Outcome

1. Pupil will acquire the knowledge of various plant diseases and their management strategies mentioned in the syllabus
2. Pupil will be able to know the general characters, classification and economic importance of Bryophytes
3. Pupil will acquire the basic knowledge of Meristem and its organization, permanent tissues, Anatomy of root, stem and leaf and secondary growth

Units	Content	Teaching Hours / week
Unit-1	**Mycology** - General Characteristics and Classification (Alexopoulus), Nutrition, Reproduction - vegetative (Fragmentation, Fission and Budding), Asexual (Zoospores, Chlamydospores, Conida and Aplanospores), Sexual Reproduction (Planogametic Copulation, Gametangial contact), Gametangial copulation, Spermatisation and Somatogamy. Structure and reproduction of Albugo,Peziza, Puccinia and Cercospora. Economic importance of Fungi (Medicine and Industry)	**14 Hours**
Unit -2	**Plant pathology:** Causal organism, Symptoms and Managememt of Late blight of Potato, kole Roga of Arecanut, Grain Smut of Sorghum,	**14 Hours**

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	Coffee Rust, Red Rot of Sugar Cane, Blast disease of Rice. **Lichens:** General account, Structure, Classification (Ascolichen and Basidiolichen) Morphological types of Lichens (Crustose, foliose and fruticose), Internal Structure of Thallus and Reproduction, Economic importance of lichen. **Mycorrhizae:** Definition, types- Ecto and Endomycorrhizae, Significance of Micorrhiza	
Unit-3	**Bryophytes:** General Charaecteristics and classification. Study of structure, reproduction and alternation of generation in Marchantia, Anthoceros and Funaria. Ecological and Economic importance of Bryophytes	**14 Hours**
Unit-4	**Histology:** Meristematic tissue - Definition, classification based on Origin, Position and Function. Theory of Shoot organization -Tunica corpus theory, Theory of Root Organization - Histogen theory **Permanent tissues:** Simple tissues - structure, types and functions of Parenchyma, Collenchyma and Sclerenchyma. Complex tissues- Xylem and Phloem, **Plant Anatomy:** Primary anatomy of Dicot and Monocot root, Stem and Leaf. Normal Secondary growth in Dicot stem. Anamolous Secondary growth in Boerhaavia stem	**14 Hours**

Pedagogy: Lectures, Demonstrations with live specimens, Charts, Permanent slides, Assignments, Seminars and field visits

Formative Assessment for Theory

Formative Assessment			
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C2	Test-2	5	10
	Seminar	5	
Total IA			**20**
Summative Assessment			
C3	Semester end Theory exam		**80**

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BOTANY- I1 SEMESTER (SEP): BOTT 201

Paper-2: MYCOLOGY, PLANT PATHOLOGY, BRYOPHYTES AND PLANT ANATOMY

(THEORY)

Model Question Paper for Theory Examination

Time: 3Hrs. Max Marks: 80

Instruction: Draw neat labelled diagrams wherever necessary

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Suggest Readings

1. Dutta, A. C. 1998. Botany for Degree Students Oxford University Press
2. Easu, K. 1979. Anatomy of seed plants. Wiley Eastern Ltd. New Delhi
3. Fahn, A. 1969. Plant Anatomy. 2nd Edition, Wiley, New York.
4. Gangulee, H. C., Kar and Kumar, A. 1982. College Botany- Vol. II. Central Book Agency, Calcutta.
5. Pandey, S. N. and Chadha, A. 2009. Plant Anatomy and Embryology. Vikas Publishing House Pvt Limited.
6. Pandey, S. N., Mishra, S. P. and Trivedi, P. S. 2007. A Textbook of Botany- Vol. II. Rastogi Publications, Meerut.
7. Singh, V., Pande, P. C. and Jain, D. K. 2006. A Textbook of Botany. Rastogi Publications, Meerut.
8. Tayal M. S. 2004. Plant Anatomy. Rastogi Publications.
9. Alexopolous, J. and Charles, W. M. 1988. Introduction to Mycology. Wiley Eastern, New Delhi.
10. Dube, H. C. 1983. An Introduction of Fungi. Vikas Publication House, New Delhi.
11. Mehrotra, R. S. and Aneja, K. R. 1990. An Introduction of Mycology. Wiley Eastern Ltd.
12. Sambamurthy, A. V. S. S. 2006. A text book of Plant Pathology. I. K. International Pvt. Ltd., New Delhi
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