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Department of Botany & Microbiology
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2. [illegible].Modern Practical Botany ,, vol. 1, [illegible], [illegible], _ 17[illegible]edn., 1999
3. [illegible].,[illegible].[illegible].,A Textbook of Practical Botany, [illegible], [illegible],2005.
4. [illegible], Practical Botany[illegible], [illegible], 2016.
5. [illegible]., Practical manual of Botany, vol.1, [illegible], [illegible], 2007.

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St. Aloysius College (Autonomous), Jabalpur-M.P.
Department of Botany & Microbiology
I year
Botany Syllabus
Paper II/Minor/ Elective
Basic Botany
THEORY

Part A- INTRODUCTION			
Program: Certificate	**Class: BSc I**	**Year: 2021**	**Session: 2021-22**
Subject: BOTANY			

1.	**Course Code**	**S1-BOTA2T**	
2.	**Course Title**	**Basic Botany (Paper-2)**	
3.	**Course Type (Core Course/Elective/Generic Elective/Vocational/…..)**	**Core Course**	
4.	**Pre-requisite (if any)**	**To study this course, a student must have had the subject botany in class 12th/certificate/diploma.**	
5.	**Course Learning Outcome (CLO)**	• This course will help the student to understand the diversity of plants and evolutionary process in plant kingdoms. • It gives an account of plant adaptations from aquatic condition to colonize terrestrial habitat. • The changes in morphological, anatomical and reproductive structures that propel plant evolution can be investigated. • The economic importance and significance of plants in nature will be understood. • They will be acquainted with locally prevalent microbial diseases of plants and humans.	
6.	**Credit Value**	**4 Credits**	
7.	**Total Marks**	**Max. Marks: 25+75**	**Min. Passing Marks: 33**

Part B- Content of the Course

Total No. of Lectures- 60 Tutorials- 0 Practical =0 (theory 4 hours per week): L-T-P:

UNIT	TOPIC	No. of Lectures
I	**1.1 History of Botany and Indian Contributions.** **1.2** Morphological Characteristics of lower and higher plants(Angiosperms). **1.3** Types of leaves, Inflorescence, Flowers and Fruits. **1.4** Structure of Plant cell and cell organelles, Prokaryotic and Eukaryotic Cells, types of Cell division. **1.5** Microscope structure and function of light microscope (magnification and resolving power), **1.6** Various types of Microscopes: Bright field, Phase Contrast, SEM and TEM.	12
II	**1. Algae** **1.1** General characteristics **1.2** Range of thallus organization, reproduction. **1.3**Types of life-cycles in algae **1.4** Role of algae in nature and its economic importance.	12

	2. Bryophytes : **2.1** General characteristics, Ecology. **2.2**Range of thallus organization, morphology, anatomy (internal and external features) and reproduction of any one Bryophyte. **2.3**Economic importance of Bryophytes	
III	**1. Pteridophytes** **1.1** General characteristics and morphology. **1.2**Stelar organization and reproduction. **1.3**Heterospory and seed habit. **1.4**Economical importance **2.Gymnosperms** **2.1** General description and their distribution. **2.2** Economical importance of Gymnosperms. **3.Paleobotany** **3.1** Indian contribution in Paleobotany. **3.2** Brief knowledge of Fossils and Geological time scale.	12
IV	**1. Fungi** **1.1** General characteristics and cell wall composition. **1.2** Mode of nutrition **1.3** Types of reproduction **1.4** Economic importance **1.5** Parasexuality and Mycorrhiza **2. Lichens:** Brief knowledge and their significance.	12
V	**1. Microbes** **1.1** Brief outline of various types of Microbes **1.2**Archaebacteria, Eubacteria, Cyanobacteria, Mycoplasma, Actinomycetes and Virus. **1.3** Beneficial and harmful roles.	12

Keywords/Tags: History of Botany, Paleobotany, Prokaryotes, Eukaryotes, Algae, Bryophyta, Pteridophyta, Gymnosperms, Fungi , Mycorrhiza, Lichens, Bacteria, Virus

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

1. Oladele Ogunseitan, Microbial Diversity: Form and Function in Prokaryotes, Wiley Blackwell, 2008.
2. Pelczar, M.J et al., Microbiology, Tata McGraw-Hill Co, New Delhi,5th edition, 2001.
3. Presscott, L. Harley, J. and Klein, D., Microbiology, Tata McGraw-Hill Co. New Delhi, 6th edn., 2005.
4. Fritsch F.E., The Structure & Reproduction of Algae, Vol. I & Vol. II., Cambridge University Press, Cambridge, U.K. 1945.
5. Smith, G.M., Cryptogamic Botany, Vol. I: Algae, Fungi, & Lichens, McGraw-Hill Book Co., New York, 1955.
6. Tan Morris, An Introduction to the Algae, Hutchinson, London, 1967.
7. Alexopoulos, C.J., Mims, C.W. and Blackwell, M., Introductory Mycology, John Wiley and

Sons, 1996.
8. Webster, J., Introduction to Fungi, Cambridge University Press2nd edn., 1999.
9. Cavers F., The inter-relationships of the Bryophyta, The New Phytologist, Indian Reprint, Vol.10, issue 1-2, p. 1-21, 1911.
10. Parihar, N.S., An Introduction to Embryophyta: Bryophyte, Vol.I, Central Book Depot, Allahabad, 1965.
11. Watson, E.V., British Mosses and Liverworts, Cambridge University Press, U.K, 1968.
12. Eames, A.J., Morphology of Vascular Plants: Lower Groups, McGraw Hill, N.Y., 1936.
13. Parihar, N.S., An Introduction to Embryophyta: Pteridophyte, Vol.II, Central Book Depot,Allahabad, 1965.
14. Sporne, K.R., The Morphology of Pteridophytes: The Structure of Ferns and Allied Plants, Hutchinson University Library, London, 1970.
15. Bierhorst, D.W., Morphology of Vascular Plants, The MacMillan Co.,N.Y. and Collier MacMillan Ltd., London, 1971.
16. Coulter, J.M. and C.J. Chamberlain, Morphology of Gymnosperms, Central Book Depot, Allahabad, 1964.
17. Sporne, K.R., The Morphology of Gymnosperms: The Structure and Evolution of Primitive seed Plants, Hutchinson University Library, London, 1971.
18. Dutta , S.C., An introduction to Gymnosperms, Kalyani Publishers, New Delhi, 1984.
19. Sharma, O.P andShivani Dixit, Gymnosperms, Pragati Prakashan, Meerut, 2015.
20. Vasishtha, P.C., Botany for Degree students: Gymnosperms, revised edn.,S. Chand and Comp. Ltd., N. Delhi, 2018.
21. Bhatnagar, S.P. and Alok Moitra, Gymnosperms, New age International (P.) Ltd., New Delhi, 2000.

Suggested equivalent online courses:

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods:
Maximum Marks : 100
Continuous Comprehensive Evaluation (CCE): 25marks University Exam (UE) 75 marks

Internal Assessment : Continuous Comprehensive Evaluation (CCE):25	**Class Test** **Assignment/Presentation** **Total**	15 10 25
External Assessment : University Exam Section: 75 **Time: 02:00 Hours**	**Section(A):** Three very short Questions (50 Words Each) **Section(B):** Four short Questions (200 Words Each) **Section(C):** Two Long Questions (500 Words Each)	**03 x 03 = 09** **04 x 09 = 36** **02 x 15 = 30** **TOTAL= 75**

Any Remarks/ Suggestions:

PRACTICAL

Part A- INTRODUCTION			
Program: Certificate	**Class: BSc I**	**Year: 2021**	**Session: 2021-22**

Subject: BOTANY PRACTICAL			
1.	**Course Code**	**S1-BOTA2P**	
2.	**Course Title**	**Basic Botany Practical (Paper-2)**	
3.	**Course Type (Core Course/Elective/Generic Elective/Vocational/…..)**	**Core Course**	
4.	**Pre-requisite (if any)**	**To study this course, a student must have had the subject of Biology/Life Science/Agriculture in class 12th.**	
5.	**Course Learning Outcome (CLO)**	• Students will learn to carry out practical work in the laboratory. • Interpreting plant morphology and anatomy of various groups of lower and higher plants. • Students will be able to identify the major groups of microorganisms.	
6.	**Credit Value**	**2 Credits**	
7.	**Total Marks**	**Max. Marks: 25+75**	**Min. Passing Marks: 33**

Part B- Content of the Course

Total No. of Lectures- 30 Tutorials- 0 Practical (2 hours per week): L-T-P:

UNIT	TOPIC	No. of Practical
I to V	1. Study of various types of leaves , inflorescence, Flowers and fruits. 2. Understanding various parts of Microscope(simple and compound microscope) 3. Study of plant cells (e.g. Onion etc.) 4. Study of permanent slides of Mitosis and meiosis 5. Study of Electron Micrographs of Cell and organelles from Internet, You -Tube. 6. Identification of various algae from specimens, slides and temporary mounts of water from nearby areas like, ***Nostoc***, ***Oscillatoria***, ***Volvox***, ***Spirogyra***, ***Oedogonium***, ***Chara***, and specimens and pictographs of marine algae like ***Ectocarpus***, ***Sargassum***, ***Polysiphonia***. 7. Study and identification of some Bryophytes like ***Riccia***, ***Marchantia***, ***Anthoceros***, ***Funaria*** and Field visit. 8. Study of some fossils (specimens and slides) 9. Study of some Pteridophytes like ***Lycopodium***, ***Sellaginella***, ***Equisetum***, ***Marselia*** and study of any one fern. 10. Section cutting of Pteridophytes and Gymnosperms: Stem, root and leaves. 11. Specimen study of Pteridophytes and Gymnosperms Cones. 12. Study of fugal structures and preparation of temporary mounts of ***Mucor, Rhizopus***, ***Asperigillus***, ***Yeast***, ***Pencillium***, ***Alternaria***, ***Albugo***, ***Helimenthosporium***.	30

	13. Permanent slides of ***Puccinia*** on host. 14. Study of various fungal plant diseases. 15. Observation of symptoms of virus and bacteria on plants. 16. Gram staining techniques. 17. Survey & identification foliage of local trees.	

Keywords/Tags: Microscope, Algae, Bryophyta, Pteridophyta, Gymnosperm, Fungi.

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

1. Bendre Ashok and Ashok Kumar, A Textbook of Practical Botany, , vol. 1, Rastogi Pub., Meerut, 1984. 2. Pandey B.PModern Practical Botany,., vol. 1, S. Chand and Co. Ltd., N. Delhi, 17th edn., 1999.
3. Singh M.P., Chaudhary S.B. and Sahu H. BA Textbook of Practical Botany, Daya Pub. House, N. Delhi, 2005.
4. Shahezad, Akil Mohd., Practical Botany, Shanti Prakashan, Gwalior, 2016.
5. Elizabeth Margaret and Angela GPractical manual of Botany, vol.I, New Age (Pub.) Ltd., Delhi, 2007.

Suggestive digital platforms web links –

Suggested equivalent online courses:

Part D- Assessment & Evaluation

Suggested Continuous evaluation methods

Internal Assessment	Marks	External Assessment	Marks
Class Interaction/quiz	10	Viva voce on Practical	15
Attendance	05	Practical Record File	10
Assignments (Chart/Model/Seminar/Rural service/ Technology Dissemination/Report of lab visit/ Survey/ Industrial Visit	10	Table work/ Experiment	50
Total	25		75

Any remark/suggestions: Practical may be adjusted accordingly by the teacher