

I. Objectives: By the end of this course the learner has to:

1. Brief the general characters, classification and value of algae.
2. Discuss the morphology, reproduction and life cycles of some algae.
3. Tell the general characters, classification and value of fungi.
4. Discuss the morphology, reproduction and life cycles of some fungi.
5. Summarize the morphology, anatomy, reproduction and economic value of lichens.

II. Course Outcomes: On completion of this course students will be able to:

1. Compile the general characteristics of algae and their significance in nature.
2. Compare and contrast the characteristics of different groups of algae.
3. Summarize the important features of fungi and their economic value.
4. Distinguish different groups of fungi based on their characteristics.
5. Elaborate the features and significance of lichens.

III. Syllabus of Theory:

Unit-1: Introduction to Algae 8Hrs.

1. General characteristics of algae: occurrence and distribution, cell structure, pigments, flagella and reserve food material.
2. F.E.Fritsch (1935) classification of algae; thallus organization in algae.
3. Life cycles in algae; ecological and economic importance of algae.

Unit-2: Biology of selected Algae 10Hrs.

1. Occurrence, structure, reproduction and life cycle of: (a) Chlorophyceae: *Spirogyra* (b) Phaeophyceae: *Ectocarpus* and (c) Rhodophyceae: *Polysiphonia*
2. Culture and cultivation of *Chlorella*

Unit-3: Introduction to Fungi 8Hrs.

1. General characteristics of fungi; Ainsworth (1973) classification.
2. Thallus organization and nutrition in fungi.
3. Reproduction in fungi (asexual and sexual); heterothallism and para-sexuality.
4. Ecological and economic importance of fungi.

Unit-4: Biology of selected Fungi 10Hrs.

1. Occurrence, structure, reproduction and life cycle of: (a) Zygomycotina: *Rhizopus* (b) Ascomycotina: *Penicillium* (c) Basidiomycotina: *Puccinia*
2. General account of Deuteromycetes; Tikka disease of Groundnut, Red rot of Sugarcane.

Unit-5: Lichens 7 Hrs.

1. Lichen: definition, phycobionts and mycobionts in lichens; morphology and internal structure of lichens; classification based on growth form, habitat and fungal partner.
2. Reproduction – vegetative, asexual and sexual methods.
3. Ecological and economic importance of lichens.

IV. Text Books:

1. Pandey, B.P. (2013) College Botany; Volume-I, S. Chand Publishing, New Delhi
2. Hait, G., K. Bhattacharya & A.K. Ghosh (2011) A Text Book of Botany; Volume-I, New Central Book Agency Pvt. Ltd., Kolkata

V. Reference Books:

1. Fritsch, F.E. (1945) The Structure & Reproduction of Algae (Vol. I & Vol. II) Cambridge University Press Cambridge, U.K.
2. Bold, H.C. & M. J. Wynne (1984) Introduction to the Algae, Prentice-Hall Inc., New Jersey
3. Robert Edward Lee (2008) Phycology, Cambridge University Press, New York
4. Van Den Hoek, C., D.G. Mann & H.M. Jahns (1996) Algae: An Introduction to Phycology. Cambridge University Press, New York.
5. Alexopoulos, C.J., C.W. Mims & M. Blackwell (2007) Introductory Mycology, Wiley & Sons, Inc., New York
6. Mehrotra, R.S. & K. R. Aneja (1990) An Introduction to Mycology. New Age International Publishers, New Delhi.
7. Kevin Kavanagh (2005) Fungi; Biology and Applications John Wiley & Sons, Ltd., West Sussex, England.
8. John Webster & R. W. S. Weber (2007) Introduction to Fungi, Cambridge University Press, New York.

VI. Suggested activities and Evaluation methods: Unit-1: Activity: Algae specimen collection from any water bodies in their locality, recording the characteristics, identification and classifying them according to Fritsch system. **Evaluation method:** Evaluating the presentation or report summarizing findings.

Unit-2: Activity: Microscopic observations and recording distinguishing characters of any six algal forms excluding the genera in the syllabus. **Evaluation method:** Conducting a Quiz or an exam/ evaluating the chart or drawings or summarized data on similarities and differences.

Unit-3: Activity: Collection of economically valuable fungal products. **Evaluation method:** Evaluating the collections made and awarding grade.

Unit-4: Activity: Group discussion/quiz/JAM on characteristics of various groups of algae. **Evaluation method:** Assessment of the performance of individual/group of students based on a rubric.

Unit-5: Activity: Microscopic observations and summarizing the salient features of the fungal genera and lichen forms in the syllabus. **Evaluation method:** Conducting a Quiz or an exam/ evaluating the chart or drawings or concise data on similarities and differences.

ST. JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS) VISAKHAPATNAM		
I SEMESTER Course-1	BOTANY	TIME: 2Hrs/week
BOTANY 1103 (2)	DIVERSITY OF THALLOPHYTES	Max.Marks:50
w.e.f. "25AM"	Practical Syllabus	

Practical Credits: 1

2 hrs/week

I. Course Outcomes: On successful completion of this practical course, student shall be able to:

1. Identify some algal and fungal species based on the structure of thalli and reproductive organs.
2. Decipher the lichens based on morphological, anatomical and reproductive features.
3. Realize the value of algal, fungal and lichen products available in markets.

II. Laboratory/field exercises: Study/ microscopic observation of vegetative, sectional/anatomical and reproductive structures of the following using temporary or permanent slides/ specimens/ mounts:

1. **Algae:** *Spirogyra*, *Ectocarpus*, *Vaucheria* and *Polysiphonia*; a centric and a pennate diatom.
2. Demonstration of culture and cultivation of *Chlorella*
3. Identification of some algal products available in local market.
4. **Fungi:** *Rhizopus*, *Penicillium* and *Puccinia*
5. Tikka disease of Groundnut and Red rot of Sugarcane
6. Identification of some fungal products available in the local market.
7. **Lichens:** Crustose, foliose and fruticose
8. Identification of some lichen products available in the local market.