



Code	Subject Title	Cr. Hrs	Semester
BOT-301	Higher Fungi	3	V
Year	Discipline		
3	Botany		

**Syllabus Outline:** Advanced features and complexity in structure of fungi.

**Course Outline:**

**Ascomycotina:** Mycelium, hyphae, cells and fungal tissues, Ascus, Sexual Reproduction, Compatibility, Non-Sexual Reproduction, Classification, Comparative study of Biology, Life Cycle Patterns, Ascospore Formation, Mode of Ascocarp Development, Types of Centra and its Significance in various Ascomycetes genera of classes Hemiascomycetes, Plectomycetes, Pyrenomycetes, Discomycetes and Loculoascomycetes, Origin of Ascomycotina.

**Basidiomycotina:** Mycelium, Hyphal Cells and Fungal Tissues, Basidium and Sexual Reproduction, Compatibility, Classification, Comparative study of Biology, Occurrence, Importance, General Life Cycle, Morphology, Development and Anatomy of Basidiocarp, Basidiospores and Spore Dispersal in various **Hymenomycetes** Orders viz.; Agaricales, Aphyllophorales and Non-Hymenomycetous Fungi of Gasteromycetes, **Teliomycetes;** Occurrence and importance as Phytopathogenic Fungi, Life Cycle Patterns, Spores and Spore Stages and Heteroecism in **Rust Fungi** (Uredinales) Biology, Economic Importance, Life Cycle, Teliospores and Teliospore Germination in Smut Fungi (Ustilaginales).

**Deuteromycotina (Fungi Imperfecti):** Their Characteristics, Telomorph, Anamorph Concept, Classification, Conidia, Conidiophores and Conidial Ontogeny, Heterokaryosis, Parasexuality and its significance, Economic Importance of Conidial Fungi,

**Lichens:** General Characters and Anatomy of Thallus.

**Module Aims:** The aim of this course is to know about the Diversity of Fungi which possess cross walls in their hyphae, Knowledge about Occurrence of Pathogenic, Mutualistic and Saprophytic Groups of these Fungi along with their Habitat and Growth Condition.

**Learning Strategies:**

1. Lectures
2. Group Discussion
3. Laboratory work
4. Seminar/ Workshop

**Learning Outcome:** The study would be able to know about different fungal groups around them and their economic importance.

**Assessment Strategies:**

1. Lecture Based Examination (Objective and Subjective)
2. Assignments
3. Class discussion
4. Quiz



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5. Tests

**Books Recommended:**

1. **Funder, S. (2010).** *Practical Mycology*. Hafner Publishing Company, Inc., New York and Kingston-upon-Thames.
  2. **Webster, J. (2009).** *Introduction to the Fungi*. (4<sup>th</sup> Ed), Cambridge University Press. U.K.
  3. **Sharp, R.F. (2006).** *Investigative Mycology*. (2<sup>nd</sup> Ed.). Heinemann Edu. Books. London. U. K.
  4. **Moore-Landecker, E. (2002).** *Fundamentals of Fungi*. Prentice Hall Inc. New Jersey, USA.
  5. **Khan, S.M. (1999).** *Laboratory Manual for Plant Pathogens*. Pakistan. Phytopathological Society, Faisalabad, Pakistan.
  6. **Alexopoulos, C.J., Mims, C.W. and Blackwell, M. (1996).** *Introductory Mycology*. (4<sup>th</sup> Ed.) John Wiley and Sons, New York.
  7. **Saleem, A. and Nasir, M.A. (1991).** *Culture Media*. Government of the Punjab, Agriculture Department.
  8. **Ahmad, S. (1952).** *Gasteromycetes of West Pakistan*. Publication of Botany Deptt. P.U. Lahore.
  9. **Ahmad, S. (1980).** *Ascomycetes of Pakistan*. Vol. **I and II**. Biological Society of Pakistan.
  10. **Ahmad, S. (1972).** *Basidiomycetes of Pakistan*. Biological Society of Pakistan.
  11. **Ahmad, S. (1980).** *A Contribution to the Agaricales of Pakistan*. Biological Society of Pakistan.
  12. **Ahmad, S., Iqbal, S.H. and Khalid, A.H. (1997).** *Fungi of Pakistan*. Sultan Ahmad Mycological Society of Pakistan.
  13. **Kendric, B. (2000).** *The Fifth Kingdom*. (3<sup>rd</sup> Ed.), Focus Publishing Co. USA.
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