**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**
**DEPARTMENT OF MICROBIOLOGY**
**COURSE CURRICULUM**

| **PART – A: Introduction** | | | |
|---|---|---|---|
| **Program: Bachelor in Life Science (Honors/ Honors with Research)** | | **Semester - VII** | **Session: 2024-25** |
| **1** | **Course Code** | **MBSE- 06 T** | |
| **2** | **Course Title** | **Mycology and Plant Pathology** | |
| **3** | **Course Type** | **Discipline Specific Elective (DSE)** | |
| **4** | **Prerequisite (If Any)** | **As per Program** | |
| **5** | **Course Learning Outcomes (CLO)** | **At the end of this course, the students will be able to –**<br>➢ classify and distinguish different types of fungi<br>➢ relate some special phenomenon in fungi<br>➢ examine the important genera of fungi<br>➢ determine applied aspects of fungi<br>➢ explain basic concepts of plants diseases and their management | |
| **6** | **Credit Value** | **03 Credits** | **Credit = 15 Hours - Learning & Observation** |
| **7** | **Total Marks** | **Max. Marks: 100** | **Minimum Passing marks: 40** |

**PART: B CONTENT OF THE COURSE**

**Total No. of Teaching-Learning Periods: 45Hours/ 45 Periods**

| **Unit** | **Topics (Course contents)** | **No. of Period** |
|---|---|---|
| **I** | **Mycology:** Characteristics, cellular and thallus organization in fungi, Classification, general features, structure, nutrition and reproduction in Phycomycetes, Ascomycetes, Basidiomycetes and Deuteromycetes; Heterothallism and Para sexuality, Physiological specialization, Sex hormones in fungi | **12** |
| **II** | **Important Fungal Genera:** General features, taxonomic status and economic importance of *Mucor, Aspergillus, Penicillium, Saccharomyces, Neurospora, Agaricus, Fusarium, Alternaria, Curvularia, Cladosporium*; General account and importance of Lichens. | **11** |
| **III** | **Fungal Biotechnology:** Role of fungi in biotechnology, Applications of fungi in food industry (Flavor, texture, fermentation, organic acids, enzymes, Mycoproteins) fungal secondary metabolites, Fungal biofertilizers, Mycotoxins, Mushroom cultivation. | **11** |
| **IV** | **Concept of plant disease:** Definition of disease, symptoms associated with plant disease, Methods of infection and dissemination of pathogens, forecasting of plant diseases and its relevance in Indian context, Defence Mechanisms in Plant, Principles and practices involved in the management of plant diseases, Koch's postulates, Contributions of eminent Indian plant pathologists. | **11** |
| **Key Words** | **Classification of fungi, Fungal biotechnology, Concept of plant disease, Mycotoxins, Mycoproteins** | |

**Name and Signature of Convener and Members of CBoS**

10.6.24 Rashmi 10.6.24 10.6.24 DR K K Patel

10/6/24 10/6/24 10/6/24 10-6-24 Dr. Nelson Xess

## Part – C: Learning Resources

**Text Books, Reference Books and Others**

**Text Books Recommended:**

1. Introductory Mycology; Alexopoulus, C.J., Mims,C.W. and Blackwel, M,. John Wiley, New York.
2. An Introduction to Mycology; Mehrotra, R.S. and K.R.Aneja. New Age International
3. Plant Pathology; Mehrotra R S and Ashok Agrawal. Tata Mc Graw Hill ,6th reprint (2006).

**Reference Books:**

1. Introduction to fungi; Webster, J. Cambridge University Press. Cambridge, U.K. (1985).
2. Morphology and Taxonomy of fungi; Bessey E.A. Vikas Publishing House Pvt. Ltd., New Delhi.

**Online Resources – e-Resources/ e-Books and e- learning portals**

- Text Book of Modern Plant Pathology
- https://yeastwonderfulworld.files.wordpress.com/2016/10/fungal-biology.pdf
- http://www.deskuenvis.nic.in/pdf/WEBSTER30521807395.pdf
- https://www.rvskvv.net/images/I-Year-II-Sem_Principles_Plantpathology_ANGRAU_20.04.2020.pdf
- https://agri-bsc.kkwagh.edu.in/uploads/department_course/PATH-121_FUNDAMENTALS_OF_PLANT_PATHOLOGY.pdf

## Part – D: Assessment and Evaluation

**Suggested Continuous Evaluation Methods:**

| | |
|---|---|
| **Maximum Marks:** | **100 Marks** |
| **Continuous Internal Assessment (CIA):** | **30 Marks** |
| **End Semester Exam (ESE):** | **70 Marks** |

| | | |
|---|---|---|
| **Continuous Internal Assessment (CIA):** **(By Course Teacher)** | Internal Test / Quiz – **(2): 20+20**<br>Assignment/ Seminar – **10**<br>Total Marks – **30** | Better marks out of the two Test/ Quiz + obtained marks in Assignment shall be considered against **30** Marks |
| **End Semester Exam (ESE):** | **Two Section – A & B**<br>Section A: **Q1.** Objective **10 X 1 = 10 Mark**; **Q2.** Short answer type – **5X4= 20 Marks**<br>Section B: Descriptive answer type qts., **1 out of 2** from each unit – **4X10 = 40 Marks** | |

**Name and Signature of Convener and Members of CBoS**

10.6.24 Roshmi 10.6.24 10.6.24 Dr. K. K. Patel Dr. Nelson Rao

10/6/24 10/6/24 10/6/24 10.6.24

**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**
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**COURSE CURRICULUM**

| **PART – A: Introduction** | | | |
|---|---|---|---|
| **Program: Bachelor in Life Science (Honors/ Honors with Research)** | | **Semester -VII** | **Session: 2024-25** |
| **1** | **Course Code** | **MBSE-06 P** | |
| **2** | **Course Title** | **Laboratory exercises in Mycology and Plant Pathology** | |
| **3** | **Course Type** | **Laboratory Course** | |
| **4** | **Prerequisite (If Any)** | **As per Program** | |
| **5** | **Course Learning Outcomes (CLO)** | **At the end of this course, the students will be able to –**<br>➢ distinguish pathogenic and non-pathogenic fungi<br>➢ demonstrate fungal preservation under laboratory conditions<br>➢ identify the life cycle of disease-causing fungi<br>➢ examine plant disease symptoms in the laboratory | |
| **6** | **Credit Value** | **1 Credit** | ***Credit = 30 Hours. Laboratory or Field learning/ Training*** |
| **7** | **Total Marks** | **Max. Marks: 50** | **Min. Passing marks: 20** |

**PART: B CONTENT OF THE COURSE**

**Total No. of Teaching-Learning Periods: 30Hours**

| **Module** | **Topics (Course contents)** | **No. of Period** |
|---|---|---|
| **Lab./ Field Training/ Experiment contents of Course** | 1. Isolation of fungi from different sources.<br>2. Preservation of pure cultures of common fungi.<br>3. Study of the vegetative and reproductive structures through temporary and permanent slides: *Mucor, Rhizopus, Saccharomyces, Aspergillus, Penicillium, Erysiphe, Agaricus, Fusarium, Cercospora, Colletotrichum, Cladosporium and Alternaria.*<br>4. Study of common plant diseases on the basis of causal agent, symptoms, epidemiology and control; White rust of crucifers; Downy mildew; Late blight of potato; Powdery mildew, Ergot of rye; Black stem rust of wheat; Loose smut of wheat; Wilt of tomato. | **30** |
| **Key Words** | **Pathogenic fungi, Disease symptoms, Pure Culture, Plant Diseases** | |

## PART – C: Learning Resources

**Text Books, Reference Books and Others**

**Text Books Recommended:**

1. Laboratory Manual of Microbiology and Biotechnology; K. R Aneja
2. Practical Microbiology; R. C. Dubey and D. K. Maheshwari.
3. Laboratory Manual in Microbiology; P. Gunasekaran.
4. Experiments in Microbiology, Plant Pathology and Biotechnology; K.R. Aneja. New Age Pub. 2017

**Online Resources:**

- https://nikolaussucher.github.io/bio-two/fungi.html
- Practical manual of Plant pathology
- Plant Pathology Concepts and Laboratory Exercises 240131_100459.pdf (tnau.ac.in)

## PART – D: Assessment and Evaluation

**Suggested Continuous Evaluation Methods:**
**Maximum Marks: 50 Marks**
**Continuous Internal Assessment (CIA): 15 Marks**
**End Semester Exam (ESE): 35 Marks**

| | | |
|---|---|---|
| **Continuous Internal Assessment (CIA):** (By Course Teacher) | **Internal Test/ Quiz – (2): 10 & 10**<br>**Assignment/ Seminar + Attendance: 05**<br>**Total Marks: 15** | Better Marks out of the two Test/ Quiz + obtained marks in Assignment shall be considered against **15** Marks |
| **End Semester Exam (ESE):** | **Laboratory/ Field Skill Performance: On spot Assessment**<br>**A. Performed the Task based on lab. work – 20 Marks**<br>**B. Spotting based on tools & technology (written) - 10 Marks**<br>**C. Viva-voce (based on principle/ technology) – 05 Marks** | **Managed by course teacher as per lab. status** |

**Name and Signature of Convener and Members of CBoS**

10/6/24 10/6/24 10.6.24 10.6.24 10.6.24 10.6.24 10.6.24 BKK Patel