

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-07 T	
2	Course Title	Agriculture and Veterinary Microbiology	
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 – <ul style="list-style-type: none"> ➤ find the multifarious roles of microorganisms in agriculture ➤ illustrate microbial damages to plants ➤ explain harmful effects fungal toxins on human ➤ examine biological control measures of plant diseases ➤ relate animal diseases due to microorganisms 	
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 (01 Hr. per period) - 45 Periods (45 Hours)

Unit	Topics (Course contents)	No. of Period
I	Agricultural Microbiology: History, Contributions of Subba Rao, Dr. M. Swaminathan in Indian agriculture. Microbes and their importance in agriculture. Bio fertilizers: classification of biofertilizers, Nitrogen fixers, Phosphate solubilizers, PGPR, biofertilizers. Phyllosphere microflora.	12
II	Plant Diseases: Fungal diseases of plants: Rusts of wheat, late blight of potato, red rot of sugarcane; Bacterial diseases of plants: Citrus canker, blight of rice; Viral diseases of plants: Leaf curl of Papaya, vein clearing of lady's finger Storage fungi: Categories of storage fungi, conditions during storage in relation to damage of seeds, harmful effects. Role of Enzymes and toxins in plant pathogenesis, Mycotoxins and their effect on human	11
III	Biological Control of plant diseases: Bacterial control of insect pests: <i>Bacillus thuringiensis</i> as bacterial insecticide; Viral control of insect pests: Nuclear polyhedrosis viruses (NPV) and cytoplasmic polyhedrosis viruses (CPV); Fungal control of insect pests: Entomopathogenic fungi: <i>Beauveria bassiana</i> , <i>Verticillium lecani</i> .	11
IV	Veterinary Microbiology: Introduction, history and scope, Sources and routes of infection, Zoonoses, Study of following animal diseases with respect to etiology, symptoms, mode of transmission, prophylaxis and control: FMD, swine flu, bird flu, Rabies, bovine tuberculosis, Marek's, Ranikhet disease, brucellosis, distemper, transgenic animals.	11
Key Words	Biofertilizers, Biopesticides, Plant diseases, Storage fungi, biological control, Animal diseases	

Name and Signature of Convener and Members of CBoS

Convener: *[Signature]* 10-6-24
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PART – A: Introduction		
Program: Bachelor in Life Science (Honors/ Honors with Research)		Semester -VII
		Session: 2024-25
1	Course Code	MBSE-07 P
2	Course Title	Lab. Course - MBSE-07
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 – > examine microbial population of soil and their role > demonstrate role of microorganisms for plant growth > identify specific plant diseases > identify specific animal diseases
6	Credit Value	1 Credit <i>Credit = 30 Hours. Laboratory or Field learning/ Training</i>
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. Enumeration of microbial population in soil- bacteria, fungi, actinomycetes. 2. Isolation of <i>Rhizobium</i> from legume root nodule and seed treatment studies. 3. Isolation of <i>Azotobacter/ Azospirillum</i> and study their effects. 4. Isolation of BGA from water/soil and its mass cultivation. 5. Isolation of PGPR from soil. 6. Study of storage fungi. 7. Symptomatic study of plant diseases and causal organism. 8. Symptomatic study of animal diseases and causal organism.	30

Key Words **Soil Microflora, Beneficial Microbes for plants, Plant diseases, Animal diseases**

PART – C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended:

- Laboratory Manual of Microbiology and Biotechnology; Aneja K. R
- Practical Microbiology, R. C. Dubey and D. K. Maheshwari.
- Laboratory Manual in Microbiology. By P. Gunasekaran.

Online Resources:

- <https://nishat2013.files.wordpress.com/2013/11/laboratory-exercises-in-microbiology-book.pdf>
- <https://books.google.co.in/books?id=Wh9OTbjcsfUC&printsec=age&q&f=false>

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 Assignment/ Seminar + Attendance: 05 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 A. Performed the Task based on lab. work – 20 Marks B. Spotting based on tools & technology (written) - 10 Marks 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

The bottom of the page contains several handwritten signatures in blue ink, each followed by a date, likely '10.6.24'. The signatures are:

- Dr. N. Nagaraj
- Dr. K. K. Patil
- Dr. S. S. S. S.
- Dr. S. S. S. S.
- Dr. S. S. S. S.
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