Paper 1a MYCOLOGY AND PLANT PATHOLOGY

M. Sc. va (Candidates admitted from the academic year 2021-2022)

Course Code 212BO1M01 Total Hours 75 Credits 4

CORE THEORY

Learning Objective	To equip the students to distinguish various fungal forms, recognize its role and potential. Gain knowledge on plant disease, effects and its management.

CO No.	Course Outcome Upon the completion of this course, students will be able to	PSO Addressed	CL
CO - 1	Have an insight on the position of Fungi in the classification of life forms, how it has evolved and to Distinguish different group of Fungi to genus level.	PSO-1	U
CO - 2	Know the distinguishing characteristic feature with reference to its structure, development, reproduction of Fungi.	PSO-1	U
CO - 3	Understand about the different associations in Fungi and to recognize the importance of Fungi in day today life and its commercial potential.	PSO-1	An
CO - 4	Give an idea about the disease, its types, agents and management, understand the mechanism of infection, interactions and effect during disease.	PSO-1	Ap
CO - 5	Recognize the inbuilt mechanism of defense in plants and role of environment in disease development.	PSO-1	U

UNIT I **HOURS 18**

A general account of fungi, their nature, distribution, structural variation, development, modes of reproduction, patterns of life cycle. A general knowledge of heterothallism and hormonal mechanism of sexual reproduction. A critical reference to the position of fungi in recent classification of the plant and other kingdoms (Seventh kingdom). Classification of fungi as given by Alexopoulous and Higher level phylogenetic classification (Hibbett).

UNIT II **HOURS 18**

Occurrence, distribution, somatic structure, reproduction and life cycle of Myxomycota (*Physarum*), Plasmodiophoromycota (*Plasmodiophora*), Oomycota (*Pythium*), Chytridiomycota (*Synchytrium*), Zygomycota (Rhizopus, *Pilobolus*), Ascomycota (*Peziza*), Basidiomycota (*Polyporus, Puccinia*) and Deuteromycota (*Colletotrichum, Aspergillus*).

UNIT III **HOURS 12**

Lichen: Diversity, types, classification, Structure & its use in environment [*Parmelia* & *Usnea].* Mycorrhizae: Types, Occurrence & its use in Agriculture and Bioremediation [*Pisolithus*, *Glomus*]. Importance of Fungi in Academy and Industries. Cultivation of Mushrooms.

UNIT IV **HOURS 15**

A General account of plant diseases caused by Mycoplasma, Bacteria, Viruses & Fungi. Causes of plant diseases, Mechanism of Infection; Inoculum potential, Penetration, Infection, Factors governing infection. Symptoms and identification of plant diseases. Host - Parasite interaction: Effect of infection on the Physiology of the Host, Role of Toxins in Pathogenesis. Effect of Environment on Pathogenesis.

UNIT V **HOURS 12**

Defense mechanism in plants. Principles of Plant Disease Management. Control ofPplant Diseases through Cultural practices, Biological control, Genetic methods, Fungicides including systemic fungicides and other protectants.

TEXT BOOKS

SHARMA, P.D. 2005. Fungi & allied organisms. Narosa Publishing House, Delhi.

SHARMA, O.P. 2006. Text book of fungi. Tata McGraw - Hill publishing company ltd, New Delhi.

ANNIE, R. AND KUMERASAN, V. 2002. Fungi Plant Pathology. Saras publishing Nagerkoil, India.

GEETHA SUMBALI. 2010. The Fungi. Narosa publishing House Pvt ltd.

MEHROTRA, R.S. AND ANEJA, K. R. 2006. An Introduction to Mycology. New age international Pvt. Ltd.

MEHROTRA, R.S. 1980. Plant Pathology. Tata McGraw - Hill Publishing Company Ltd.

SINGH. R.S. 1980. Introduction to Principles of Plant Pathology. III - Edition. Oxford. Sons, New York.

SUGGESTED READING

AINSWORTH, G.C., F.K. SPARROW, AND A.S. SUSSMAN (Eds.). 1965 - 1975. The Fungi and advanced treatise. Vol. I - IV. G.L. Academic press, New York and London.

ALEXOPOLOUS, C.J and C.W. MISRA. 1972. Introductory mycology. John Wiley and Bisby's Dictionary of the Fungi. 7th Edition. Commonwealth Mycological Institute. Kew. England.

BURNETT, J.H. 1976. Fundamentals of mycology. Edward Arnold Publishers, London. Commonwealth Mycological Institute, Kew. U.K.

COOKE, W.B. 1979. The ecology of fungi. C.R.C. Press. Inc., Florida.

KIRK PM. CANNON PF, MINTER DW AND STALPERS JA. 2011. Ainsworth and Bibsy's Dictionary of fungi. 10thEdition. CPI group International U.K.

MORRE - LANDECKER. 1972. Fundamentals of the fungi. Prince Hall Inc, New Jersey. New Delhi.

REFERENCES

AINSWORTH, G.C., F.K. SPARROW, AND A.S. SUSSMAN (Eds.). 1965 - 1975. The fungi and advanced treatise. Vol. I - IV. G.L. Academic press, New York and London.

BURNETT, J.H. 1976. Fundamentals of mycology. Edward Arnold Publishers, London. Commonwealth Mycological Institute, Kew. U.K.

COOKE, W.B. 1979. The ecology of fungi. C.R.C. Press. Inc., Florida.

WEBSTER, J and WEBER, R.W.S. 2007. Introduction to Fungi. Cambridge University Press, UK.

SUBRAMANIAN, C.V. 1983. Hyphomycetes, taxonomy and biology. Academic press.

TALBOT, P.H.B. 1971. Principles of fungal taxonomy. Macmillan Press Ltd, London.

WEBSTER, J. and WEBER, R.W.S. 2007. Introduction to Fungi. Cambridge University Press, UK.

ONLINE RESOURCES

http://qldfungi.org.au/Australasian Mycological Society

http://www.australasianmycologicalsociety.com/Australian Biological Resources Study: Fungi

https://www.environment.gov.au/science/abrs/online-resources/fungi