



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Agriculture

Generic Elective Course, VII semester

Course Code	Course Name	TEACHING & EVALUATION SCHEME						
		Theory			Practical		Credits	
		END SEM University Exam	Mid term exam	Teachers Assessment	END SEM University	Teachers Assessment	L	P
AGGE113	Beneficial Microbes	60	20	20	00	00	4	0
								4

1. Legends: L - Lecture; P – Practical

2. *Teacher Assessment shall be based on following components: Quiz / Assignment / Project / Participation in Class.

Aim of the course

To Understand the role of beneficial microorganisms in agriculture, food, human health and the environment.

Theory

Unit I

Introduction to Microbes and Their Importance: Definition of Microbes, Types of Microorganisms and their General Characteristics.

Unit II

Microbes in Agriculture: Soil Microorganisms, Rhizosphere and Plant-Microbe Interactions, Biological Pests and Diseases Management, Biofertilizers and Biopesticides:

Unit III

Microbes as Food: Mushrooms (*Agaricus* spp, *Pleurotus* spp., *Volvariella volvacea*, *Calocybe indica*, *Lentinula edodes*, *Grifola frondose*, *Morchella conica*, *Flammulina velutipes*)

Unit IV:

Microbes in Human Health and Food Industry: Microbiota and Human Health, Probiotics, Production of Antibiotics vaccines, insulin etc., Fermentation in Food Production, Beneficial Microbes in Dairy Products, Probiotics.

Unit V:

Environmental Applications of Beneficial Microbes: Bioremediation, Microbial Fuel Cells and Bioenergy, Wastewater Treatment, Composting and Biodegradation, Green Biotechnology.

References

1. Singh, S. P. (2017). *Microbial Biotechnology: Applications in Agriculture and the Environment*, Publisher: Springer.
2. Khan, Shahid N. and Singh, Abhay P. (2017). *Beneficial Microorganisms in Agriculture, Food, and the Environment: Safety Aspects* Publisher: Springer.



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3. Aneja, .K. R. (2013). Soil Microorganisms and Plant Growth. Publisher: Kalyani Publishers
4. Tripathi, D.P. (2005). Mushroom Cultivation, , Oxford & IBH Publishing Co. Pvt.Ltd., New Delhi.

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