



# Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

## Shri Vaishnav Institute of Science

### Department of Life Science

#### Generic Elective (GE) Undergraduate Courses

##### Semester VII

COURSE CODE	Category	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTUG701	GE	Industrial Applications of Microorganisms	60	20	20	0	0	3	0	0	3

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;  
**\*Teacher Assessment shall be based following components: Quiz/Assignment/ Project/ Participation in Class, given that no component shall exceed more than 10 marks.**

#### Course Objectives:

To impart knowledge about microorganisms, their cell structure, metabolism and growth.  
To develop understanding about industrial products of microbial origin and their applications in agriculture, health, food and dairy industries.  
To familiarize students with basic principles regarding treatment of industrial waste.

#### Course Outcomes:


Students will be able to recall the concepts of microbial world and its significance  
Students will develop an understanding about industrial products of microbial origin and their applications in different commercial sectors.  
Clarify application of microorganisms in the treatment of industrial waste.


#### Unit I- Introduction to the world of Microorganisms


Scope & relevance of Microbiology, types of microorganisms, distinguishing characteristics of bacteria, algae, fungi, viruses and protozoa; Microbial growth and metabolism


#### Unit II- Microbial Products in Agriculture

Biofertilizers, bioinsecticides and biopesticides, rhizosphere, mycorrhizal and nodule formation and plant diseases

  
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##### BTUG701 Industrial Applications of Microorganisms

##### Unit III- Humans and Microorganisms

Microbial diseases, role of normal flora of human body, concept of -antibiotics, vaccines and antisera.

##### Unit IV- Food and Dairy products


Fermented foods, Probiotics, Beverages, Vitamins, Mushrooms


##### Unit V – Microorganisms and Industrial waste treatment


Bioremediation, Biodeterioration, Wastewater treatment, Valorization of wastes


##### BOOKS

1. Pelczar, M. J., Reid, R. D., & Chan, E. C. (2001). Microbiology (5th Ed.). New York: McGraw-Hill.
2. Willey, J. M., Sherwood, L., Woolverton, C. J., Prescott, L. M., & Willey, J. M. (2011). Prescott's Microbiology (8th Ed, New York: McGraw-Hill.
3. Matthai, W., Berg, C. Y., & Black, J. G. (2005). Microbiology, Principles and Explorations. Boston, MA: John Wiley & Sons.
4. Cappuccino, J. G., & Welsh, C. (2016). Microbiology: a Laboratory Manual. Benjamin-Cummings Publishing Company.
5. Collins, C. H., Lyne, P. M., Grange, J. M., & Falkinham III, J. (2004). Collins and Lyne's Microbiological Methods (8th Ed.). Arnolds.
6. Tille, P. M., & Forbes, B. A., Bailey & Scott's Diagnostic Microbiology. (2018) 14th Edition

  
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