# 19BT214 MICROBIAL TECHNOLOGY

Hours Per Week :

L	Т	Р	С
3	0	0	3

Total Hours :

L	Т	Р	WA/RA	SSH/HSH	ß	SA	S	BS
45	-	-	10	50	-	8	2	2

# PREREQUISITE COURSE: Microbiology

# COURSE DESCRIPTION AND OBJECTIVES:

The objective of the course is to understand the production of commercially and therapeutically important metabolites and bioproducts like enzymes, recombinant proteins. The course also provides a fundamental knowledge of methods used in manufacturing of bioproducts.

# COURSE OUTCOMES:

Upon completion of the course, the student will be able to achieve the following outcomes:

COs	Course Outcomes	POs
1	Understand and explain the streamlining of production pro cesses for obtaining metabolites.	1,2
2	Predict the effect of nutritional and other process variables on production of bioproducts.	1,2,3,5
3	Select the required unit operations for production of bioproducts.	1,2,3
4	Develop product manufacturing process.	1,2,3,4,11

# SKILLS:

- ✓ Formulation of suitable fermentation media for commercial production of bioproducts.
- ✓ Production and purify antibodies.
- ✓ Handeling and maintanence of shake flask fermentation process.
- Apply unit operations in industrial fermentation process for production of microbial products.



Source: http:// fermentation-microbialtechnology.blogspot.com/ 2017/07/fermentationand-microbial.html

### II Year II Semester 🔳 🔳

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### zymes such as proteases, amylases, lipases and cellulases; Production of biopesticides; Produc-

#### L-9

**PRODUCTION OF MODERN BIOTECHNOLOGY PRODUCTS:** Production of recombinant proteins having therapeutic and diagnostic applications; Production of vaccines; Production of monoclonal antibodies; Products of plants and animals obtained by modern biotechnology approaches.

**INTRODUCTION TO INDUSTRIAL BIOTECHNOLOGY:** Scope of biotechnology and industrial microbiology; Process flow sheet for overview of industrial fermentation process; Industrial media and the Nutrition of industrial organisms; Criteria for the choice of raw materials used in industrial media; A

**PRODUCTION OF PRIMARY METABOLITES:** Outline of processes for the production of some commercially important organic acids such as citric acid, lactic acid and acetic acid; Amino acids such as glutamic acid, phenylalanine and aspartic acid; Production of wines and spirits; Production of bu-

PRODUCTION OF SECONDARY METABOLITES: Antibiotics- beta-lactams (penicillin), aminoglycosides

PRODUCTION OF INDUSTRIAL ENZYMES AND OTHER BIOPRODUCTS: Production of industrial en-

tion of biofertilisers; Production of biopreservatives (nisin); Production of biopolymers (xanthan gum,

(Streptomycin) macrolides (Erythromycin); Production of Vitamin B12 and steroids.

PHB); Single cell protein production and its uses.

# **TEXT BOOKS:**

UNIT-I

UNIT - II

tanol.

UNIT - III

UNIT - IV

UNIT-V

brief survey of organisms.

- 1. A.N. Glazer and H. Nikaido, "Microbial Biotechnology" (eBook), W.H. Freeman and Company, NewYork, 1995.
- S. Krupanidhi, A. Venkata Narayana, D.John Babu, "Hand book of Fermentation Technology - Instant Class Notes" (eBook), Publisher: pothi.com, ISBN: 9789352352616
- Christoph wittmann, James C.Liao, "Industrial Biotechnology: Products and Processes", WILEY-VCH, USA, 2017.

# **REFERENCE BOOKS:**

- 1. L.E. Casida Jr., "Industrial Microbiology", 1<sup>st</sup> edition, New Age International (P.) Ltd, 2007.
- S.C. Presscott and C.G. Dunn, "Industrial Microbiology", 1<sup>st</sup> edition, Agrobios (India), CBS Publication, 2004.