



## **Course Outline Form**

## **EVEN SEMESTER 2019**

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*Dear Student: Course outlines are intended to provide students with an overall plan for a course to enable them to function efficiently and effectively in the course.*

*Academic Programs  
BSc Biotechnology  
EMEA College  
Kondotty*

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## Course Outline : BT2C02 Environmental Biotechnology (2018-2019)

Name of the Stream	Science
Name of the Programme	BSc Biotechnology
Name of the Course	BT2C02 Environmental Biotechnology
Nature of the Course	Complementary Course
Semester	Second
Lecturer(s)	Dr.K.Mashoor and Ruba Badarudheen
Name of the Coordinator	Dr.K.Mashoor
Year	2018-2019
No of Credits	2
No of Contact Hours	2
Course Description	The course is an introduction to environmental biotechnology and focuses on the utilization of microbial processes in waste and water treatment, and bio remediation. Topics included are microbial energy metabolism, microbial growth kinetics and elementary chemostat theory, relevant microbiological processes, microbial ecology, approaches for studying microbial communities, and basic principles in bio remediation and biological water and waste treatment.
Course Objectives	To introduce the students to suitable methods for waste water treatment and biotechnological applications of microorganisms in pesticide degradation.
Course Outcome	Evaluate the potential for biodegradation of organic pollutants, taking microbial and physical/chemical environments, as well as the chemical structure of the compound itself, into consideration
Assessment Method	Assignments Homeworks Class Tests Unit Tests Practical Tests Term Exam Seminars Lab Experiments
Teaching Methods Used	
Textbook	Jogdand, G.N. and EBT : Basic Concepts and Application: Indushekar Thakur
References	1. Sylvania S. Mader. 2010. BIOLOGY, TENTH EDITION, McGraw-Hill Companies, Inc. 2. T. Srinivas. 2008, New Age International (P) Ltd., Publishers 3. Jogdand, G.N. 1995. EBT, Himalaya Publishing House. 4. EBT : Basic Concepts and Application: Indushekar Thakur (2006). I.K. International Publication 5. Pelczar, M.J. 1998. Microbiology: Concept & Applications, McGraw.
Internet Resources	

## Internal Exam Pattern

Items	Marks/20	Marks/15
Assignment	4	3
Test Paper(s)/Viva voce	8	6
Seminar/Presentation	4	3
Class Room Participation based on Attendance	4	3
<b>Total</b>	<b>20</b>	<b>15</b>

## External Exam Pattern

Question Type	No of Question	Marks/Question	Total Marks
Short Questions(2-3 Sentences)	15	2	Ceiling 25
Paragraph / Problem Type	8	5	Ceiling 35
Essay Type	2 out of 4	10	20
<b>Total</b>			<b>80</b>
<b>Time</b>			<b>2.5 hrs</b>

Graduate Attributes

**Name of the Course:** BT2C02 Environmental Biotechnology

### Knowledge

### Academic and Intellectual Skills

Self Learning

Collaborative Learning

### Professional Skills

Communication Skills

Team Work and Leadership

Critical and Analytical Skills

Problem Solving Skills

Research Skills

Entrepreneur Aptitude

### Personal Skills

Creative Thinking

Application Skills

### Attitude and Values

Social Responsibility

Global Citizen

## Course Schedule

Water pollution	Week 1
Physical, Chemical and Biological characteristics wastewater. Assignment	Week 2
bacteriological examination of water- Escherichia coli as indicator, Presumptive, confirmed and completed test unit test I	Week 3
Treatment of wastewater - Primary, secondary, tertiary and alternative treatment.	Week 4
Advantages of biological wastewater treatment over other methods.	Week 5
Principles and application of Aerobic and Anaerobic waste water treatment methods	Week 6
Biological wastewater treatment processes I internal exam	Week 7
Activated sludge and biological filters	Week 8
Rotating biological contactor and Fed Batch Reactor	Week 9
trickling filters and contact digesters	Week 10
Packed column reactors and Upflow anaerobic sludge blanket. II internal Exam	Week 11
stabilization ponds and Sludge treatment.	Week 12
nitrogen and phosphate removal.	Week 13
Waste treatment using aquatic plants.	Week 14
Principles and application of water purification methods: distillation, ultraviolet light and chlorination.	Week 15
Methods nitrogen and phosphorus from waste water.	Week 16
sedimentation and filtration	Week 17
methods used for the removal of nitrogen and phosphorus from waste water. Model exam	Week 18

## Contact Details

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