



Course Outline Form

ODD SEMESTER 2019

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 Microbiology
EMEA College
Kondotty*

Course Outline : Biochemistry III (2018-2019)

Name of the Stream	Science
Name of the Programme	BSc Microbiology
Name of the Course	Biochemistry III
Nature of the Course	Complementary Course
Semester	Third
Lecturer(s)	Dr. T. Krishnakumar
Name of the Coordinator	Dr. T. Krishnakumar
Year	2018-2019
No of Credits	3
No of Contact Hours	54
Course Description	The course covers the importance of enzymes in metabolism giving stress to mammalian system. This also covers the aerobic and anaerobic metabolism. The biochemical aspect of photosynthesis is also covered in this course.
Course Objectives	To understand the basics of enzyme action and their kinetics. Enzyme inhibition and regulation of enzyme mechanism is also covered. The course also enable the students to know the metabolic reactions occurring in the mammalian systems
Course Outcome	Thorough knowledge about enzyme action, its inhibition and regulation. Enable the students in acquiring the different metabolic pathways in biosystems.
Assessment Method	Assignments Homeworks Class Tests Unit Tests Practical Tests Term Exam Seminars Lab Experiments
Teaching Methods Used	Lectures Cooperative Learning Collaborative Learning LMS Class Discussion
Textbook	

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
Total	20	15

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
Total			80
Time			2.5 hrs

Name of the Course: Biochemistry III

Knowledge

Academic and Intellectual Skills

Self Learning

Collaborative Learning

Cognitive Skills

Professional Skills

Communication Skills

Team Work and Leadership

Decision Making

Critical and Analytical Skills

Problem Solving Skills

Research Skills

Entrepreneur Aptitude

Personal Skills

Lifelong Learning

Course Schedule

History of Enzymology. Classification of enzymes; six major classes of enzymes with one example each. Apo enzyme, coenzyme, holoenzyme with examples. Elementary study of the following factors affecting velocity of enzyme-catalysed reactions – effect of substrate concentration, enzyme concentration, temperature and pH; Michaelis Menten equation (without derivation), Km and its significance The Lineweaver- Burk plot.	Week 1
Definition of enzyme specificity – an example each for group specificity, optical specificity, geometrical specificity and cofactor specificity of enzymes from the pathways to be studied this year.	Week 2
Explanation of competitive and non competitive type of inhibition, their destination on the basis of double reciprocal plot, brief study of allosteric inhibition with an example. Brief study of the activation of zymogen form of enzymes. Brief study of allosteric activation with example.	Week 3
Industrial applications of enzymes (preliminary study).	Week 4
Introduction to metabolism. Digestion of carbohydrates and absorption. Reactions of glycolytic sequences with the names of enzymes and intermediates (without structures).Fate of pyruvate in alcoholic fermentation. Outline study of glycogenesis and glycogenolysis. Role of cyclic AMP and hormones in glycogen metabolism. Gluconeogenesis and pentose phosphate pathway (only outlines without structures of intermediates).	Week 5
Decarboxylation of pyruvate – reactions of citric acid cycle (without structures of intermediates) only outline expected. Calculation of energy yield (as ATP) of aerobic and anaerobic oxidation of carbohydrates. The mitochondria – arrangement of electron carriers in the electron transport chain. Substrate level phosphorylation – site of ATP formation in the chain (Mechanism of ATP formation not expected). High energy compounds with an examples. Phosphate potential, principle of reversible reaction.	Week 6
	Week 7
	Week 8
	Week 9
	Week 10
	Week 11
	Week 12
	Week 13
	Week 14
	Week 15
Outline of cyclic and non cyclic photophosphorylation- outline study (without structures) of the path of carbon in the dark reaction (Calvin cycle), glyoxylate cycle, significance.	Week 16
	Week 17
	Week 18

Contact Details

Email	krishemea@gmail.com
Website	www.emeacollege.ac.in
