Course Outline Form

EVEN 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 Biotechnology
EMEA College
Kondotty

Course Outline : BTY6B15. RECOMBINANT DNA TECHNOLOGY AND BIOINFORMATICS (2018-2019)

Name of the Stream	Science
Name of the Programme	BSc Biotechnology
Name of the Course	BTY6B15. RECOMBINANT DNA TECHNOLOGY AND BIOINFORMATICS
Nature of the Course	Core Course
Semester	Sixth
Lecturer(s)	Dr. K.MASHHOOR
Name of the Coordinator	Dr. K.MASHHOOR
Year	2018-2019
No of Credits	4
No of Contact Hours	3
Course Description	This course introduce students about the concept of gene cloning,DNA sequencing,and application of recombinant DNA technology
Course Objectives	1. Helps the student to understand the tools and steps in Genetic engineering. 2. Trains students on the strategy employed in genetic engineering. 3. Helps the student understand the application in genetic engineering and the social implications and the ethics to be followed.
Course Outcome	The students will be able to 1. Learn the basics of genetic engineering 2. Understand the basic tools employed in genetic engineering. 3. Understand the use of cloning vectors in genetic engineering. 4. Gain knowledge about polymerase chain reaction and its variations and applications. 5. Learn the strategy of gene cloning. 6. Understand the implications of ethical issues pertaining to genetic engineering
Assessment Method	Assignments Homeworks Class Tests Unit Tests Practical Tests Term Exam Seminars Lab Experiments
Teaching Methods Used	
Textbook	1. Watson, J.D Gitman, M, Witkowsk, J. and Foller, M. 1992, Recombinant DNA, II edition, Scientific American books, W.H. Freeman and Co, New York. 2. Old. R.W and Primerose, S.B. 1994. Principles of gene manipulation 0 An introduction to Genetic engineering. 3. T.A. Brown. Gene cloning and DNA Analysis an Introduction 4. - James D. Watson, Michael Gilman. Recombinant DNA

References	1. Watson, J.D Gitman, M, Witkowsk, J. and Foller, M. 1992, Recombinant DNA, II edition, Scientific American books, W.H. Freeman and Co, New York. 2. Old. R.W and Primerose, S.B. 1994. Principles of gene manipulation 0 An introduction to Genetic engineering. 3. T.A. Brown. Gene cloning and DNA Analysis an Introduction 4. - James D. Watson, Michael Gilman. Recombinant DNA 5. T.K. Altwood, D.J. Parry-Smith and S. Phukan. Introduction to Bioinformatics. 6. David. W. Mount. Bioinformatics: Sequence and Genome Analysis
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
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**

Graduate Attributes	**Name of the Course:** BTY6B15. RECOMBINANT DNA TECHNOLOGY AND BIOINFORMATICS **Knowledge** **Academic and Intellectual Skills** Self Learning Collaborative Learning **Professional Skills** Decision Making IT Skills Problem Solving Skills Research Skills Entrepreneur Aptitude **Personal Skills** Application Skills Life Skills **Attitude and Values** Social Responsibility Ethical Commitment

Course Schedule

Introduction to gene cloning,	Week 1
enzymes and basic tools involved in gene cloning.	Week 2
DNA sequencing methods	Week 3
Northern hybridization techniques	Week 4
southern blotting, western blotting,assignment	Week 5
In Situ hybridiztion	Week 6
PCR (variation RtPCR)	Week 7
DNA finger printing, unit test	Week 8
RFLP, RAPD, AFLP and STR analysis.	Week 9

Isolation and purification of total cell DNA. first internal test	Week 10
Cloning vectors in prokaryotes and eukaryotes (pBr 322, puc 18, M13)	Week 11
cosmids, Phagemids, phasmids, yeast vectors	Week 12
Animal viral vectors - SV40, Plant viral vectors - CaMV, Agrobacterium – Tiplasmid.	Week 13
Introduction of recombinant DNA into living cells an overview.	Week 14
Selection and screening of recombinant clones. second internals	Week 15
Application of r-DNA technology - production of recombinant proteins, vaccines, Transgenic plants. (Insect resistance, disease resistance), Transgenic animals - molecular pharming.	Week 16
Introduction to bioinformatics, pattern recognition and prediction, biological databases, primary and secondary sequence databases, composite protein sequence databases	Week 17
pair wise alignment technique; database searching NCBI, EMB, FASTA, BLAST BITS etc. algorithms and programmes, comparison of two sequences, global and local alignment – multiple sequence alignment Model exam	Week 18

Contact Details

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