



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 Biochemistry
EMEA College
Kondotty*

Course Outline : Recombinant DNA Technology (2019-2020)

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|-------------------------|---|
| Name of the Stream | Science |
| Name of the Programme | BSc Biochemistry |
| Name of the Course | Recombinant DNA Technology |
| Nature of the Course | Core Course |
| Semester | Sixth |
| Lecturer(s) | RAJESH.T.K |
| Name of the Coordinator | |
| Year | 2019-2020 |
| No of Credits | 3 |
| No of Contact Hours | 4 |
| Course Description | Recombinant DNA (rDNA) molecules are DNA molecules formed by laboratory methods of genetic recombination (such as molecular cloning) to bring together genetic material from multiple sources, creating sequences that would not otherwise be found in the genome |
| Course Objectives | 1. TO HAVE BASICS ON RECOMBINANT TECHNOLOGY 2. TO AWARE ABOUT BIOETHICS AND TRANSGENIC ORGANISMS |
| Course Outcome | After completion of this course students will know about the basics of recombinant technology and transgenic plants and animals |
| Assessment Method | |
| Teaching Methods Used | |
| Textbook | |
| References | 1. Biotechnology: U Sathyanarayana. Books and Allied (p) Ltd. 2. Recombinant DNA: A Short Course. James D. Watson, Gilman Michael, Jan Witkowski, Mark Zoller. Freeman, W. H. & Company. 3. Biotechnology: John E Smith. Cambridge University Press 4. Genetic Engineering: Principles and Practice. Sandhya Mitra. Laxmi Publications. 5. Biotechnology: B D Singh. Kalyani Publishers. |
| 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: Recombinant DNA Technology

Course Schedule

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|---|---------|
| <p>Recombinant DNA Technology: Basic principles of recombinant DNA technology, restriction endonuclease, Cloning vectors: plasmid vectors, phage vectors, cosmids, high capacity cloning vectors- bacterial artificial chromosome (BAC),</p> | Week 1 |
| | Week 2 |
| | Week 3 |
| <p>Recombinant DNA Technology: phage P, vector PACs (P1 artificial chromosomes), Yeast artificial chromosome (YAC) and human artificial chromosomes.</p> | Week 4 |
| | Week 5 |
| <p>Gene transfer methods: electroporation, lipofection, cloning strategies, cDNA and genomic DNA libraries, cDNA cloning and cloning from genomic DNA.</p> | Week 6 |
| | Week 7 |
| <p>Applications of recombinant DNA technology: production of therapeutic proteins, genetically modifies organisms (GMO), safety issues, ethical and social issues in recombinant DNA technology.</p> | Week 8 |
| | Week 9 |
| <p>Transgenesis in plant technology: plant tissue culture methods, methods of gene transfer to plants, Agrobacterium mediated transformation. Direct DNA transfer, protoplast transformation, plant virus as vectors.</p> | Week 10 |
| | Week 11 |
| | Week 12 |
| <p>Control of transgene expression in plants, Developing plant species for insect resistance, herbicide resistance, stress and senescence tolerance, modification of production traits (starch oil, vitamin etc). Transgenic plants as bioreactors, vaccine and antibody production</p> | Week 13 |
| | Week 14 |
| | Week 15 |
| <p>Animal cell and tissue cultures, cell lines, stem cell, gene transfer methods in animal cells, transgenic animal- transgenic mice, cattle, sheep. Transgenic and knock out animals as models for human disease.</p> | Week 16 |
| | Week 17 |
| | Week 18 |

Contact Details

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