

**SIR C R REDDY COLLEGE FOR WOMEN**  
(Affiliated to Adikavi Nannaya University, Rajamahendravaram)  
Vatluru(post), Eluru, Eluru Dist.

**DEPARTMENT OF BIOTECHNOLOGY**

**Semester-I-Biomolecules & Analytical techniques**

**Students after successful completion of the course will be able to**

Co1:- Appraise the significance & structural aspects of complex biomolecules like carbohydrates, proteins and lipids.

Co2:- Understand the structures and roles of nucleic acids and vitamins.

Co3:- To understand and apply various principles of different analytical techniques and separation techniques.

Co4:- To understand the various principles and identification of biological macromolecules basing on physico-chemical characters.

Co5:- To apply various basic statistical methods to macro molecules.

**Practicals:-**

**On successful completion of the practical course, student shall be able to**

- To understand and analyze characterization of macro molecules basing on qualitative and quantitative instrumentation techniques.

- To estimate and evaluate the biological macromolecules by using separation techniques

- To apply basic statistical methods to understand the prevalence of biomolecules.

**Semester-II**  
**Microbiology, Cell & Molecular Biology**

**Students after successful completion of the course will be able to**

Co1:- Explain the history and scope of Microbiology and describe various components of Prokaryotic cell with diagram.

Co2:- Understand the concept of species and strain and classify the microorganisms and summarize the diseases.

Co3:- Describe the stages of cell cycle, cell division with diagrams and explain about structures of cell organelles.

Co4:- Describe the process of replication, transcription and summarize the concept of gene regulation.

Co5:- Describe the process of Translation and understand post-translational modifications.

**Practicals:-**

**On successful completion of the practical course, student shall be able to**

- To understand the principles and handling of microbial equipment, glassware; preparation procedures of microbiological media and sterilization techniques.
- To learn various staining techniques.
- To experiment and observe different stages of mitosis & meiosis.
- To understand about the isolation of genetic elements.

**Semester-III**  
**Immunology & rDNA technology**

**Students after successful completion of the course will be able to**

Co1:- Classify and explain the types of immunity.

Co2:- Summarize the preparation of Vaccines and Monoclonal antibodies and explain the principle and applications of immunological techniques.

Co3:- Enumerate the types of blotting techniques and discriminate the types of enzymes and vectors used in rDNA technology.

Co4:- Apply the principles of rDNA technology in various fields.

Co5:- Classify the types of databases.

**Practicals:-**

**On successful completion of the practical course, student shall be able to**

-To learn and understand the principles of blood grouping & widal tests.

- To enhance knowledge of immunochemical techniques.

- To understand about the isolation of genetic elements.

**Semester-IV**  
**Plant & Animal Biotechnology**

**Students after successful completion of the course will be able to**

Co1:- Write about types of plant tissue culture media and basic requirements of plant and tissue culture laboratory.

Co2:- Summarize the concept of transgenic plants and apply the principles of molecular markers.

Co3:- Write about types of animal tissue culture media and transfection methods.

Co4:- Summarize the concept of transgenic animals and demonstrate about invitro fertilization technique.

Co5:- Interpret about IPL, Copyrights and trademarks.

**Practicals:-**

**On successful completion of the practical course, student shall be able to**

- To learn the procedures for the preparation of plant & animal culture media.
- To understand and apply the process of callus induction.
- To establish plant and animal cell cultures.

**Semester-IV**  
**Environmental & Industrial Biotechnology**

**Students after successful completion of the course will be able to**

Co1:- Enumerate pollution types and their control methods.

Co2:- Apply the knowledge of biological methods of cleaning the environment.

Co3:- Demonstrate the production of Biofuels.

Co4:- Summarize various concepts of applications of Biotechnology.

Co5:- Describe the production of various products by employing micro organisms.

**Practicals:-**

**On successful completion of the practical course, student shall be able to**

- To detect coliforms for the determination of potable water.
- To determine DO, COD, BOD, total dissolved solids of water.
- To isolate industrially important microorganisms from soil.
- To apply the knowledge of alcohol & citric acid productions
- To estimate citric acid by titrimetry.

## **Semester-V Organic Farming**

**Students after successful completion of the course will be able to**

Co1:- Understand the soil profile and nutrients in soil.

Co2:- Appreciate the importance of organic manure and bio fertilizers.

Co3:-Understand the concept and importance of Organic farming.

Co4:- Produce vermi compost, farmyard manure from bio waste.

Co5:- Acquire skill on isolation and maintenance of bio fertilizers.

### **Practicals:-**

**On successful completion of the practical course, student shall be able to**

- Estimate NPK levels in the soil.
- Demonstrate the collection and processing of raw material.
- Develop skill of vermi compost production.
- Learn the technique of establishing organic farms.
- Equip with the skill of preparation of microbial media.

**Semester-V**  
**Biofertilizers & Biopesticides**

**Students after successful completion of the course will be able to**

Co1:- Understand the importance of bio fertilizers for sustainable agriculture.

Co2:- Appreciate the role of VAM in phosphate solubilization.

Co3:- Define bio pesticide and its nature.

Co4:-Produce bio fertilizers and bio pesticides on large scale.

Co5:-Able to prepare inoculums for field application.

**Practicals:-**

**On successful completion of the practical course, student shall be able to**

-Prepare bacterial and fungal media.

-Isolate and identify symbiotic and free living nitrogen fixing bacteria.

-Isolate fungal bio control agents from soil samples.

-Develop skill for large scale production of micro organisms.