



Annai College of Arts & Science

Quality Education for Today & Tomorrow

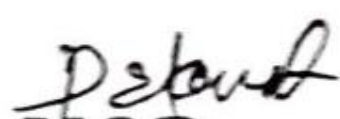
Kovilacheri, Kumbakonam, 612 503. Ph: 0435 2453007

Accredited by NAAC with 'B' Grade & Recognized by UGC under Section 2(F) & 12(B)

Affiliated to Bharathidasan University, Tiruchirappalli. E-Mail: acadm@annai.ac.in

DEPARTMENT OF BIOTECHNOLOGY

Attainment of Programme outcome,
Programme Specific outcome with
Course outcome


HOD

HEAD,
Department of Biotechnology,
Annai College of Arts and Science,
Kovilacheri, Kumbakonam - 612 503


IQAC

Coordinator

IQAC Co-ordinator,
Annai College of Arts and Science,
Kovilacheri, Kumbakonam-612 503


PRINCIPAL

Principal
Annai College of Arts & Science
Kovilacheri, Kumbakonam-612 503



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Mapping of Programme outcome, Programme Specific outcome with Course outcome

UG Programme outcome:

- PO1:** Students develop global competencies in the area of basic and applied biological sciences.
- PO2:** Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures.
- PO3:** Know various Culture media and their applications are also understand various physical and chemical means of sterilization.
- PO4:** Biotechnology teaches about biological sciences with engineering technologies that manipulate living organisms and biological systems to produce products that advance healthcare, medicine, agriculture, food, Pharmaceuticals and environment control.
- PO5:** Master aseptic techniques are able to perform routine culture handling tasks safely and effectively.
- PO6:** Understand the microbial transport systems, the modes and mechanisms of energy conservation in microbial metabolism – Autotrophy and heterotrophy.
- PO7:** Discern the replication strategies of representative viruses from the seven Baltimore classes.
- PO8:** 'To enrich students' knowledge and train them in various branches of Biotechnology such as genetics, molecular biology, biochemistry, immunology, fermentation technology, environmental biotechnology and tissue culture techniques.
- PO9:** To groom the students to meet futuristic challenges and national interests.



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UG Programme Specific outcome:

PSO1: Emphasis on the application of recombinant DNA technology to animals, plants and microbial organisms. to gain knowledge about the application of various types of Microscopy to classify and explain the structure and general characteristics of microorganisms.

PSO2: To explain the microbial degradation of pesticides, bioremediation and biofertilizers.

PSO3: The course describes the use of genetically engineered products to solve environmental Problems and cure human diseases.

PSO4: Understand the applications of biotechnology and advances in the different areas like Medical, microbial, environmental, bioremediation, agricultural, plant, animal and forensic sciences. Learn the concept and applications of monoclonal antibody technology

PSO5: Learn how to use mammalian cells for the production of pharmaceutical products.

PSO6: Explain the general principles of generating transgenic plants, animals and microbes.

PSO7: Students will possess hands-on technical skills necessary to support biotechnology

PSO8: Research activity. Have hands-on experience of basic techniques like agarose and poly acryl amide gel

PSO9: A general course emphasizing distribution, morphology and physiology of microorganisms in addition to skills in aseptic procedures, isolation and identification. This course also includes sophomore level material covering immunology, virology, and epidemiology and DNA technology.



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DEPARTMENT OF BIOTECHNOLOGY

CELL BIOLOGY 16SCCBT1:

Course outcome	Programme outcome									Programme Specific outcome								
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1: How you demonstrate membrane transport?	✓																	
CO2: Explain the nature of polymers and their integrity in cell structure.		✓											✓					
CO3: How do you explain that external signals are amplified within the cells?		✓																
CO4: Explain the importance of cellular Lipid recycling?			✓											✓				
CO5: How the Cells are Communicating?		✓																
CO6: Discuss the complexity of cell specialization in everyday life.		✓																
CO7: Describe the structure and function of ribosomes.																✓		
CO8: Reveal nuclear organization.		✓																
CO9: Brief cytoskeleton and cell appendages.					✓									✓				

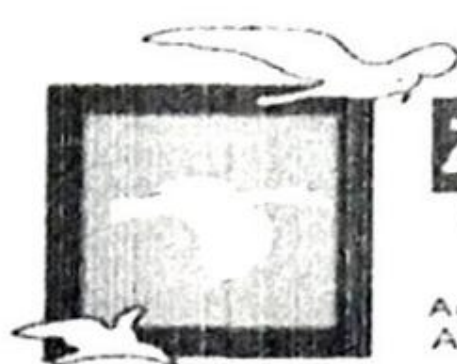


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DEPARTMENT OF BIOTECHNOLOGY

BASIC MICROBIOLOGY 16SACMB1:

Course outcome	Programme outcome									Programme Specific outcome								
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1: Learning the morphology and ultra structure of microorganisms.	✓																	
CO2: Understanding the concept of classification and contributions of microbiologist.			✓											✓				
CO3: Exploring the various types of microscopes and its applications.		✓											✓					
CO4: List out the applications of microbial metabolism in industrial applications.		✓																
CO5: Understand the Ultra structure of prokaryotic and eukaryotic cells.			✓															



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DEPARTMENT OF BIOTECHNOLOGY

MOLECULAR BIOLOGY 16SCCBT2:

Course outcome	Programme outcome									Programme Specific outcome								
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1: Explain the biology has a basis in chemistry, physics and mathematics.		✓																
CO2: How do you correlate biochemistry and genetics with the function of cell?					✓													
CO3: How the chemical and molecular processes that occur in and between cells-explain.					✓													
CO4: How do you explain the advancement in rDNA technology?					✓								✓					
CO5: How do you perform the molecular and cell based experiment either to confirm or reject the hypotheses.						✓												
CO6: How do you explain the role of cell adhesion molecules?						✓							✓					



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DEPARTMENT OF BIOTECHNOLOGY

APPLIED MICROBIOLOGY/16SACMB2 :

Course outcome	Programme outcome									Programme Specific outcome								
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1: Explain the classification of Microorganisms, prokaryotes, and eukaryotes.	✓													✓				
CO2: Describe the morphology and general properties of bacteria, actinobacteria, cyanobacteria.	✓																	
CO3: Describe the structure and nutrition, life cycle of yeast and mold.		✓										✓						
CO4: Narrates the morphology, cultivation, life cycle of protozoa.					✓								✓					
CO5: Explain the symbiotic microorganisms.						✓												
CO6: Narrates the cultivable and uncultivable microorganisms.						✓												

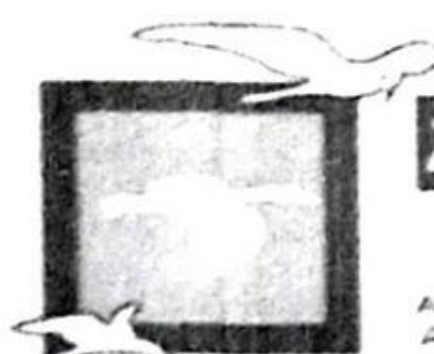


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DEPARTMENT OF BIOTECHNOLOGY

RDNA TECHNOLOGY/16SCCBT3:

Course outcome	Programme outcome									Programme Specific outcome								
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1: Explains Restriction endonucleases Type I, II & III and DNA Manipulative Enzymes.	✓												✓					
CO2: Classify cloning vectors.				✓														
CO3: Pinpoint various cloning methods.					✓													
CO4: Explain PCR and its types.						✓								✓				
CO5: Discuss PCR in molecular diagnostics.					✓													
CO6: Write down PCR for mutagenesis.					✓									✓				
CO7: Identify methods of DNA sequencing.							✓											
CO8: Explain gene silencing and gene therapy.								✓								✓		



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DEPARTMENT OF BIOTECHNOLOGY

BIOMOLECULES/16SACBT1:

Course outcome	Programme outcome										Programme Specific outcome								
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1: To list out the structure and functions of biological macromolecules.		✓												✓					
CO2: To learn the metabolism and integration of biomolecules that takes place in human system.	✓													✓					
CO3: Integrate the various aspects of metabolism and their regulatory pathways.		✓												✓					
CO4: Students can understand the fundamental energetic of biochemical processes.		✓														✓			
CO5: To elaborate the relation between biochemical defects and metabolic disorders.		✓														✓			
CO6: To enumerate the organization of signaling pathways.		✓																	
CO7: Overall, To grasp the processes of metabolic.		✓																	



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DEPARTMENT OF BIOTECHNOLOGY

IMMUNOLOGY/ 16SCCBT4:

Course outcome	Programme outcome									Programme Specific outcome								
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1: How you identify the component of the immune system.	✓											✓						
CO2: Explain the cross reactivity and cross linking - correlate with antigen-antibody interaction.									✓				✓					
CO3: Discuss-MHC and peptide interaction is direct kill or recruitment of killers.								✓					✓					
CO4: Processing of antigen by endogenous/ exogenous pathway.					✓													
CO5: How you can describe the role of co-receptor and adhesion molecule in immune response.							✓							✓				
CO6: Integrate knowledge of each subsystem to see their contribution to the functioning of higher-level systems in health and disease.				✓										✓				



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DEPARTMENT OF BIOTECHNOLOGY

APPLIED BIOCHEMISTRY/16SACBT2:

Course outcome	Programme outcome									Programme Specific outcome								
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1: To list out the structure and functions of biological macromolecules.	✓												✓					
CO2: Describe classification and properties of enzymes.		✓																
CO3: To elaborate the relation between biochemical defects and metabolic disorders.			✓										✓					
CO4: To elaborate the relation between biochemical defects and metabolic disorders.		✓																
CO5: To enumerate the organization of signaling pathways.						✓								✓				
CO6: To learn the metabolism and integration of biomolecules that takes place in human system.																		

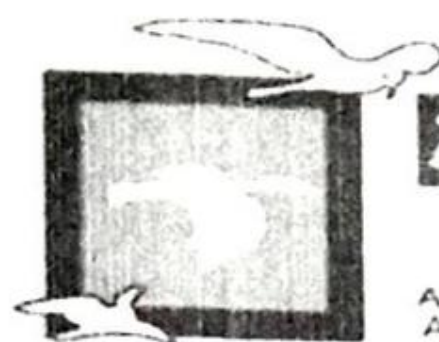


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DEPARTMENT OF BIOTECHNOLOGY

PLANT BIOTECHNOLOGY/ 16SCCBT5:

Course outcome	Programme outcome									Programme Specific outcome								
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1: MS medium preparation and sterilization	✓																	
CO2: Explains basic techniques in plant tissue culture		✓																
CO3: Narrate Organogenesis and Somatic embryogenesis						✓											✓	
CO4: Describes Practical applications of somatic embryogenesis and cryopreservation					✓													
CO5: Details of Micro propagation and production microbe free plants.					✓									✓				
CO6: Basics of Androgenesis, development of Androgenic haploids and Haploid application in plant breeding.							✓							✓				
CO7: In vitro seed germination.						✓												
CO8: Adventitious shoot production.						✓								✓				
CO9: Callus induction and Cell suspension culture.					✓													
CO10: Agrobacterium mediated genetic transformation							✓											

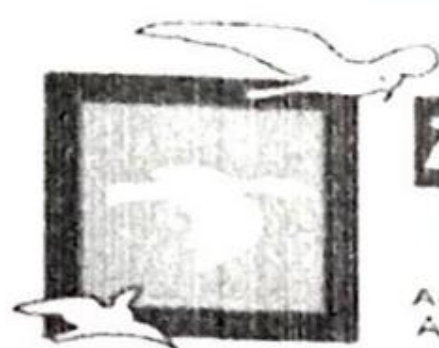


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ANIMAL BIOTECHNOLOGY/ 16SCCBT6:

Course outcome	Programme outcome									Programme Specific outcome								
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1: Discuss about different cell culture and its storage.	✓													✓				
CO2: Discuss about transgenic animals.		✓																
CO3: Give the importance of stem cell biology																		
CO4: Elaborate hybridization technique.		✓												✓				
CO5: Detail note on viral vectors.		✓																
CO6: Write down the application of gene therapy.																		
CO7: Discuss about embryonic stem cell differentiation.		✓																



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BIOSATISTIC AND BIOSAFETY/ 16SCCBT7:

Course outcome	Programme outcome									Programme Specific outcome								
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1: Understand biological databases and how to retrieve the information from the Databases	✓																	
CO2: Learn about algorithms and matrices in global and local alignment		✓												✓				
CO3: Construct phylogenic tree using multiple sequence alignment				✓										✓		✓		
CO4: Knowledge about virtual screening. Molecular modelling and dynamics						✓												
CO5: Apply basic biostatistics.					✓													
CO6: Know bioethics concepts in animal and modern biotechnology.					✓											✓		

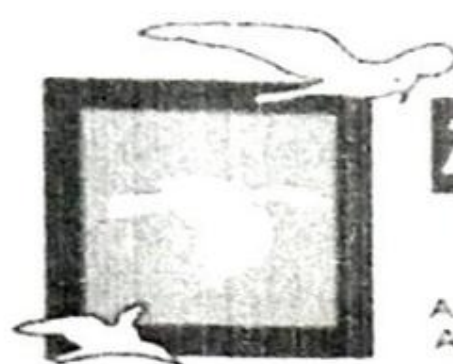


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MICROBIAL BIOTECHNOLOGY/ 16SCCBT8:

Course outcome	Programme outcome									Programme Specific outcome								
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1: Explain in detail about industrial microbes.	✓																	
CO2: Describe the process of screening commercial microbes.		✓												✓				
CO3: Elaborate anaerobic fermentation process.			✓												✓			
CO4: Discuss the fermentation of dairy products.			✓															
CO5: Discuss about microbial leaching.				✓														
CO6: Elaborate recombinant microbial products..					✓												✓	

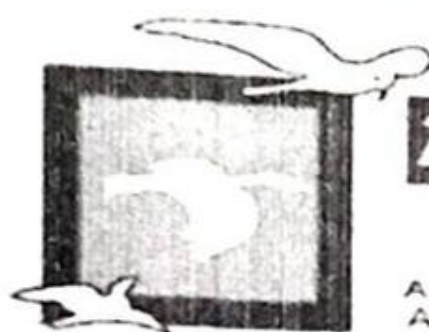


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IPR AND BIOETHICS/ 16SCCBT9:

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	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PS O1	PSO2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1: Pinpoint national and international legal trademark in IPR.	✓																	
CO2: Identify national and international agencies in IPR.		✓												✓				
CO3: Know Budapest treaty and culture collection.					✓													
CO4: The students once they complete their academic projects, they get awareness of acquiring the patent and copyright for their innovative works.						✓									✓			
CO5: They also get the knowledge of plagiarism in their innovations which can be questioned legally.							✓											

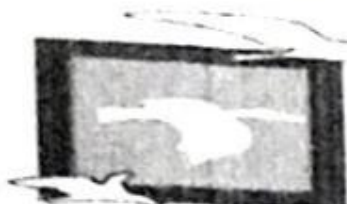


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FOOD BIOTECHNOLOGY/ 16SMBEBT2:

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	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1: Better understanding of cause of microbes in food spoilage.	✓																	
CO2: Gets information regarding food preservation?		✓										✓						
CO3: Apply regulatory techniques in real time scenarios.				✓														
CO4: Acquire an understanding in industrial operations in food, role of microbes.					✓							✓						



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IMMUNOTECHNOLOGY/ 16SMBEBT3:

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CO1: How you identify the component of the immune system.	✓																	
CO2: Explain the cross reactivity and cross linking - correlate with antigen-antibody interaction.		✓											✓					
CO3: Discuss-MHC and peptide interaction is direct kill or recruitment of killers.			✓										✓					
CO4: Processing of antigen by endogenous/ exogenous pathway.			✓															
CO5: How do you distinguish- Classical and non-classical antigen fragments?							✓											