



PRINCE SHRI VENKATESHWARA ARTS AND SCIENCE COLLEGE

Gowrvakkam, Chennai-600073.

Affiliated to University of Madras

DEPARTMENT OF BIOTECHNOLOGY

2018-2019

COURSE OUTCOMES

YEAR/ SEM: I/ I - CLA1L - TAMIL I

NO.	COURSE OUTCOME
C101.1	நாட்டுப்புற மக்களின் வாழ்வியல் பயன்பாடுகளை அறிகிறார்கள்
C101.2	புதுக்கவிதைகளின் வாயிலாகப் புதுமைக் கருத்துகளையும், சமூக சிக்கல்களையும் உணர்கின்றனர்
C101.3	சிறுகதைகளின் வாயிலாக சமூக மக்களின் வாழ்க்கை நிலையை அறிகிறார்கள்.
C101.4	சந்திரஹரி நாடகம் வாயிலாக பொய் என்றும் துன்பமே என்று அறிகிறார்கள்
C101.5	இலக்கிய வரலாற்றின் வாயிலாக நாட்டுப்புறவியல், சிறுகதை, புதினம், நாடகம், கவிதை ஆகியவற்றில் உள்ள சமூக நீதிகளையும், சிறப்புக்களையும் அறிகிறார்கள்

YEAR/ SEM: I/ I – CLE1E - HINDI I

NO.	COURSE OUTCOME
C102.1	To develop Communicating, Reading and Writing skills in Hindi
C102.2	To understand the vision of Prem Chand about the poor people
C102.3	To learn the literary work on the basis of foundation the laid by the Scholars
C102.4	To understand the meaning and concept of Functional Hindi
C102.5	To understand the various forms of Functional Hindi according to its area of application



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YEAR/ SEM: I/I – CLZ1L - ENGLISH I

NO.	COURSE OUTCOME
C103.1	To read and understand any text in English listening to the inputs given in the classroom.
C103.2	To make a detailed study of a few sample masterpieces of English poetry
C103.3	To write paragraphs and essays.
C103.4	To get accurate both in oral and written communication to be strong In Grammar
C103.5	To imbibe the rules of language unconsciously and tune to deduce language structure and usage.

YEAR/ SEM: I/I – SAC1A – CELL BIOLOGY

NO.	COURSE OUTCOME
C104.1	Comprehensive understanding of the hierarchical organization of living organisms, from unicellular entities to complex higher organisms, encompassing the interrelationships among organs, tissues, and cells.
C104.2	Explore the fundamental differences in cellular structure between Prokaryotic and Eukaryotic cells.
C104.3	Delineate the biomembranes, cellular transport mechanisms, subcellular organization in eukaryotic cells, and proficiency in microscopy for studying cell architecture
C104.4	Exemplifying the crucial roles each molecule plays in cellular processes & how they interact and regulate one another within the central dogma of molecular biology.
C104.5	Study the regulatory mechanisms governing cellular functions, focusing on transcriptional, translational processes, and post-translational modifications' impact on cellular activities
C104.6	Comprehend the intricate mechanisms of cell cyclic events, cell signaling, and the processes related to cell death and cellular aging



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YEAR/ SEM: I/I – SBANA – MICROBIOLOGY I

NO.	COURSE OUTCOME
C105.1	To study about taxonomy, nomenclature and classification of microbes
C105.2	To know about staining and sterilization and Characterization of microbe
C105.3	To learn about characterization of eukaryotic cells and virus particle.
C105.4	To learn about parasites and protozoan studies in terms of medical microbiology
C105.5	To study role of microbes in industrial production

YEAR/ SEM: I/I – SNC1B – PLANT PHYSIOLOGY

NO.	COURSE OUTCOME
C106.1	To study basic issues related to water management: water intake, transport, transpiration
C106.2	To learn about mineral nutrition: the role of macro- and microelements, element uptake and short- and long-distance transport.
C106.3	To understand mechanism of nitrogen fixation and assimilative reduction of nitrates, examples of symbiosis in the uptake of mineral substances by plants
C106.4	To study about photosynthesis: photosynthetic pigments, light and dark phases reactions, assimilation of CO ₂ in C ₃ and C ₄ , CAM plants.
C106.5	To learn about donors and acceptors of assimilates, transport of assimilates in the plant. - Respiration: stages of aerobic respiration

YEAR/ SEM: I/I – NLT1C – BASIC TAMIL

NO.	COURSE OUTCOME
C107.1	தமிழ் எழுத்துகளைத் தெரிந்து கொள்ளுதல்.
C107.2	தமிழ் ஒலியன்களை உச்சரிக்கக் கற்றுக்கொள்ளுதல் எழுத்துக்களைக் கொண்டு சொற்களை உருவாக்குதல்
C107.3	அன்றாடப் பயன்பட்டு சொற்களைப் பயிற்றுவித்தல்
C107.4	தமிழ் மொழியை அறிந்து கொள்ளுதல்
C107.5	எழுத்துக்களைக் கொண்டு சொற்களை உருவாக்குதல்



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Gowrvakkam, Chennai-600073.

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YEAR/ SEM: I/I – TSSEC – ESSENTIAL OF LANGUAGE AND COMMUNICATION SKILLS

NO.	COURSE OUTCOME
C108.1	To develop effective communication skills (spoken and written).
C108.2	To develop effective presentation skills
C108.3	To conduct effective business correspondence and prepare business reports which produce results
C108.4	To improve academic achievement
C108.5	To develop them both for the sake of their education, and for the sake of their professional careers.

YEAR/ SEM: I/II – CLA2H – TAMIL II

NO.	COURSE OUTCOME
C109.1	அகம் மற்றும் புற வாழ்வு பற்றிய செய்திகளை அறிகிறார்கள்
C109.2	சிற்றிலக்கியங்களான தமிழ்விடு தூது, குற்றிலக் குறவஞ்சி, முக்கூடற்பள்ளு வாயிலாக தமிழின் சிறப்பும் மலைவளமும், வேளாண் செய்திகளையும் அறிகிறார்கள்
C109.3	நளவெண்பாவின் வாயிலாக சூதாட்டத்தால் விளையும் சீர்கேடுகளை அறிகிறார்கள்
C109.4	சீறாப்புராணத்தின் வாயிலாக மனித நேயத்தையும், இரக்கக் குணத்தையும் அறிகிறார்கள்
C109.5	மொழிப்பயிற்சியின் வாயிலாக இலக்கண அமைப்பு முறைகளை அறிகிறார்கள்

YEAR/ SEM: I/II – CLE2G – HINDI II

NO.	COURSE OUTCOME
C110.1	To understand the Drama and the stories based on social problems.
C110.2	To understand the change in content and style of expression in short stories in modern period



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C110.3	To develop the skills of Translation from Hindi to English by using high
C110.4	To learn technical words
C110.5	To analyse the development of one act play

YEAR/ SEM: I/II – CLZ2L – ENGLISH II

NO.	COURSE OUTCOME
C111.1	To make a detailed study of a few sample masterpieces of English poetry
C111.2	To apply critical frameworks to analyze the linguistic, cultural and historical background of texts written in English.
C111.3	To get familiar with the conventions of diverse textual genres including fiction, nonfiction, poetry, autobiography, biography, plays, etc.
C111.4	The ability to transfer information in the writing tasks.
C111.5	To perform various speaking and writing tasks, such as roleplays, debates, group discussions apart from the use of correct spelling, punctuation.

YEAR/ SEM: I/II — SAC2B – MOLECULAR DEVELOPMENTAL BIOLOGY

NO.	COURSE OUTCOME
C112.1	Gain comprehensive understanding of cellular regulation encompassing cell cycle control, cell signaling pathways, and the intricate process of cellular differentiation.
C112.2	Explore transcription, expression, and regulation in eukaryotic development using slime mould and <i>C. elegans</i> as model systems, elucidating fundamental mechanisms governing cellular differentiation and organismal development.
C112.3	Adeptly analyze mammalian myogenesis, discern the roles of growth factors, mitogens, and oncogenes in this process, and articulate their impact on cellular development and regulation
C112.4	Proficient in understanding and comparing neurogenesis processes in <i>Drosophila</i> and mice, as well as comprehending regional specification mechanisms in <i>Drosophila</i> neurodevelopment
C112.5	Illustrate advanced embryogenesis knowledge by investigating the concept of mammalian homologs in <i>Drosophila</i> ANT-C and BC-X and their implications in developmental biology.



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YEAR/ SEM: I/II – SBADE – ALLIED-CHEMISTRY

NO.	COURSE OUTCOME
C113.1	To have deeper understanding to solve quantitative chemistry problems and demonstrate reasoning clearly and completely as applied to equilibria, chemical kinetics, electrochemistry, and solutions. Integrate multiple ideas in the problem-solving process
C113.2	To understand the basic physical, chemical, and stereochemical properties of organic compounds of biological importance.
C113.3	To gain information about qualitative chemical concepts and trends.
C113.4	To differentiate composition, properties, and chemical reactions of the biologically important compounds: Carbohydrates, Lipids, Proteins, and Nucleic Acids.
C113.5	To identify the functions of biomolecules in biological systems and their metabolic pathways

YEAR/ SEM: I/II – SNC2J – BASICS OF ECOLOGY

NO.	COURSE OUTCOME
C114.1	To know about Biotic and a biotic interaction
C114.2	To give basic knowledge in characteristics of population ecology.
C114.3	To know about nature of community ecology
C114.4	To gain an understanding of types and mechanisms of ecological succession
C114.5	To gain an understanding of types of Ecosystems with examples.

YEAR/ SEM: I/II – NLT2D – BASIC TAMIL

NO.	COURSE OUTCOME
C115.1	தமிழ் இலக்கியங்களை அறிந்து கொள்ளுதல்
C115.2	அற இலக்கியங்களைத் தெரிந்து கொள்ளுதல்.
C115.3	திருக்குறளின் சிறப்புகளை அறிந்துகொள்ளுதல்



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C115.4	தமிழர்களின் பண்பாடு ,நாகரிகம் போன்றவற்றைத் தெரிந்துகொள்ளுதல்
C115.5	தமிழகத்தின் விழாக்களை அறிந்துகொள்ளுதல்

YEAR/ SEM: I/II – ESSENTIAL OF SPOKEN AND PRESENTATION SKILLS

NO.	COURSE OUTCOME
C116.1	To deal with nerves and think more positively about public speaking
C116.2	To consider ways of grabbing the listener's attention, holding their interest, and concluding strongly.
C116.3	To use body language and tone of voice to enhance their presentations
C116.4	To create innovative ideas when students come up with creative and interesting slides to illustrate their talk.
C116.5	To use presentation aids makes for a much more interesting talk, and the creation of such aids can help develop students' confidence

YEAR/ SEM: I/II – SAC21 – PRACTICAL-I: CELL BIOLOGY & MICROBIOLOGY

NO.	COURSE OUTCOME
C117.1	Students will gain hands-on experience in microscope, different types of microscope.
C117.2	To gain an understanding of different types of blood cells & chromosomes.
C117.3	To gain insight into the most significant molecular and cell-based methods used today to expand our understanding of biology.
C117.4	To learn about different types of staining and sterilization procedures.
C117.5	To know about Characterization of microbe by various methods.



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YEAR/ SEM: I/II – SAC22 – PRACTICAL - II: MOLECULAR DEVELOPMENTAL BIOLOGY & CHEMISTRY

NO.	COURSE OUTCOME
C118.1	Students will gain hands-on experience in observing living gametes of grasshoppers/frogs, inducing ovulation and early fertilization in bullfrogs, monitoring developmental stages including gastrulation and organogenesis.
C118.2	To study the cleavage and gastrulation in living chick embryos, exploring wound healing, cell aggregation in frog embryos.
C118.3	Investigating the role of hormones in amphibian metamorphosis.
C118.4	To differentiate composition, properties, and chemical reactions of the biologically important compounds: Carbohydrates, Lipids, Proteins, and Nucleic Acids.
C118.5	To identify the functions of biomolecules in biological systems and their metabolic pathways

YEAR/ SEM: II/III – CLA3M – TAMIL III

NO.	COURSE OUTCOME
C201.1	பக்தி இலக்கியங்களின் வாயிலாக இறைவனின் உணர்வு மொழியை மதிப்பிட்டு அறிகின்றனர்
C201.2	கம்பராமாயணத்தின் கும்பகர்ணன் வதைபடலம் வாயிலாக சகோதரப் பாசத்தை அறிகின்றனர்.
C201.3	பெரியபுராணத்தின் வாயிலாக காரைக்கால் அம்மையாரின் சிவ பக்தியை அறிகின்றனர்.
C201.4	மனுமுறைக்கண்ட வாசகத்தின் வாயிலாக மனுநீதிச் சோழனின் நீதி தவறாமையை அறிகின்றனர்
C201.5	மொழிப்பயிற்சியின் வாயிலாக அலுவலகக் கடிதம் எழுதப் பயிற்சி பெறுகின்றனர்

YEAR/ SEM: II/III – CLE3H – HINDI III

NO.	COURSE OUTCOME
C202.1	To understand the division and the concept of Hindi literature
C202.2	To understand the features and evaluate the period Adikaal, Bhakti Kaal, and Reethi kaal, in context of social and political condition of that period



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C202.3	To identify the eminent Hindi writers of each period
C202.4	To describe the progressive nature of Kabirdas, Soordas and Thulasidas
C202.5	To understand the sudden development of ancient and medieval Hindi literature

YEAR/ SEM: II/III – CLZ3P – ENGLISH III

NO.	COURSE OUTCOME
C203.1	To refer dictionary and study the correct stress, right accent and right intonation. To ask questions, make requests or to make command.
C203.2	They will be familiar with the conventions of diverse textual genres including fiction, nonfiction, poetry, autobiography, biography, Journal, film, plays, editorials etc.
C203.3	They will be familiar with the conventions of diverse textual genres including fiction, nonfiction, poetry, autobiography, biography, Journal, film, plays, editorials etc.
C203.4	To make the students see how Indian English poetry expresses the ethos and culture of India
C203.5	To encourage students to interpret literary works and to develop aptitude for critical analysis

YEAR/ SEM: II/III – SAC3A - GENETICS

NO.	COURSE OUTCOME
C204.1	To learn about the basic idea of Genetic principles & the structure and organization of chromosome
C204.2	To illustrates various types of inheritance in various organisms.
C204.3	Demonstrates test cross used to map chromosomes
C204.4	Illustrate the various natural gene transfer techniques and genetic material that have been discovered through experimental studies.
C204.5	To provides clear idea about role of genes in evolution, human and population genetics.



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Gowrvakkam, Chennai-600073.

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YEAR/ SEM: II/III – SBC3A – BIOCHEMISTRY I

NO.	COURSE OUTCOME
C205.1	To understand biochemistry at the atomic level, draw molecules and reaction mechanisms perfectly
C205.2	To understand in detail about amino acid structures, types of amino acids, classifications, structure of proteins and types of proteins
C205.3	To learn the molecular structures of 20 amino acids, differentiating essential and non-essential amino acids, biologically important modified amino acids and their functions.
C205.4	To impart basic knowledge in structural levels of organization of proteins, 3D structures of proteins, its functions, denaturation (hemoglobin, myoglobin etc.)
C205.5	To learn how amino acids and proteins are metabolized, emphasizing the role of few intermediates of their metabolism, monitoring the deficiency and abundance disorders of amino acid metabolisms and the role of enzymes in the regulation of the pathways

YEAR/ SEM: II/III – TSSEI – COMPUTING SKILLS(PRACTICAL)

NO.	COURSE OUTCOME
C206.1	To impart hands on training to students in Microsoft Office
C206.2	To claim proficiency in Word and PowerPoint.
C206.3	To independently create professional-looking documents and presentations.
C206.4	To use Word and PowerPoint in a variety of professional, educational
C206.5	To be able to create and share presentations

YEAR/ SEM: II/IV – CLA4K – TAMIL IV

NO.	COURSE OUTCOME
C207.1	எட்டுத்தொகையின் வாயிலாக ஐந்நில மக்களின் வாழ்வியல் முறைகளை அறிகின்றனர்
C207.2	புறநானூற்றின் வாயிலாக மன்னர்களின் ஆட்சி மற்றும் போர்ச்செய்திகளை அறிகின்றனர்
C207.3	நெடுநல்வாடையின் வாயிலாக கூதிர்காலத் தன்மைகளை அறிகின்றனர்.



PRINCE SHRI VENKATESHWARA ARTS AND SCIENCE COLLEGE

Gowrvakkam, Chennai-600073.

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C207.4	இரட்டைக்காப்பியங்களின் வாயிலாக வணிகர்களின் வாழ்வியலை அறிகின்றனர்
C207.5	திருக்குறளின் வாயிலாக மக்களின் வாழ்வியல், கல்வி, கேள்வி, ஒழுக்கம் ஆகியவற்றை அறிகின்றனர். மொழிபெயர்ப்பின் வாயிலாக தமிழ் மற்றும் ஆங்கில மொழியறிவைப் பெறுகின்றனர்.

YEAR/ SEM: II/IV – CLE4G – HINDI IV

NO.	COURSE OUTCOME
C208.1	To learn in depth study and analysis of the literary work
C208.2	To gain awareness of the importance of literature in addressing contemporary issues
C208.3	To create, select, and apply appropriate approach to literature, resource and modern literary theories.
C208.4	To describe the philosophy of life as well as the poems of modern literature
C208.5	To understand the History of development of drama, short stories, one act play, novel

YEAR/ SEM: II/IV – CLZ4R – ENGLISH IV

NO.	COURSE OUTCOME
C209.1	To enable learners to appreciate and enjoy a wide range of literary or creative texts and other related cultural forms.
C209.2	To perform various speaking and writing tasks, such as roleplays, debates, group discussions apart from the use of correct spelling, punctuation.
C209.3	To enhance students' awareness in the aesthetics of poetry and to empower them to read, appreciate and critically evaluate poetry independently
C209.4	To enable students to become competent users of English in real life situations
C209.5	The ability to transfer information in the writing tasks



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YEAR/ SEM: II/IV – SAC4A – PLANT BIOTECHNOLOGY

NO.	COURSE OUTCOME
C210.1	To learn basics of Plant Genome structure & organization.
C210.2	To impart practical knowledge about Gene transfer methods and plant engineering for development.
C210.3	To impart knowledge of Gene Expression in Transgenic plants & Plant Vaccines.
C210.4	To enhance their technical skills in advancing plant cell culture by Plant Hormones.
C210.5	To familiarize students with principles, practices and applications of plant tissue culture.

YEAR/ SEM: II/IV – SBACB – BIOPHYSICS AND BIOSTATISTICS

NO.	COURSE OUTCOME
C211.1	To demonstrate basic analytical techniques to generate results
C211.2	To interpret results of commonly used statistical analyses in written summaries
C211.3	To demonstrate statistical reasoning skills accurately and contextually
C211.4	To apply statistical knowledge to design and conduct research studies
C211.5	To operate statistical software packages to conduct research studies

YEAR/ SEM: II/IV – TSSE2 – COMPUTING SKILLS (PRACTICAL)

NO.	COURSE OUTCOME
C212.1	To Provide Students with Practical Microsoft Office Training
C212.2	To assert having knowledge of PowerPoint and word.
C212.3	To demonstrate to produce documents and presentations with a professional appearance.
C212.4	To provide knowledge how to use Word and PowerPoint for a range of business and educational



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C212.5	To possessing the ability to make and deliver presentations
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YEAR/ SEM: II/IV – ENV4B – ENVIRONMENTAL STUDIES

NO.	COURSE OUTCOME
C213.1	To learn core concepts and methods from ecological and physical sciences and their application in environmental problem solving
C213.2	To learn core concepts and methods from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
C213.3	To learn appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems
C213.4	To understand the transnational character of environmental problems and ways of addressing them, including interactions across local to global scales.
C213.5	To learn concepts and methodologies to analyze and understand interactions between social and environmental processes.

YEAR/ SEM: II/IV – SAC41 – GENETICS AND BIO – CHEMISTRY (PRACTICAL)

NO.	COURSE OUTCOME
C214.1	Students will gain hands-on experience in culturing Drosophila, identifying species and mutant.
C214.2	To demonstrate proficiency in characterizing human blood groups, recognizing mitotic and meiotic stages in plant and insect tissues.
C214.3	To practice in isolating giant chromosomes from Chironomus larvae or Drosophila salivary glands.
C214.4	Using a combination of classical and modern spectroscopic tools, identify an unknown organic compound
C214.5	To write and predict the products of chemical reactions. Classify chemical reactions as to type

YEAR/ SEM: II/IV – SAC42 – PLANT BIOTECHNOLOGY (PRACTICAL)

NO.	COURSE OUTCOME
C215.1	Attain practical expertise in cell and tissue culture techniques, encompassing culture line maintenance, callus development,
C215.2	Demonstrate expertise in plant micropropagation, protoplast manipulation.
C215.3	Learn the mechanisms of Ti plasmid vector application in genetic engineering



PRINCE SHRI VENKATESHWARA ARTS AND SCIENCE COLLEGE

Gowrivakkam, Chennai-600073.

Affiliated to University of Madras

C215.4	Students will gain hands-on experience in molecular analysis via Southern and Northern hybridization methods.
C215.5	To practice in isolating the DNA & RNA from plant samples.

YEAR/ SEM: III/V – SAC5A – ANIMAL AND MEDICAL BIOTECHNOLOGY

NO.	COURSE OUTCOME
C301.1	To obtain knowledge in basics of animal cell manipulation & Reproductive processes.
C301.2	To know the various medical techniques that supports animal cells growth & diagnosis.
C301.3	To learn techniques that supports the diagnosis of pathology in animals
C301.4	To know the remedial measures to overcome the diseases in human.
C301.5	To gain knowledge in animal cell culture techniques.

YEAR/ SEM: III/V – SAC5B - BIOINFORMATICS

NO.	COURSE OUTCOME
C302.1	To learn various bioinformatic tools of genomic data analysis
C302.2	To learn about sequence analysis methods and applications
C302.3	To gain knowledge of Phylogenetic analysis method to identify cancer.
C302.4	To learn about Molecular Docking and Drug discovery methods.
C302.5	To obtain knowledge in advantages of bioinformatics in Proteomic analysis

YEAR/ SEM: III/V – SAC5C - IMMUNOLOGY

NO.	COURSE OUTCOME
C303.1	To gain knowledge about Antigen and their types.
C303.2	To learn about molecular basis of antigen recognition, characterization of immune cells.



PRINCE SHRI VENKATESHWARA ARTS AND SCIENCE COLLEGE

Gowrvakkam, Chennai-600073.

Affiliated to University of Madras

C303.3	To study principles of hybridoma technology and its applications in treating human diseases.
C303.4	Demonstrate proficiency in assessing delayed hypersensitivity reactions, conducting in situ and in vivo characterization of tissue cells, and performing HLA typing
C303.5	To learn about vaccine production & other immunotherapy.

YEAR/ SEM: III/V – SEC5A – PHARMACEUTICAL BIOTEHNOLOGY

NO.	COURSE OUTCOME
C304.1	Demonstrate a comprehensive understanding of pharmaceutical biotechnology, microbial applications in the pharmaceutical industry.
C304.2	Expertise in pharmacokinetics and pharmacodynamics & the impact of chemical modification on immunogenicity, and strategies for enhancing protein therapeutics' effectiveness.
C304.3	Learners will possess advanced knowledge in protein engineering, peptide chemistry, and understanding the role in biosensors, & the transformative impact of biotechnology on drug discovery.
C304.4	Illustrate the pharmacological principles and formulations associated with vaccines, modern vaccine technologies.
C304.5	An advanced understanding of biotechnology products in the developmental pipeline, including insights into drug development for protein pharmaceuticals and nucleic acid therapies.

YEAR/ SEM: III/V — VAE5Q – VALUE EDUCATION

NO.	COURSE OUTCOME
C305.1	To understand the importance of value-based living.
C305.2	To understand about the purpose of their life.
C305.3	To understand and start applying the essential steps to become good leaders.
C305.4	To understand and start applying the essential steps to become good leaders. Students will emerge as responsible citizens with clear conviction.
C305.5	To practice values and ethics in life



PRINCE SHRI VENKATESHWARA ARTS AND SCIENCE COLLEGE

Gowrivakkam, Chennai-600073.

Affiliated to University of Madras

YEAR/ SEM: III/VI – SAC6A – GENETIC ENGINEERING

NO.	COURSE OUTCOME
C306.1	Learning tools and techniques employed in genetic engineering have led to the production of medically important products.
C306.2	Expertise in recombinant technology, showcasing proficiency in gene cloning techniques
C306.3	Delineate the advanced skills in DNA sequencing, Polymerase Chain Reaction (PCR), Ligase Chain Reaction, and site-directed mutagenesis techniques.
C306.4	Proficient understanding and application of expression systems, focusing on the production of proteins from cloned genes with relevance to practical applications.
C306.5	Comprehensive knowledge and practical application of gene cloning and manipulation across diverse fields.

YEAR/ SEM: III/VI – SAC6B – BIOPROCESS TECHNOLOGY

NO.	COURSE OUTCOME
C307.1	To educate students about fundamental concepts of bioprocess technology and its related applications, thus, preparing them to meet challenges of new and emerging areas of biotechnology industry.
C307.2	To know about General requirement of fermentation processes
C307.3	To understand the laws of thermodynamics and conceptual knowledge of aerobic and anaerobic pathways
C307.4	To understand fermentative productions & biomass.
C307.5	Understanding recovery and purification of biomolecules & its kinetics.

YEAR/ SEM: III/VI – SEC6A – MICROBIOAL BIOTECHNOLOGY

NO.	COURSE OUTCOME
C308.1	To gain knowledge about the industrial importance and Microbial diversity.
C308.2	To know the products produced by industrially important producers and the products obtained from them
C308.3	To obtain knowledge about beverages that are produced by Microbial process
C308.4	To know the products of microbes that helps to overcome the problem in agricultural process.



PRINCE SHRI VENKATESHWARA ARTS AND SCIENCE COLLEGE

Gowrivakkam, Chennai-600073.

Affiliated to University of Madras

C308.5	To gain knowledge about bioremediation process in the environment
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YEAR/ SEM: III/VI – SEC6B – ENVIRONMENTAL BIOTECHNOLOGY

NO.	COURSE OUTCOME
C309.1	Ability to analyze biofilm kinetics, soluble microbial products, and inert biomass in various reactor types.
C309.2	Proficiency in linking stoichiometric equations to mass balance equations, engineering design, series & configurations of reactors.
C309.3	Understanding the denitrification and the application of anaerobic treatment & drinking water treatment processes.
C309.4	Expertise in detoxification of hazardous chemicals & bioremediation process in the environment
C309.5	Capability in sewage and waste treatment, proficient in pollution monitoring, control, and remediation techniques tailored for various industries.

YEAR/ SEM: III/VI – CES6Q-EXTENSION ACTIVITIES

NO.	COURSE OUTCOME
C310.1	The Extension Activities course is designed to engage students in various extracurricular and co-curricular activities beyond the regular academic curriculum.
C310.2	The course aims to foster holistic development, enhance soft skills, promote creativity, and encourage active participation in diverse activities.
C310.3	Through this course, students will have the opportunity to explore their interests, develop leadership qualities, and build a sense of community involvement.
C310.4	Develop time management and organizational skills to balance academic responsibilities and extension activities effectively.
C310.5	Promote a sense of social responsibility and ethical behavior in all extension activities.



PRINCE SHRI VENKATESHWARA ARTS AND SCIENCE COLLEGE

Gowrivakkam, Chennai-600073.

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YEAR/ SEM: III/VI – SAC61 – ANIMAL, MEDICAL BIOTECHNOLOGY AND IMMUNOLOGY (PRACTICAL)

NO.	COURSE OUTCOME
C311.1	Attain practical expertise in animal cell culture.
C311.2	Skillfully execute trypsinization and sub culturing.
C311.3	To learn techniques of measurement of phagocytic activity & comprehend the influence of serum in cell culture methodologies.
C311.4	Demonstrate proficiency in blood group and Rh typing techniques.
C311.5	Ensuring adeptness in immunological laboratory practices & diagnosis of diseases.

YEAR/ SEM: III/VI – SAC62 – GENETIC ENGINEERING AND BIOPROCESS (PRACTICAL)

NO.	COURSE OUTCOME
C312.1	Attain practical expertise in a wide array of laboratory techniques including extraction and estimation of macromolecules.
C312.2	Students will gain hands-on experience in Gene transfer technology.
C312.3	Learning tools and techniques employed in genetic engineering.
C312.4	Students will acquire hands-on experience in bioprocess techniques involving fermenters, biomass production.
C312.5	To estimate the amylolytic activity assessment, & microbial isolation, characterization, fermentation for wine and alcohol production, & technically well-versed in compost making.