



## PRINCE SHRI VENKATESHWARA ARTS AND SCIENCE COLLEGE

Gowrvakkam, Chennai-600073.

Affiliated to University of Madras, ISO 9001:2015 Certified Institution

Recognized by UGC under section 2(f) of UGC Act 1956

### DEPARTMENT OF BIOCHEMISTRY

2022-2023

### COURSE OUTCOMES

YEAR/ SEM: I/ I – LA11A - TAMIL I

| NO.    | COURSE OUTCOME  |
|--------|---|
| C101.1 | மரபு மற்றும் புதுக்கவிதைகளின் வாயிலாக அக்காலச் சூழல் மற்றும் சமூகச் சிக்கல்களை அறிகின்றனர்.                     |
| C101.2 | நாட்டுப்புறப்பாடல்களின் வாயிலாக சமூகஅமைப்பு, வேளாண் செய்திகள் மற்றும் நீர்ப்பாசனம் போன்ற செய்திகளை அறிகின்றனர். |
| C101.3 | சிறுகதை மற்றும் உரைநடையின் வாயிலாகப் பல்வேறுகாலச் சூழல்களை அறிகின்றனர்.   |
| C101.4 | நாற்காலிக்காரர் நாடகத்தின் வாயிலாக தேர்தல் களம் பற்றி அறிகின்றனர்.  |
| C101.5 | மொழிப்பயிற்சியின் வாயிலாக வாக்கியங்கள், இருவழக்குகள், சொல்வகைகள் ஆகியவற்றை அறிகின்றனர்.                         |

YEAR/ SEM: I/ I – LE11A- HINDI I

| NO.    | COURSE OUTCOME   |
|--------|--|
| C102.1 | Develop Communicating, Reading and Writing skills in Hindi.                            |
| C102.2 | Understand the vision of Prem Chand about the poor people                              |
| C102.3 | Learn the literary work on the basis of foundation laid by the Scholars'               |
| C102.4 | Develop the approach of Hindi language.  |
| C102.5 | Understand the various forms of Functional Hindi according to its area of application. |



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### YEAR/ SEM: I/I – LZ11A – COMMUNICATIVE ENGLISH I

| NO.           | COURSE OUTCOME   |
|---------------|--|
| <b>C103.1</b> | To develop the knowledge of skilful learning.  |
| <b>C103.2</b> | Ability to write coherent paragraphs with wide range of vocabulary   |
| <b>C103.3</b> | To teach the aspects of grammar  |
| <b>C103.4</b> | To learn word power and vocabulary skills other aspects of Communicative skill                                     |
| <b>C103.5</b> | Ability to participate in short group conversations. Ability to use collocations, fixed and semifixed expressions. |

### YEAR/ SEM: I/I – SB21A – NUTRITIONAL BIOCHEMISTRY

| NO.           | COURSE OUTCOME   |
|---------------|--|
| <b>C104.1</b> | To create awareness about the role of nutrients in maintaining proper health to study effect of nutrients in the biochemical process |
| <b>C104.2</b> | To understand the nutritional significance of carbohydrates, lipids and proteins   |
| <b>C104.3</b> | To learn about balanced diet   |
| <b>C104.4</b> | To analyse the cellular effects of food energy and macronutrients  |
| <b>C104.5</b> | To gain knowledge about human rights and relations, national commission for women and minorities                                     |

### YEAR/ SEM: I/I – SD3AA – CHEMISTRY I

| NO.           | COURSE OUTCOME   |
|---------------|--|
| <b>C105.1</b> | To understand the basic knowledge of radioactive element and applications of isotopes                |
| <b>C105.2</b> | To understand the importance of chemistry in various industries, fertilizers and fuel classification |



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|               |   |
|---------------|---|
| <b>C105.3</b> | To know about the basic concept of organic chemistry, types of reagents and classification of organic reactions |
| <b>C105.4</b> | To know the preparation and uses of the halogenated hydrocarbon and inter halogen compounds                     |
| <b>C105.5</b> | To understand the applications of photo chemistry in daily life   |

### YEAR/ SEM: I/I – SD5AA-CHEMISTRY IN EVERY DAY LIFE

| NO.           | COURSE OUTCOME   |
|---------------|--|
| <b>C106.1</b> | To understand the importance of chemicals in everyday life, different types of pollution and their impacts |
| <b>C106.2</b> | To understand the chemistry of building materials and types of polymers                                    |
| <b>C106.3</b> | To understand the role of chemistry in food and cosmetic industry  |
| <b>C106.4</b> | To understand the role of chemistry in fertilizer and fuels  |
| <b>C106.5</b> | To understand the importance of chemistry in drugs and explosives  |

### YEAR/ SEM: I/I – NLT1C – BASIC TAMIL

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



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### YEAR/ SEM: I/I – PZ1SB – ENGLISH FOR LIFE SCIENCES

| NO.    | COURSE OUTCOME  |
|--------|---|
| C108.1 | Recognize their own ability to improve their own competence in using the language   |
| C108.2 | Use language for speaking with confidence in an intelligible and acceptable manner understand the importance of reading for life. |
| C108.3 | To read independently unfamiliar texts with comprehension   |
| C108.4 | To understand the importance of writing in academic life  |
| C108.5 | To Write simple sentences without committing errors of spelling or grammar.   |

### YEAR/ SEM: I/II – LA12A – TAMIL II

| NO.    | COURSE OUTCOME   |
|--------|--|
| C109.1 | சங்க இலக்கியங்களின் வாயிலாக அக்கால மக்களின் வாழ்வியலை அறிகின்றனர்                    |
| C109.2 | புறநானூற்றின் வாயிலாக மன்னர்களின் போர்ச்சமூக அமைப்பை அறிகின்றனர்                     |
| C109.3 | முல்லைப்பாட்டின் வாயிலாக முல்லைநில மக்களின் வாழ்வியல், பண்பாடு ஆகியவற்றை அறிகின்றனர் |
| C109.4 | திருக்குறள் மற்றும் நாலடியார் வாயிலாக ஈகை மற்றும் ஒழுக்கத்தை அறிகின்றனர்             |
| C109.5 | மொழிப்பயிற்சி வாயிலாக தமிழைப் பிழையில்லாமல் எழுதவும் பேசவும் அறிகின்றனர்             |



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### YEAR/ SEM: I/II — LE12A– HINDI II

| NO.           | COURSE OUTCOME   |
|---------------|--|
| <b>C110.1</b> | To understand the Drama and the stories based on social problems.                          |
| <b>C110.2</b> | Understand the change in content and style of expression in short stories in modern period |
| <b>C110.3</b> | Develop the skills of Translation from Hindi to English by using high technical words      |
| <b>C110.4</b> | Analyse the development of one act play.   |
| <b>C110.5</b> | Understand the meaning concept of Functional Hindi   |

### YEAR/ SEM: I/II — LZ12A – COMMUNICATIVE ENGLISH II

| NO.           | COURSE OUTCOME   |
|---------------|--|
| <b>C111.1</b> | Ability to comprehend both the written and spoken texts. Ability to frame questions and answer them. Ability to write/speak grammatically correct sentences. |
| <b>C111.2</b> | To enroll people in our ideas, our visions, and our visions.   |
| <b>C111.3</b> | To enhance listening skills  |
| <b>C111.4</b> | Awareness of the art of personal letter/email writing without grammatical errors.  |
| <b>C111.5</b> | To analyse crucial for effectiveness – particularly in sales or leadership roles   |

### YEAR/ SEM: I/II — SB22A – CELL BIOLOGY

| NO.           | COURSE OUTCOME   |
|---------------|--|
| <b>C112.1</b> | To understand the concept that cell is the fundamental unit of life  |
| <b>C112.2</b> | To understand the structure and purpose of basic components of eukaryotic cells, especially macromolecules, membranes and organelles |



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|---------------|---|
| <b>C112.3</b> | To gain knowledge about membranes, types of transport and their organization  |
| <b>C112.4</b> | To analyse chromosomes and cell cycle, cell division  |
| <b>C112.5</b> | To evaluate apoptosis, cancer and its prevention. At the end of the course, the student has a strong foundation on the functions of the cell. |

### YEAR/ SEM: I/II — SB221 – CORE PRACTICAL I

| NO.           | COURSE OUTCOME   |
|---------------|--|
| <b>C113.1</b> | To gain knowledge about the preparation of standard buffers and pH determination   |
| <b>C113.2</b> | To create knowledge on volumetric analysis - glycine, calcium and iron   |
| <b>C113.3</b> | To understand about the preparation of biochemical compounds like starch, casein and lactalbumin and albumin from potatoes, milk and eggs. |
| <b>C113.4</b> | To evaluate BMI measurements.  |
| <b>C113.5</b> | To analyse the morphology of plant & cellular organelles   |

### YEAR/ SEM: I/II – SD3AC - CHEMISTRY II

| NO.           | COURSE OUTCOME   |
|---------------|--|
| <b>C114.1</b> | To understand the features of coordination compounds and its applications  |
| <b>C114.2</b> | To identify the structure and properties of carbohydrates in living system   |
| <b>C114.3</b> | To gain the knowledge of proteins, amino acids - importance, classifications and functions in biological system.                     |
| <b>C114.4</b> | To understand basic terminologies of electrochemistry, types of battery and its uses and types of catalyst uses in chemical reaction |
| <b>C114.5</b> | To gain the knowledge of separation of substance by qualitative and quantitative methods   |



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### YEAR/ SEM: I/II – SD3A1 – CHEMISTRY I & II PRACTICAL

| NO.    | COURSE OUTCOME   |
|--------|--|
| C115.1 | To Perform the volumetric analysis and estimate the quantity present.          |
| C115.2 | To identify and analyze organic compounds                                      |
| C115.3 | To identify the nature of the functional groups                                |
| C115.4 | To find out the nature of hetero atoms   |
| C115.5 | To analyze the nature of compounds - aromaticity, special elements, saturation |

### YEAR/ SEM: I/II – SS52A– MUSHROOM CULTIVATION

| NO.    | COURSE OUTCOME   |
|--------|--|
| C116.1 | On successful completion of the course, students will be able to: Identify edible types of mushrooms |
| C116.2 | Gain the knowledge of cultivation of different types of edible mushrooms and spawn production        |
| C116.3 | Manage the diseases and pests of mushrooms   |
| C116.4 | Develop competency in self-employment and income generation  |
| C116.5 | Packaging, Storing and grading of mushroom; post-harvest procedures                                  |

### YEAR/ SEM: I/II – NLT2D – BASIC TAMIL

| NO.    | COURSE OUTCOME                            |
|--------|---|
| C117.1 | தமிழ் இலக்கியங்களை அறிந்து கொள்ளுதல்      |
| C117.2 | அற இலக்கியங்களைத் தெரிந்து கொள்ளுதல்      |
| C117.3 | திருக்குறளின் சிறப்புகளை அறிந்துகொள்ளுதல் |



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|--------|--|
| C117.4 | தமிழர்களின் பண்பாடு, நாகரிகம் போன்றவற்றைத் தெரிந்துகொள்ளுதல் |
| C117.5 | தமிழகத்தின் விழாக்களை அறிந்துகொள்ளுதல்                       |

### YEAR/ SEM: I/II – PZ1SD – ENGLISH FOR LIFE SCIENCE II

| NO.    | COURSE OUTCOME   |
|--------|--|
| C118.1 | To attend interviews with boldness and confidence.   |
| C118.2 | To imbibe the rules of language unconsciously and tune to deduce language structure and usage  |
| C118.3 | To adapt easily into the workplace context, having become communicatively competent.   |
| C118.4 | Apply to the Research & Development organizations/ sections in companies and offices with winning proposals.                         |
| C118.5 | To decipher the mechanism of language and use it for success in competitive examinations and job-related speaking and writing tasks. |

### YEAR/ SEM: II/III – LA13A – TAMIL III

| NO.    | COURSE OUTCOME  |
|--------|---|
| C201.1 | பல்லவர் காலத்தில் நாயன்மார்கள் மற்றும் ஆழ்வார்களின் பக்தி நெறிகளை அறிகின்றனர்     |
| C201.2 | இசுலாமியர் மற்றும் கிறித்தவர்கள் தமிழிக்குச் செய்த தொண்டினை அறிகின்றனர்           |
| C201.3 | நாயக்கர் காலத்தில் தோன்றிய சிற்றிலக்கியங்களின் வளர்ச்சி நிலைகளை அறிகின்றனர்       |
| C201.4 | சமயங்கள் வளர்த்த இலக்கியங்களை அறிகின்றனர்   |
| C201.5 | மொழிப்பயிற்சியின் வாயிலாக கடிதம் மற்றும்பிற மொழிக் கலவாமல் தமிழ் எழுத அறிகின்றனர் |





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### YEAR/ SEM: II/III – LE13A – HINDI III

| NO.    | COURSE OUTCOME   |
|--------|--|
| C202.1 | To identify the literary trends of ancient Hindi literature, and social conditions and its impact on ancient poetry  |
| C202.2 | To summarize the content of prescribed poems and understand the trends of Ancient Hindi Literature   |
| C202.3 | To critical study and analysis of artistic skills of poets and their expressional skills and literary trends   |
| C202.4 | To employ the methods of interpreting contexts, ideas and identify the special features, poetic skills through practicing annotation writing                                     |
| C202.5 | To differentiate the subject, ideology, contribution and poetic skills with each other and also know about contemporary poets, writers and the impact of contemporary situations |

### YEAR/ SEM: II/III – LZ13B – LANGUAGE THROUH LITERATURE I

| NO.    | COURSE OUTCOME  |
|--------|---|
| C203.1 | To get acquainted with the different forms of poetry, prose, fiction and drama.                               |
| C203.2 | To get exposed to advanced level of grammatical patterns and usages in English.                               |
| C203.3 | To improve their skills to speak and write English accurately   |
| C203.4 | To closely analyse texts, applying critical and theoretical approaches  |
| C203.5 | To evaluate socio-cultural and historical phenomena influence the literary production of a particular period. |

### YEAR/ SEM: II/III – SB23A – BIOMOLECULES

| NO.    | COURSE OUTCOME  |
|--------|---|
| C204.1 | To demonstrate the chemistry and the role of mono and disaccharides in living systems |



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|---------------|---|
| <b>C204.2</b> | To elucidate the structural conformation of different types of polysaccharides                  |
| <b>C204.3</b> | To gain insight into the reactivity of amino acids and nutritional importance of proteins       |
| <b>C204.4</b> | To apply the relationship between the structure and functions of proteins in biological context |
| <b>C204.5</b> | To elucidate the various levels of organization of Proteins and its biological importance.      |

**YEAR/ SEM: II/III – SN3AA –ALLIED MICROBIOLOGY**

| NO.           | COURSE OUTCOME   |
|---------------|--|
| <b>C205.1</b> | To identify different types of microorganisms.   |
| <b>C205.2</b> | To name and list the growth requirements of micro-organisms.   |
| <b>C205.3</b> | To Know various Culture media and their applications and also understand various physical and chemical means of sterilization. |
| <b>C205.4</b> | To techniques in microbiology like staining, cultivation of microorganisms.  |
| <b>C205.5</b> | To understand the basic microbial structure and functions of various physiological groups of prokaryotes and eukaryotes        |

**YEAR/ SEM: II/III – TSSEG – PERSONALITY ENRICHMENT I**

| NO.           | COURSE OUTCOME  |
|---------------|---|
| <b>C206.1</b> | To develop and exhibit and accurate sense of self.  |
| <b>C206.2</b> | To demonstrate knowledge of personal beliefs and values and a commitment to continuing personal reflection and reassessment |
| <b>C206.3</b> | To learn to evaluate and improve upon personal leadership strengths and weaknesses  |
| <b>C206.4</b> | To build self-awareness, personal development and life skills.  |



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|        |   |
|--------|---|
| C206.5 | To assert strengthened personal character and further, an enhanced ethical sense. |
|--------|---|

### YEAR/ SEM: II/IV – LA14A – TAMIL IV

| NO.    | COURSE OUTCOME   |
|--------|--|
| C207.1 | காப்பியங்களின் வாயிலாக வாழ்வியல் அறங்களை அறிகின்றனர்   |
| C207.2 | புராணங்களின் வாயிலாக பண்பாடு, ஒழுக்கம் ஆகியவற்றை அறிகின்றனர்                                 |
| C207.3 | தேம்பாவணி, சீறாப்புராணம் வாயிலாக இறைத்தூதர்களின் வாழ்வியல் மற்றும் அருட்செயல்களை அறிகின்றனர் |
| C207.4 | சிறுநிலக்கியங்களின் வாயிலாக பழங்கால மக்களின் வாழ்வியல் முறைகளை அறிகின்றனர்.                  |
| C207.5 | மாணாக்கர்கள் கவிதை மற்றும் சிறுகதைப் படைக்கும் ஆற்றலைப் பெறுகின்றனர்                         |

### YEAR/ SEM: II/IV – CLE4J – HINDI IV

| NO.    | COURSE OUTCOME  |
|--------|---|
| C208.1 | To identify the modern trends of Modern Hindi literature, different forms of modern literature i.e., poetry, fiction etc.   |
| C208.2 | To summarise the content of prescribed poems and understand the trends of modern Hindi Literature   |
| C208.3 | To Critical study and analysis of artistic skills of poets and their expression skills  |
| C208.4 | To employ the methods of interpreting contexts, ideas and identify the poetic skills through practicing annotation writing  |
| C208.5 | To differentiate the subject and poetic skills of prescribe poems with each other and also know about contemporary poets, writers and the impact of contemporary situations |



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### YEAR/ SEM: II/IV – LZ14B – LANGUAGE THROUGH LITERATURE II

| NO.           | COURSE OUTCOME   |
|---------------|--|
| <b>C209.1</b> | Ability to comprehend both the written and spoken texts.   |
| <b>C209.2</b> | To broaden their vocabularies and to develop an appreciation of language   |
| <b>C209.3</b> | To develop a deeper appreciation of cultural diversity by introducing them to poetry from a variety of cultures throughout the world |
| <b>C209.4</b> | Ability to write/speak grammatically correct sentences.  |
| <b>C209.5</b> | To create clear and compelling communication in writing and speaking skills  |

### YEAR/ SEM: II/IV – SB24A – BIOMOLECULES AND BIOCHEMICAL TECHNIQUES

| NO.           | COURSE OUTCOME  |
|---------------|---|
| <b>C210.1</b> | Gain insight into the classes of lipids and characterization of fats by their constants   |
| <b>C210.2</b> | Establish the diverse role of lipids in biological system   |
| <b>C210.3</b> | Relate the structure of lipids with their reactivity in biological membrane systems and life processes.   |
| <b>C210.4</b> | Establish the role of purine and pyrimidine bases in nucleic acid structure.  |
| <b>C210.5</b> | Acquire knowledge about principle of various centrifugation types and its applications. Appreciate the principle, instrumentation and the difference between various spectroscopic methods to choose analysing biological samples |

### YEAR/ SEM: II/IV – SN3AB – MICROBIOLOGY ALLIED- II

| NO.           | COURSE OUTCOME  |
|---------------|---|
| <b>C211.1</b> | To define and analyse the role microorganisms in dairy, food, and environment |



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|               |   |
|---------------|---|
| <b>C211.2</b> | To inter relate the microorganisms and elemental cycles in nature.  |
| <b>C211.3</b> | To Understand the various biogeochemical cycles - microbes involved and biochemical mechanisms of Carbon, Nitrogen. |
| <b>C211.4</b> | To give examples of industrially important micro-organisms and their applications                                   |
| <b>C211.5</b> | To summarise the role of microorganisms in agriculture  |

### YEAR/ SEM: II/IV – SN3A1 – MICROBIOLOGY I & II PRACTICAL

| NO.           | COURSE OUTCOME  |
|---------------|---|
| <b>C212.1</b> | To identify types of microorganisms with the help of microscope.                              |
| <b>C212.2</b> | To understand the microbial physiology and to identify the microorganisms                     |
| <b>C212.3</b> | To train with various techniques carried out in industries like fermentation, food and dairy. |
| <b>C212.4</b> | To understand the isolation, characterization and identification of soil microorganisms       |
| <b>C212.5</b> | To distinguish between air waste microflora   |

### YEAR/ SEM: II/IV – TSSEH – PERSONALITY ENRICHMENT II

| NO.           | COURSE OUTCOME  |
|---------------|---|
| <b>C213.1</b> | To develop the strategies to work with others to achieve specific goals                                 |
| <b>C213.2</b> | To learn to manage conflict   |
| <b>C213.3</b> | To understand and appropriately apply the skills of problem solving, conflict management and resolution |
| <b>C213.4</b> | To learn how personal values connect to motivation to serve to benefit teamwork                         |
| <b>C213.5</b> | To contribute to an inclusive and engaging environment  |



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### YEAR/ SEM: II/IV – SB241 – CORE PRACTICAL II

| NO.           | COURSE OUTCOME  |
|---------------|---|
| <b>C214.1</b> | To study about qualitative test for carbohydrates and amino acids   |
| <b>C214.2</b> | To learn and understand the principles of reactions involved in titrimetric methods – saponification number, iodine number and acid number from an edible oil |
| <b>C214.3</b> | To study about colorimetric estimation – Protein, DNA, RNA, carbohydrates and amino acids   |
| <b>C214.4</b> | To learn about Isolation and assay of glycogen from animal tissue   |
| <b>C214.5</b> | To study about separation and Identification of Amino acids and carbohydrate by paper chromatography.   |

### YEAR/ SEM: II/IV – ENV4B – ENVIRONMENTAL STUDIES

| NO.           | COURSE OUTCOME   |
|---------------|--|
| <b>C215.1</b> | To understand the scope and importance of environmental studies and to create public awareness for environmental protection            |
| <b>C215.2</b> | To evaluate the problems created by the over utilization of resources and to suggest alternate energy to meet our energy crisis/demand |
| <b>C215.3</b> | To analyse ecosystem, ecological succession, ecological pyramid, food chain and food web   |
| <b>C215.4</b> | To apply the different methods of biodiversity conservation.   |
| <b>C215.5</b> | To create awareness on the effects of pollution and the role of individual for pollution control programme.                            |



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### YEAR/ SEM: III/V – SB25A - ENZYMES

| NO.    | COURSE OUTCOME   |
|--------|--|
| C301.1 | To gain thorough knowledge about the nature and classification of enzymes. |
| C301.2 | Understand specificity, kinetics, inhibition and mechanism of action.      |
| C301.3 | Elucidation about mechanism of enzyme activity.                            |
| C301.4 | Understand isolation, Purification and characterization of enzymes.        |
| C301.5 | Analyse the immobilization and applications of enzymes.                    |

### YEAR/ SEM: III/V – SB25B - METABOLISM

| NO.    | COURSE OUTCOME  |
|--------|---|
| C302.1 | To comprehend the concepts of thermodynamics and the mechanism of energy transfer in ETC.                                       |
| C302.2 | Understand the fate of absorbed carbohydrates and metabolism of other hexoses.  |
| C302.3 | Gain knowledge about fate of the dietary lipids, biosynthesis and degradation of fatty acids.                                   |
| C302.4 | Evaluate about fate of dietary proteins and catabolism of carbon skeleton of amino acids.                                       |
| C302.5 | At the end of the program the student gain knowledge about interrelationship between carbohydrates, fat and protein metabolism. |

### YEAR/ SEM: III/V –SB25C– ANALYTICAL BIOCHEMISTRY

| NO.    | COURSE OUTCOME  |
|--------|---|
| C303.1 | Understand the concepts of acids, bases, buffers, various units used in expressing their strength and measuring their pH, buffers in body fluids. |
| C303.2 | To gain in depth knowledge about the techniques, types, operation and applications of oxygen electrode and Microscopy.                            |



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|---------------|---|
| <b>C303.3</b> | To apply knowledge in the chromatographic and electrophoretic techniques.                         |
| <b>C303.4</b> | Understanding radioactivity, its measurements and applications                                    |
| <b>C303.5</b> | Comprehend about basics of bioinformatics, Nanotechnology and its applications in various fields. |

**YEAR/ SEM: III/V – SB45A -HUMAN PHYSIOLOGY (ELECTIVE)**

| NO.           | COURSE OUTCOME  |
|---------------|---|
| <b>C304.1</b> | Understand the structure and function and different components of Digestive and urinary system.                         |
| <b>C304.2</b> | Analysis of blood composition and its function, blood clotting mechanism and cardiovascular diseases.                   |
| <b>C304.3</b> | Gain knowledge about the muscular and nervous system, role of neurotransmitters in Physiology.                          |
| <b>C304.4</b> | To inculcate knowledge about respiratory and to create awareness about lung disorders.                                  |
| <b>C304.5</b> | To acquire in-depth knowledge about reproductive physiology and to understand about structure and function of hormones. |

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

| NO.           | COURSE OUTCOME  |
|---------------|---|
| <b>C305.1</b> | To gain knowledge about the importance of value education                             |
| <b>C305.2</b> | To learn about salient values for life and problem-solving and decision-making skills |
| <b>C305.3</b> | To create awareness about the importance of human rights & social values              |
| <b>C305.4</b> | To evaluate the environmental and ecological balance.                                 |
| <b>C305.5</b> | To apply human rights to combat social evils.   |





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### YEAR/ SEM: III/V – SB26A – CLINICAL BIOCHEMISTRY

| NO.    | COURSE OUTCOME  |
|--------|---|
| C306.1 | To gain knowledge on the scope of clinical biochemistry and the alteration in biochemical components during various clinical conditions |
| C306.2 | To comprehend Liver function tests and clinical enzymology.   |
| C306.3 | To analyse the kidney function tests and proteinuria.   |
| C306.4 | To evaluate the abnormal levels of lipids in diseases and inborn errors of amino acid metabolism.                                       |
| C306.5 | To apply the knowledge and importance of various biochemical parameters in the diagnosis of diseases.                                   |

### YEAR/ SEM: III/VI – SB26B – MOLECULAR BIOLOGY

| NO.    | COURSE OUTCOME  |
|--------|---|
| C307.1 | Gain knowledge about the various types of DNA, the organization of genes to chromosomes in prokaryotes and eukaryotes.  |
| C307.2 | Understand the molecular basis of DNA synthesis, know the importance of the process, and the role of inhibitors of DNA as drugs.                                    |
| C307.3 | Comprehend the process of RNA synthesis, post transcriptional modifications and apply the same to understand the role of antibiotics.                               |
| C307.4 | Elucidation about the genetic code, molecular basis of protein synthesis & modification.  |
| C307.5 | Application of molecular biology techniques to study the mechanism of DNA mutation, repair system and understand the use of molecular process in disease diagnosis. |



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### YEAR/ SEM: III/VI – SB261 – CORE PRACTICAL III

| NO.           | COURSE OUTCOME   |
|---------------|--|
| <b>C308.1</b> | To demonstrate proficiency in the collection of urine samples, clean-catch techniques, 24-hour urine collection, and paediatric urine collection.  |
| <b>C308.2</b> | To perform qualitative analysis of normal and abnormal constituents of urine, recognizing clinical significance.   |
| <b>C308.3</b> | To gain hands-on experience in quantitative analysis of urine samples, utilizing techniques such as spectrophotometry or chromatography and interpreting results and relating them to normal physiological ranges. |
| <b>C308.4</b> | To understand the interplay between urine and blood parameters and their significance in diagnosing and monitoring various medical conditions.   |
| <b>C308.5</b> | To Comprehend about experiments, interpreting results, and presenting findings, enhancing their ability to work effectively in a laboratory setting.   |

### YEAR/ SEM: III/VI – SB26Q-PROJECT

| NO.           | COURSE OUTCOME  |
|---------------|---|
| <b>C309.1</b> | To integrate knowledge of fundamental biochemical principles.   |
| <b>C309.2</b> | To comprehend research skills by conducting a literature review to identify relevant studies and incorporate them into their projects |
| <b>C309.3</b> | To demonstrate proficiency in applying various biochemical techniques   |
| <b>C309.4</b> | To analyse experimental data, interpret results, and draw meaningful conclusions  |
| <b>C309.5</b> | To effectively communicate their research findings through a written report or oral presentation                                      |



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### YEAR/ SEM: III/VI –SB46A- IMMUNOLOGY

| NO.           | COURSE OUTCOME   |
|---------------|--|
| <b>C310.1</b> | Understand about the types of immunity, lymphoid organs and the cellular basis of immunity   |
| <b>C310.2</b> | Obtain knowledge on types of antigens, antibodies and activation of complements  |
| <b>C310.3</b> | Gain insight into various in vitro reactions between antigen and antibody and its application in clinical diagnosis  |
| <b>C310.4</b> | Apprehend the enormous scope of different types of vaccines  |
| <b>C310.5</b> | Acquire knowledge on autoimmunity, hypersensitivity and transplantation immunology. The course develops in the student an appreciation for principles of immunology and its applications in treating human diseases. |

### YEAR/ SEM: III/VI – SB46B - BIOTECHNOLOGY

| NO.           | COURSE OUTCOME  |
|---------------|---|
| <b>C311.1</b> | To acquire basic knowledge of recombinant DNA technology, DNA manipulation in prokaryotes and eukaryotes                                  |
| <b>C311.2</b> | To understand the methods of engineering of DNA molecules using restriction and modification enzymes.                                     |
| <b>C311.3</b> | To get acquainted with the use of cloning and vectors, creation of genomic and cDNA libraries and their applications.                     |
| <b>C311.4</b> | To evaluate the methods for production of proteins using recombinant DNA technology and their applications.                               |
| <b>C311.5</b> | To comprehend the basics of tissue culture, transgenesis, stem cell technology, risks, and safety aspects and patenting in biotechnology. |