



## Dr. N.G.P. ARTS AND SCIENCE COLLEGE

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)  
Approved by Government of Tamil Nadu & Accredited by NAAC with 'A++' Grade (3<sup>rd</sup> Cycle-3.64 CGPA)  
Dr. N.G.P.-Kalapatti Road, Coimbatore-641 048, Tamil Nadu, India.  
Website: www.drngpasc.ac.in | Email: info@drngpasc.ac.in. | Phone: +91-422-2369100

BoS

13<sup>th</sup>

### MINUTES OF THE THIRTEENTH BOARD OF STUDIES MEETING

Faculty: Biosciences

Board: Biochemistry


The Meeting of Board of Studies (BoS) was held as given below:

Name of the Body	Board of Studies
Department	Biochemistry
Meeting No.	13
Date and Time	04.08.2022 @ 9.30 a.m.
Venue	Innovation Lab
Members Attended	The details are given in the ANNEXURE -I

### AGENDA

1.	Discussion on UG Curriculum for AY 2022-23 and onwards adopting R4 guidelines
2.	Discussion on UG syllabi for Part III - Core Courses for first semester 2022-23 Batch
3.	Discussion on syllabus for Part III - Inter Disciplinary Course (IDC) offered by Department of Chemistry
4.	Discussion on Part I (Tamil/Hindi/French/Malayalam) offered by Language department for 2022-23 Batch
5.	Discussion on Part II (English) offered by English department for 2022-23 Batch
6.	Discussion on Part IV (AECC) Environmental Studies for 2022-23 Batch offered by Department of Microbiology
7.	Discussion on credits for Part V Extension Activity for 2022-23 Batch
8.	Discussion on PG Curriculum for AY 2022-23 and onwards adopting R4 guidelines
9.	Discussion on PG syllabi for first semester courses 2022-23 Batch
10.	Discussion on PG DSE offered by Department of Biochemistry to other departments for 2022-23 Batch
11.	Discussion on Value Added Certificate Courses (VACC)
12.	Any other matter



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### MINUTES OF THE THIRTEENTH BOARD OF STUDIES MEETING

**Faculty: Biosciences**

**Board: Biochemistry**

The Chairman of BoS welcomed all the panel members for the meeting. The items listed in the agenda were taken for discussion.

The following are the minutes of the meeting:

<b>Item - 01</b>	Discussion on UG Curriculum for AY 2022-23 and onwards adopting R4 guidelines
<b>Discussion</b>	Under regulation R4, UG Curriculum for AY 2022-23 have been designed and was presented for discussion.
<b>Resolution</b>	The Board unanimously approved the Curriculum.
<b>Item - 02</b>	Discussion on UG syllabi for Part III - Core Courses for first semester 2022-23 Batch
<b>Discussion</b>	<p><b>223BC1A1CA: Biomolecules (New Course)</b>            Prof. Amirtham suggested to include the topics Bacterial cell wall Polysaccharides, Eicosanoids, Glutathione, Synthetic peptides, Chemical Reactions of RNA and DNA with acid and alkali, color reactions in order to obtain knowledge about recent trends Biomolecular research            Prof.Sridhar suggested to include Hypervitaminosis to understand recent trends in vitamins research and removal of Phytosterols which was included in Plant Biochemistry course.</p> <p><b>223BC1A1CB: Cell Biology (New Course)</b>            Prof Sridhar suggested to include the topics exception in cell theory, Lysosomal storage disease, osmosis to learn advances in cell biology research            Prof.Vijayanand suggested to include the topics Stem Cells and maintenance of Adult Tissues, Embryonic Stem Cells and Therapeutic Cloning to impart knowledge about stem cells and their applications</p> <p><b>223BC1A1CP: Biomolecules &amp; Cell Biology (New Course)</b>            Prof Amirtham suggested to add Histidine instead of Glycine in Qualitative Analysis of Amino acids to gain knowledge on aromatic amino acids,            Dr.Santhini suggested to include Qualitative tests for nucleic acids, Identification of cancer cells using permanent slides to gain fundamental practical skills on nucleic acids and cancer cells</p>
<b>Resolution</b>	The Board approved the syllabi for the above three courses
<b>Item - 03</b>	Discussion on syllabus for Part III - Inter Disciplinary Course (IDC) offered by Department of Chemistry
<b>Discussion</b>	<p><b>222CE1A1IA – Chemistry for Biologists (New Course)</b>            The syllabus approved by the Board of Studies in Chemistry was placed for endorsement.</p>
<b>Resolution</b>	The Board unanimously approved the above syllabus
<b>Item - 04</b>	Discussion on Part I (Tamil/Hindi/French/Malayalam) offered by Language department for 2022-23 Batch
<b>Discussion</b>	<p><b>221TL1A1TA/ 221TL1A1HA /221TL1A1FA /221TL1A1MA: Part I: Tamil-I: Ikkala Illakiyam / Hindi-I: Modern Literature/French-I: Grammar, Translation and Civilization/ Malayalam – I: Modern Literature respectively</b>            The unified syllabi approved by the Board of Studies in Languages were placed for endorsement.</p>
<b>Resolution</b>	The Board unanimously approved the syllabi.





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<b>Item - 05</b>	<b>Discussion on Part II (English) offered by department of English for 2022-23 Batch</b>
<b>Discussion</b>	<b>221EL1A1EA : Part II: Professional English I (New Course)</b> The unified syllabus approved by the Board of Studies in English was placed for endorsement.
<b>Resolution</b>	The Board unanimously approved the syllabus
<b>Item - 06</b>	<b>Discussion on Part IV (AECC) Environmental Studies offered by Department of Microbiology for 2022-23 Batch</b>
<b>Discussion</b>	<b>223MB1A1AA: Environmental Studies</b> The unified syllabus approved by the Board of Studies in Microbiology was placed for endorsement.
<b>Resolution</b>	The Board unanimously approved the syllabus
<b>Item - 07</b>	<b>Discussion on credits for Part V Extension Activity for 2022-23 Batch</b>
<b>Discussion</b>	One credit to be awarded for participation in Extension activity like YRC/NCC/NSS/RRC/Yoga/Sports/Clubs
<b>Resolution</b>	The Board members approved one credit for Extension activity
<b>Item - 08</b>	<b>Discussion on PG Curriculum for AY 2022-23 and onwards adopting R4 guidelines</b>
<b>Discussion</b>	Under regulation R4, PG Curriculum for AY 2022-23 has been designed and was presented for discussion.
<b>Resolution</b>	The Board unanimously approved the Curriculum.
<b>Item - 09</b>	<b>Discussion on PG-syllabi for Core Courses for first semester 2022-23 Batch</b> <b>223BC2A1CA: Chemistry of Biomolecules (New Course)</b> Dr.Vadivel Suggested to include glycogen, Isolation and purification of polysaccharides, denaturation and renaturation of proteins, physical Properties of DNA, DNA Supercoiling and Linking Number to gain knowledge for Biological research.  Prof.Amirtham suggested to include Lipid peroxidation and Antioxidants to understand role of antioxidants in pharmacology  <b>223BC2A1CB: Biochemical Techniques and Instrumentation (New Course)</b> Prof. Kalaiselvi Senthil and Dr.Vadivel suggested to include FTIR and NIR, UV Microscope, LCMS, #D Eletrophoresis to provide analytical skills to the students.  Prof.Sridhar suggested to include radioisotopes in disease diagnosis to convey the recent applications of isotopes  <b>223BC2A1CC: Enzymes and Enzyme Technology (New Course)</b> Dr.Vadivel and Prof. Amitham suggested to include Pyruvate dehydrogenase and Fatty acid synthase in multienzyme complex, Importance of Kcat, specificity constant, Strain and distortion theory, Significance and evaluation of activation theory, Investigation of 3D Structure of Active site to impart detailed knowledge in Enzyme research and removal of the topic Enzymes as diagnostic reagents which was a repeated topic.



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<b>Discussion</b>	<p><b>223BC2A1CP: Enzymes and Cellular Biochemistry (New practical Course)</b>          Dr.Santhini suggested to include Preparation of permanent slides and Isolation of organelles by subcellular fractionation, RBC Ghost cell preparation, Isolation of subcellular organelles, Assay of enzyme activity and specific activity of catalase, Separation of isoenzymes by PAGE to gain more practical knowledge in Cellular Biochemistry</p> <p><b>223BC2A1CQ: Biomolecules and Biochemical Techniques (New practical Course)</b>          Dr.Santhini and Dr.Vadivel suggested to include Hemagglutination assay of lectins, Isolation of lymphocytes from whole blood using density gradient Centrifugation and Analysis of secondary Metabolites using HPLC and HPTLC to gain practical skills in Biochemical techniques and the experiments PCR demonstration and separation of proteins by PAGE were moved to practical I and Practical V.</p>
<b>Resolution</b>	The Board approved the syllabi for the above courses
<b>Item -11</b>	Discussion on PG DSE offered by Department of Biochemistry to other departments for 2022-23 Batch
<b>Discussion</b>	<p><b>223BC2A1DA: Cancer biology, Diagnosis and Therapy</b></p> <p>Dr.Santhini suggested to include the topics metastasis and cytoskeleton, Abrupt activation of cancer markers, stem cells and cancer to learn recent advances in cancer research.</p>
<b>Resolution</b>	The Board unanimously approved the syllabus
<b>Item – 11</b>	Discussion on Value Added Certificate Courses (VACC)
<b>Discussion</b>	The VAC courses entitled Molecular Diagnostics to be offered by internal faculty and Cheminformatics offered by the industry were discussed
<b>Resolution</b>	The Board members approved the syllabi for the above two courses.
<b>Item – 12</b>	Any other matter
<b>Discussion</b>	The board members discussed and recommended a Panel of Examiners
<b>Resolution</b>	The Board unanimously approved the Panel of Examiners

The chairman of Board of Studies (BoS) thanked all the members for their active participation and cordially invited them for the next meeting.

Date: 04.08.2022

(Dr.Gowri.S)





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## Syllabus Revision B.Sc Biochemistry

Faculty: Biosciences

Board: Biochemistry

Semester: I

Course Code/ Name: 223BC1A1CA: Biomolecules

Unit	Existing	Changes
I	<b>Water and Introduction to Carbohydrates</b> Water: Structure, Physical properties of water. Weak interaction in aqueous solutions. pH – Introduction, buffers, Henderson-Hasselbalch equation, biological buffer system. Introduction to biological macromolecules. Carbohydrates- classification, structure, properties & chemical reactions of monosaccharide. Structure, Properties of disaccharides – Maltose, Lactose and Sucrose. Polysaccharides – structure & biological functions of Homo & Hetero polysaccharides	Occurrence, importance and the structure of amino sugars, bacterial cell wall polysaccharides and peptidoglycan.
II	<b>Lipids</b> Definition & classification of lipids, physico-chemical properties. Storage lipids: fatty acids- types. Structural lipids- phospholipids, glycolipids & sphingolipids. Structure and function of steroids- cholesterol and phytoosterols	Eicosanoids
III	<b>Amino acids and Proteins</b> Classification of amino acids, general properties, Chemical reactions of amino acids due to carbonyl groups and amino groups. Peptide bond- structure and properties. Protein classification, Physico-chemical properties of proteins. Organization of protein Structure – Primary (Insulin), Secondary (Keratin, Collagen), Tertiary (Myoglobin), Quaternary structure (Haemoglobin). Denaturation & Renaturation	Structure and biological importance of glutathione, synthetic peptides - polyglutamic acid.
IV	<b>Nucleic acids</b> Structures of Purines, Pyrimidines, Nucleosides and Nucleotides. Properties of nucleic acids. DNA double helical structure. A, B & Z forms. Denaturation & Renaturation of DNA. Types, structure and functions – RNA. microRNA, siRNA and other forms of RNA.	Chemical reactions of RNA and DNA with acid and alkali, colour reactions.
V	<b>Minerals and Vitamins</b> Minerals in biological system and their importance – Iron, Calcium, Phosphorous, Iodine, Copper, Zinc. Vitamins- Definition, classification. Fat soluble (Vitamin A, D, E, K) and Water-soluble vitamins (Vitamin-B & Vitamin C) - Sources, functions and deficiencies.	Micro and Macro minerals – Clinical Significance. Hypervitaminosis.

PERCENTAGE OF SYLLABUS REVISED: 21 %

COURSE FOCUS ON:

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovation
<input type="checkbox"/>	Intellectual Property Rights (IPR)		





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## Syllabus Revision B.Sc Biochemistry

Faculty: Biosciences

Board: Biochemistry

Semester: I

Course Code/ Name: 223BC1A1CB: Cell Biology

Unit	Existing	Changes
I	<b>Introduction to cell biology</b> An overview of cells: origin and evolution of cells and cell theory. Classification of cells: Prokaryotic (archaea and eubacteria) and eukaryotic cells (animal and plant cells). Comparison of cells: microbial, plant, and animal cells. Cells as experimental models: prokaryotic and eukaryotic cells	Exceptions to cell theory Mycoplasma, Viruses, Virioids, prions
II	<b>Structure and Functions of different cell organelles</b> Structure and functions: Endoplasmic reticulum, Golgi apparatus, Ribosome's, Nuclear envelope, Nuclear-pore complex, Lysosomes, Glyoxysomes, Mitochondria, Chloroplast and Peroxisomes	RER- Brief overview of translational and posttranslational transport of proteins, SER: Lipid Synthesis, Brief overview of export of proteins from ER. Lysosomal storage diseases
III	<b>Cytoskeletal proteins</b> Structure and organization: actin filaments. Microfilament polymerization: tread milling and role of ATP. Non-muscle myosin. Intermediate filament proteins: assembly and intracellular organization. Assembly, organization and movement: cilia and flagella	
IV	<b>Cell wall, extracellular matrix, cell membrane and transport</b> Cell wall and cell matrix proteins: prokaryotic and eukaryotic cells. Structure and function: capsule. Interactions: Cell-matrix and cell-cell. Junctions: adherence, tight and gap, desmosomes, hemi-desmosomes, focal adhesions and plasmodesmata. Cell signalling and receptors (overview). Cell membrane: fluid mosaic model. Transport across membrane: diffusion, active and passive transport, and ion channels	Osmosis,
V	<b>Nucleus, chromosome, cell cycle</b> Structure and function: Nucleus and Chromosomes. Cell division: Mitosis and Meiosis (prokaryotes and eukaryotes). Cell cycle: phases of cell cycle (eukaryotic cell cycle, restriction point, and checkpoints; overview). Cell death: apoptosis and necrosis(overview). Transformed cells: salient features	Stem cells and maintenance of adult Tissues, Embryonic Stem cells and Therapeutic cloning.

PERCENTAGE OF SYLLABUS REVISED: 31%

### COURSE FOCUS ON:

- |                                     |                                    |                          |                             |
|-------------------------------------|------------------------------------|--------------------------|-----------------------------|
| <input checked="" type="checkbox"/> | Skill Development                  | <input type="checkbox"/> | Entrepreneurial Development |
| <input checked="" type="checkbox"/> | Employability                      | <input type="checkbox"/> | Innovation                  |
| <input type="checkbox"/>            | Intellectual Property Rights (IPR) |                          |                             |





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## Syllabus Revision B.Sc Biochemistry

Faculty: Biosciences

Board: Biochemistry

Semester: I

Course Code/ Name: 223BC1A1CP: Biomolecules and Cell Biology

1	Preparation of Normal and Molar solutions, Preparation of Buffer Solutions- Phosphate, Citrate, Tris, Acetate	Preparation of Normal and Molar solutions, Preparation of Buffer Solutions- Phosphate, Citrate, Tris, Acetate
2	Determination and adjustment of pH using pH paper and pH meter	Determination and adjustment of pH using pH paper and pH meter
3	Qualitative Analysis of carbohydrates Monosaccharides: Glucose, Fructose, Galactose,	Qualitative Analysis of carbohydrates Monosaccharides: Glucose, Fructose, Galactose, Disaccharides: Sucrose, Lactose, Maltose Polysaccharides: Starch
4	Qualitative Analysis of carbohydrates Disaccharides: Sucrose, Lactose, Maltose	Qualitative analysis of amino acids: Histidine, Tyrosine, Tryptophan, Cysteine and Arginine
5	Qualitative Analysis of carbohydrates Polysaccharides: Starch	Determination of Saponification number of edible oil, acid number of edible oil and Iodine number of oil
6	Qualitative analysis of amino acids: Glycine, Tyrosine, Tryptophan, Cysteine and Arginine	Qualitative test for nucleic acids
7	Determination of Saponification number of edible oil, acid number of edible oil and Iodine number of oil	Mitosis in Onion root tip squash
8	Mitosis in Onion root tip squash.	Meiosis in grasshopper testis squash
9	Meiosis in grasshopper testis squash.	Fractionation of cellular components.
10	Staining and visualization of mitochondria by Janus green stain.	Staining and visualization of mitochondria by Janus green stain.
11	Cell Types - Microbial, Animal and Plant Morphometric measurements	Cell Types - Microbial, Animal and Plant Morphometric measurements
12	Fractionation of cellular components.	Identification and study of cancerous cells using permanent slides and photomicrographs

Note: End Semester Practical Examination requires completion of 10 experiments out of 12.  
PERCENTAGE OF SYLLABUS REVISED: 33%



Skill Development



Entrepreneurial Development



Employability



Innovation



Intellectual Property Rights (IPR)





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## Syllabus Revision B.Sc Biochemistry

Faculty: BAS

Semester: I

Course Code/ Name : 222CE1A1IA- IDC Chemistry For Biologists

Board: Chemistry

Unit	Existing	Changes
I	Coordination Chemistry and Fertilizers Coordination Chemistry: Nomenclature, Theories of Werner, Sidgwick-Pauling, Chelation examples, Haemoglobin, Chlorophyll. Applications in qualitative and quantitative analysis of EDTA. Fertilizers: Urea, ammonium sulphate, ammonium Nitrate, Potassium Nitrate, NPK, fertilizer. Triple Superphosphate, Pollution of air, Water and Soil sources, remedies.	Solutions Normality, molarity, molality, mole fraction, mole concept. Primary and secondary standards – preparation of standard solutions. Principle of Volumetric analysis (with simple problems). Indicators – Theory of indicators- Oswald and quinonoid theory.
II	Chemical Bonding Molecular Orbital Theory – bonding, anti-bonding and non-bonding orbitals. MO configuration of H <sub>2</sub> , N <sub>2</sub> , O <sub>2</sub> , F <sub>2</sub> – bond order – diamagnetism and paramagnetism. Ionic Bond: Nature of ionic bond, structure of NaCl and CsCl, factors influencing the formation of ionic bond. Covalent Bond: Nature of covalent bond, structure of CH <sub>4</sub> , NH <sub>3</sub> , H <sub>2</sub> O. shapes of BeCl <sub>2</sub> , BF <sub>3</sub> , based on VSEPR theory and hybridization.	Acids and Bases Acid base theories – Strength of acids and bases – Equilibrium constant and Ionic constant of water- pH, pKa, pKb, Buffer solution, pH and pOH simple calculations.
III	Basic Organic Chemistry Electron displacement effect in organic compounds – Inductive effect – Electromeric effect – Resonance effect, Hyperconjugation and Steric effect. Isomerism, Symmetry of elements (Plane, Centre and Axis of symmetry), Molecules with one chiral carbon and two adjacent chiral carbons – Optical isomerism of lactic acid and tartaric acid, Enantiomers, Diastereomers – Separation of racemic mixture Geometrical isomerism (maleic and fumaric acid). R/S and E/Z configuration assignments for simple molecules.	Types of bonding - Ionic Bond: Nature of ionic bond, factors influencing the formation of ionic bond, Covalent and coordinate bond- Molecular Orbital Theory- MO- configuration of H <sub>2</sub> , N <sub>2</sub> , O <sub>2</sub> - bond order- diamagnetism and paramagnetism.
IV	Solutions Normality, molarity, molality, mole fraction, mole concept. Primary and secondary standards – preparation of standard solutions. Principle of Volumetric analysis (with simple problems). Indicators – Theory of indicators – Acid base and quinonoid. Strong and weak acids and bases – Ionic product of water – pH, pKa, pKb, Buffer solution, pH and pOH simple calculations.	Stereo Chemistry Isomerism, Structural isomerism- Symmetry of elements (Plane, Centre and Axis of symmetry), Optical isomerism of lactic acid and tartaric acid, Enantiomers, Diastereomers – Separation of racemic mixture, Geometrical isomerism (maleic and fumaric acid). R/S and E/Z configuration assignments for simple molecules.
V	Chemical Kinetics and Catalysis Rate of reaction, rate law, order, molecularity, first order rate law, half-life period of first order equation, pseudo first order reaction, zero and second order reactions. Derivation of rate expression for I and H-order kinetics. Catalysis – homogenous, heterogeneous and enzyme catalysis (definition only), enzymes used in industry, characteristics of catalytic reactions	

PERCENTAGE OF SYLLABUS REVISED: 50%

### COURSE FOCUS ON:



Skill Development



Entrepreneurial Development



Employability



Innovation



Intellectual Property Rights (IPR)







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## Syllabus Revision

Faculty: Biosciences

Board: Biochemistry

Semester: I

Course Code/ Name: 221TL1A1TA / PART – I - TAMIL - I: Ikkala Ilakkiyam

Unit	Existing	Changes
I	1. உயிர்-பெற்ற-தமிழர்-பாட்டு - பாரதியார் 2. படி - பாரதிதாசன் 3. போராடப்-புறப்பட்டோம் - தமிழ்-ஒளி 4. தமிழ்க் கொலை புரியாதீர்- புலவர் குழந்தை 5. திரைத்தமிழ்: அ)சும்மா கிடந்த நிலத்தை - எனத் தொடங்கும் பாடல் - பட்டுக்கோட்டை கல்யாண சுந்தரனார். ஆ) சமரசம் உலாவும் இடமுமே - எனத் தொடங்கும் பாடல் - மருதகாசி. இ) உன்னை அறிந்தால் - எனத் தொடங்கும் பாடல் - கண்ணதாசன்.	இலக்கிய வரலாறு - மறுமலர்ச்சி கவிஞர்களின் தமிழ்ப்பணிகள் பாரததேசம் - பாரதியார் தமிழரின் பெருமை - நாமக்கல் கவிஞர் திரைத் தமிழ் : விஞ்ஞானத்த வளர்க்கப் போற்றண்டி - உடுமலை நாராயணகவி
II	1. கடமையைச் செய் - மீரா 2. அம்மாவின்-பொய்கள் - ஞானக்கூத்தன் 3. செருப்புடன்-ஒரு-பேட்டி - மு.மேத்தா 4. சிங்கவால்-குரங்கின்-மரணம் - சிற்பி 5. கடல்கோள்-2004 - முத்தமிழ்-விரும்பி 6. கரிகிறது தாய்ப்பால் - ஆரூர் தமிழ்நாடன் 7. ஐந்தாம் வகுப்பு 'அ' பிரிவு - நா. முத்துக்குமார் 8. ஹைகூ கவிதைகள் - 15 கவிதைகள்	இலக்கிய வரலாறு - புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும் ஒப்பிலாத சமுதாயம் - அப்துல் ரகுமான் கன்னிமாடம் - மு.மேத்தா மலையாளக் காற்று - சிற்பி
III	1. ஒருகதவும்-கொஞ்சம்-கள்ளிப்பாலும் - தாமரை 2. நீரில் அலையும் முகம் - அ. வெண்ணிலா 3. தொட்டிச்-செடி - இளம்பிறை 4. ஏனிந்த வித்தியாசங்கள் - மல்லிகா	தொலைந்து போனேன் - தாமரை தற்காத்தல் - பொன்மணி வைரமுத்து புதையுண்ட வாழ்க்கை - சுகந்தி சுப்ரமணியன்
IV	1. வேப்பமரம் - ந.பிச்சமூர்த்தி 2. அகல்யை - புதுமைப்பித்தன் 3. ஒருபிடி-சோறு - ஜெயகாந்தன் 4. காய்ச்சமரம் - கி.ராஜநாராயணன் 5. நிர்ராசை - பஃபா 6. குதிரை-மசால்-தாத்தா - சுவேணுகோபால்	இலக்கிய வரலாறு - சிறுகதையின் தோற்றமும் வளர்ச்சியும் கனகாம்பரம் - கு.ப.ராஜகோபாலன் ஆற்றங்கரைப் பிள்ளையார் - புதுமைப்பித்தன் பொம்மை - ஜெயகாந்தன் காட்டில் ஒரு மான் - அம்பை வேட்கை - சூர்யகாந்தன்
V	அ. இலக்கியவரலாறு 1. மறுமலர்ச்சி கவிஞர்களின் தமிழ்ப்பணிகள் 2. புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும் 3. சிறுகதையின் தோற்றமும் வளர்ச்சியும் ஆ. இலக்கணம்:1.வல்லினம் மிகும், மிகா இடங்கள் (ஒற்றுப்பிழை நீக்கி எழுதுதல்) 2. ர,ற,ல, ழ, ள,ண, ந,ன வேறுபாடு (ஒலிப்பு நெறி. சொற்பொருள் வேறுபாடு அறிதல்) இ. படைப்பாக்கப் பயிற்சி 1. கவிதை, சிறுகதை எழுதுதல்	இலக்கிய வரலாற்றுப் பகுதி அந்தந்த அலகுகளுக்குத் தகுந்தார் போல் மாற்றி அமைக்கப்பட்டுள்ளது.

Percentage Of Syllabus Revised: 44 %  
Course Focus On:



Skill Development



Entrepreneurial Development



Employability




Innovation



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Syllabus Revision  
B.Sc Biochemistry

Faculty: Biosciences  
Semester : I

Board: Biochemistry

Course Code/ Name: 221TL1A1HA/ PART – I - HINDI – I : Modern Literature

Unit	Existing	Changes
I	गद्य – नूतन गद्य संग्रह (जय प्रकाश) पाठ 1- रजिया पाठ 2- मक्रील पाठ 3- बहता पानी निर्मला पाठ 4- राष्ट्रपिता महात्मा गाँधी	-
II	कहानी कुंज- डॉ वी.पी. 'अमिताभ' (पाठ 1-4)	-
III	व्याकरण : शब्द विचार ( संज्ञा, सर्वनाम, कसक, विशेषण)	व्याकरण : शब्द विचार ( संज्ञा, सर्वनाम, विशेषण)
IV	अनुच्छेद लेखन	-
V	अनुवाद अभ्यास-III (केवल अंग्रेजी से हिन्दी में) (पाठ 1 to 10)	-

PERCENTAGE OF SYLLABUS REVISED: 25 %

COURSE FOCUS ON:

<input checked="" type="checkbox"/> Skill Development	<input checked="" type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input checked="" type="checkbox"/> Innovation
<input type="checkbox"/> Intellectual Property Right (IPR)	



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Syllabus Revision

Faculty: BAS

Board: Biochemistry

Semester : I

Course Code/ Name: 221TL1A1FA / PART – I FRENCH – I: Grammar, Translation and Civilization.


Unit	Existing			Changes
I	Objectifs de Communication	Tâche	Activités de réception et de production orale	
	<ul style="list-style-type: none"> <li>• Saluer</li> <li>• Enter en contact avec quelqu'un.</li> <li>• Se présenter.</li> <li>• S'excuser</li> </ul>	En cours de cuisine, premiers contacts avec les membres d'un groupe	<ul style="list-style-type: none"> <li>• Comprendre des personnes qui se saluent.</li> <li>• Échanger pour entrer en contact, se présenter, saluer, s'excuser.</li> <li>• Communiquer avec <i>tu</i> ou <i>vous</i>.</li> <li>• Comprendre les consignes de classe</li> <li>• Épeler son nom et son prénom. Compter jusqu'à 10.</li> </ul>	
II	Objectifs de Communication	Tâche	Activités de réception et de production orale	
	<ul style="list-style-type: none"> <li>• Demander de se présenter.</li> <li>• Présenter quelqu'un.</li> </ul>	Dans la classe de français, se présenter et remplir une fiche pour le professeur.	<ul style="list-style-type: none"> <li>• Comprendre les informations essentielles dans un échange en milieu professionnel.</li> <li>• Échanger pour se présenter et présenter quelqu'un.</li> </ul>	
III	Objectifs de Communication	Tâche	Activités de réception et de production orale	
	<ul style="list-style-type: none"> <li>• Exprimer ses goûts.</li> </ul>	Dans un café, participer à une soirée de rencontres rapides et remplir de tâches d'appréciation.	<ul style="list-style-type: none"> <li>• Dans une soirée de rencontres rapid comprendre des personnes qui échangent sur elles et sur leurs goût</li> <li>• Comprendre une personne qui parler des goûts de quelqu'un d'autre.</li> </ul>	
IV	Objectifs de Communication	Tâche	Activités de réception et de production orale	Demander à quelqu'un de faire quelque chose. Demander poliment. Parler d'actions passées. Organiser un programme d'activités pour accueillir une personne importante. Comprendre une personne demande un service à quelqu'un. Demander à quelqu'un de faire quelque chose. Imaginer et raconter au passé à partir de situations dessinées. Tu veux bien? Page 46
	<ul style="list-style-type: none"> <li>• Présenter quelqu'un</li> </ul>	Dans un café, participer à une soirée de rencontres rapides et remplir de tâches d'appréciation	<ul style="list-style-type: none"> <li>• Exprimer ses goûts.</li> <li>• Comprendre une demande laissée sur un répondeur téléphonique.</li> <li>• Parler de ses projets de week-end.</li> </ul>	
V	Demander à quelqu'un de faire quelque chose. Demander poliment. Parler d'actions passées.	Organiser un programme d'activités pour accueillir une personne importante.	Comprendre une personne demande un service à quelqu'un. Demander à quelqu'un de faire quelque chose. Imaginer et raconter au passé à partir de situations dessinées.	Make in Own Sentences

PERCENTAGE OF SYLLABUS REVISED: 25%

COURSE FOCUS ON:

<input checked="" type="checkbox"/> Skill Development	<input checked="" type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input checked="" type="checkbox"/> Innovation
<input type="checkbox"/> Intellectual Property Right (IPR)	



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Syllabus Revision

Faculty: Biosciences

Board: Biochemistry

Semester : I

Course Code/ Name: 22ITL1A1MA / PART – I - MALAYALAM – I : Modern Literature

Unit	Existing	Changes
I	Novel : Alahayude penmakkal	Novel : Pathummayude Adu
II	Novel : Alahayude penmakkal	Novel : Pathummayude Adu
III	Short Story : Nalinakanthi	-
IV	Short Story : Nalinakanthi	-
V	Composition & Translation	Expansion of ideas, General Essay and Translation

Percentage Of Syllabus Revised: 50%

Course Focus On:

<input checked="" type="checkbox"/> Skill Development	<input checked="" type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input checked="" type="checkbox"/> Innovation
<input type="checkbox"/> Intellectual Property Right (IPR)	





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## Syllabus Revision

Faculty: Biosciences

Board: Biochemistry

Semester: I

Course Code/ Name: 221ELIA1EA- Core Course: Professional English I

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUS ON:



Skill Development



Entrepreneurial Development



Employability



Innovation



Intellectual Property Rights (IPR)





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Faculty: Biosciences  
 Semester: I

Syllabus Revision

Board: Biochemistry  
 Course Code/ Name: 223MB1A1AA –Environmental studies

Unit	Existing	Changes
I	Introduction to Environmental studies & Ecosystems: Multidisciplinary nature of environmental studies; components of environment – atmosphere, hydrosphere, lithosphere and biosphere. Scope and importance; Concept of sustainability and sustainable development. Ecosystem - Structure and function of ecosystem; Energy flow in an ecosystem: food chain, food web and ecological succession. Case studies of the following ecosystems: Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).	
II	Natural Resources: Renewable and Non-renewable Resources: Land Resources and land use change; Land degradation, soil erosion and desertification. Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations. Water: Use and overexploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state). Heating of earth and circulation of air, air mass formation and precipitation. Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.	
III	Biodiversity and Conservation: Levels of biological diversity: genetic, species and ecosystem diversity; Biogeography zones of India; Biodiversity patterns and global biodiversity hot spots. India as a mega-biodiversity nation; Endangered and endemic species of India. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity. Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and informational value.	
IV	Environmental Pollution, Environmental Policies & Practices: Environmental pollution: types, causes, effects and controls; Air, water, soil, chemical and noise pollution. Nuclear hazards and human health risks. Solid waste management: Control measures of urban and industrial waste. Pollution case studies. Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture. Environment Laws: Environment Protection Act; Prevention & Control of Pollution Act – Air & Water, Wildlife Protection Act; Forest Conservation Act; International agreements: Montreal and Kyoto protocols and conservation on Biological Diversity (CBD). The Chemical Weapons Convention (CWC). Nature reserves, tribal population and rights, and human-wildlife conflicts in Indian context.	
V	Human Communities and the Environment & Field Work : Human population and growth: Impacts on environment, human health and welfares. Carbon foot print. Resettlement and rehabilitation of project affected persons; case studies. Disaster management: floods, earthquakes, cyclones and landslides. Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan. Environmental ethics: Role of Indian and other religions and cultures in environmental conservation. Environmental communication and public awareness case studies (e.g., CNG vehicles in Delhi). Visit to an area to document environmental assets; river/forest/flora/fauna, etc. Visit to a local polluted site – Urban/Rural/Industrial/Agricultural. Study of common plants, insects, birds and basic principles of identification. Study of simple ecosystems pond, river, Delhi Ridge, etc.	Population explosion – Family Welfare Programmes Role of Information Technology in Environment and human health. Role of the Colleges, Teachers and Students in village adoption towards clean, green and make in villages in various aspects.

Percentage Of Syllabus Revised: 33 %  
 Course Focus On:

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input type="checkbox"/>	Employability	<input type="checkbox"/>	Innovation
<input type="checkbox"/>	Intellectual Property Right (IPR)		



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## Syllabus revision M.Sc Biochemistry

Faculty: Biosciences

Board: Biochemistry

Semester: I

Course Code/ Name: : 223BC2A1CA : Chemistry of Biomolecules


Unit	Existing	Changes
I	<b>Polysaccharides</b> Homo polysaccharides: Structure and biological functions of starch, cellulose, chitin, fructans, mannans, xylans, and galactans. Hetero polysaccharides: Structure and biological importance of sugar derivatives- glycosaminoglycans, proteoglycans. Glycoprotein – Blood group and bacterial cell wall polysaccharides, O- linked and N- linked oligosaccharides and Lectins	Glycogen Isolation and Purification of Polysaccharides
II	<b>Proteins</b> Primary structure- determination of amino acid sequence of proteins. The peptide bond: Ramachandran plot. Secondary structure- weak interactions involved- alpha helix and beta sheet and beta turn's structure. Pauling and Corey model for fibrous proteins. Collagen triple helix. Super secondary structures- helix-loop-helix, zinc finger and leucine zipper. Tertiary structure- alpha and beta domains. Quaternary structure- structure of haemoglobin. Solid state synthesis of peptides. Protein folding.	Denaturation and Renaturation of proteins Myoglobin
III	<b>Lipids</b> Classification – saturated and unsaturated fatty acids – Triacyl Glycerol, phospholipids- classification, structure and functions. Ceramides and sphingomyelins. Eicosanoids, Structure and functions of prostaglandins, thromboxanes, leukotrienes. Types and functions of plasma lipoproteins. Amphipathic lipids- membranes, micelles, emulsions and liposomes. Steroids- cholesterol structure and biological role- bile acids, bile salts.	Classification, structure, function, physical and chemical properties of lipids. Fattyacids-Saturated, Hydroxy and Unsaturated Fattyacids- Triacylglycerol Lipid Peroxidation and antioxidants.
IV	<b>Nucleic Acids</b> DNA double helical structure. A, B and Z forms of DNA. Triple and quadruple structures. Chemicals that react with DNA, DNA-sequencing procedures – Maxam – Gilbert method and Sanger's dideoxy methods. Renaturation and denaturation. DNA bending: The Wedge model and Junction model, Protein induced bending. Cruciform DNA, Left-handed DNA. Types of RNA, Secondary and tertiary structure of RNA.	DNA super coiling and linking number Physical properties of DNA
V	<b>Heterocyclic compounds</b> Hetero cyclic rings of biologically important compounds. Structure and biological importance of pyridine, pyrrole, quinolene, pyrimidine, purine, pteridine, thiazole, imidazole and indole ring containing compounds. Porphyrine – structure and biologically important compounds containing porphyrin ring	

PERCENTAGE OF SYLLABUS REVISED: 28%

Course Focus On:

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input type="checkbox"/>	Employability	<input type="checkbox"/>	Innovation
<input type="checkbox"/>	Intellectual Property Right (IPR)		



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**Syllabus Revision**  
**M.Sc Biochemistry**

**Faculty: Biosciences**

**Board: Biochemistry**

**Semester: I**

**Course Code/ Name: 223BC2A1CB : Biochemical Techniques and Instrumentation**

Unit	Existing	Changes
I	<b>Spectroscopic techniques:</b> Principle, instrumentation and applications of Colorimetry, UV-Visible, IR, Fluorescence spectrophotometry, Turbidimetry, Luminometry and Flame emission spectrometry, Principle and applications of Electron Spin Resonance, Nuclear Magnetic Resonance, Mass and Raman Spectroscopy	FTIR, NIR,
II	<b>Centrifugation techniques and Microscopy:</b> Principle, technique and applications of preparative ultracentrifugation- differential centrifugation, density gradient centrifugation (caesium chloride and sucrose density gradients) and analytical ultracentrifugation. Basic principles, instrumentation and applications of microscopes- Light, Compound microscope, Fluorescence microscopy, Phase contrast microscopy; Scanning electron microscopy (SEM), Transmission electron microscopy (TEM) and Confocal microscopy.	UV microscope
III	<b>Chromatographic techniques:</b> Principle, technique and applications of paper, TLC, HPTLC, column - hydrophobic interaction and adsorption chromatography, affinity, ion- exchange, gel filtration. Principle, components, limitations and applications of GC, GC-MS, HPLC, RP- HPLC. and FPLC	LC-MS
IV	<b>Electrophoresis and Blotting techniques:</b> Principle, technique and applications of paper, gels – Agarose electrophoresis; Native and SDS-PAGE, Isoelectric focusing, 2D and 3D PAGE; Denaturing gels for RNA, Urea-PAGE, Electrophoresis techniques for in DNA sequencing, Peptide mapping, N-terminal sequencing of proteins, Next generation sequencing. Principle, technique and applications of western, southern and northern blotting. Chemiluminescence and Phosphor imaging.	3D Electrophoresis and applications,
V	<b>Biophysical and Radio-isotopic methods:</b> Principles and applications of X-ray diffraction, ORD and circular dichroism. Applications of radioisotopes in disease diagnosis, Radioisotopes in Biochemistry, Types of radiation, half-life and units of radioactivity, Detection and measurement of radioactivity- Principle, instrumentation and applications of Liquid scintillation counter and Geiger-Muller counter. Autoradiography and its applications	Applications of radioisotopes in disease diagnosis.

PERCENTAGE OF SYLLABUS REVISED: 29%

**Course Focus On:**

<input checked="" type="checkbox"/> Skill Development	<input type="checkbox"/> Entrepreneurial Development
<input type="checkbox"/> Employability	<input type="checkbox"/> Innovation
<input type="checkbox"/> Intellectual Property Right (IPR)	







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Approved by Government of Tamil Nadu & Accredited by NAAC with 'A++' Grade (3<sup>rd</sup> Cycle-3.64 CGPA)  
Dr. N.G.P.-Kalapatti Road, Coimbatore-641 048, Tamil Nadu, India.  
Website: www.drngpasc.ac.in | Email: info@drngpasc.ac.in. | Phone: +91-422-2369100

BoS

13<sup>th</sup>

## Syllabus Revision M.Sc Biochemistry

Faculty: Biosciences

Board: Biochemistry

Semester: I

Course Code/ Name: 223BC2A1CC : Enzymes and Enzyme Technology

Unit	Existing	Changes
I	<b>Classification, Purification and Active Site</b> Nomenclature and classification of enzymes, isolation and purification of enzymes—by different—methods, criteria of purity- specific activity. Active site- structure, determination of active site amino acids- chemical probe, affinity label, and site-directed mutagenesis, intrinsic and extrinsic regulations. Models of enzyme substrate binding- Lock and key model and Induced Fit model. Coenzymes and cofactors in enzyme catalysed reaction. Multi-enzyme complex-occurrence, isolation and properties. Measurement of enzyme activity- two-point assay, kinetic assay, using radio-labelled substrates.	Investigation of 3D Structure of Active site. Molecular weight determination MEC- Pyruvate dehydrogenase, fatty acid synthase
II	<b>Enzyme Kinetics and Inhibition</b> Kinetics of single substrate enzyme catalysed reactions- Michaelis-Menten equation, importance of V-max, Km, MM-equation, and turnover number; Lineweaver-Burk plot, Eadie-Hofstee plot, Hanes-Woolfplot and Eisenthal and Cornish-Bowden plot. Kinetics of Allosteric enzymes- MWC and KNF models, Hill' equation coefficient. Sequential and non-sequential bisubstrate and multi-substrate reactions. Enzyme inhibition- types and kinetics differentiation. Simple problems related to enzyme kinetics	Importance of Kcat Importance of specificity constant (Kcat/Km)
III	<b>Mechanism of Enzyme Action and Regulation</b> Enzyme specificity, Mechanism of enzyme action- general acid-base catalysis, covalent catalysis, proximity and orientation effects, role of metal ion in enzyme catalysis, mechanism of serine proteases- chymotrypsin, lysozyme, and ribonuclease. Metal activated enzymes and metalloenzymes. Role of metal ions in carbonic anhydrase, superoxide dismutase, carboxy peptidase. Regulation of enzyme activity-covalently modified regulated enzymes, allosteric enzymes, isozymes	Strain and Distortion theory, Significance and Evaluation of activation energy
IV	<b>Industrial and Clinical uses of Enzymes</b> Enzymes applications in food and allied industries- sources of industrial enzymes, thermophilic enzymes, amylases, glucose isomerases, cellulose degrading enzymes, lipases, proteolytic enzymes in meat and leather industry, detergents and cheese production. Clinical enzymology- Enzymes as thrombolytic agents, anti-inflammatory agents digestive aids. Therapeutic use of asparaginase, streptokinase. Enzymes and isoenzymes in diagnosis- LDH, CK, transaminases, phosphatases, amylase and cholinesterase	
V	<b>Immobilized Enzymes and Biosensors</b> Immobilized enzymes-various methods of immobilization, kinetics and applications of immobilized enzyme. Enzymes as diagnostic reagents. Biosensors: Principle, technique and mechanism of Biosensors. Calorimetric biosensors, potentiometric biosensors, Amperometric biosensors, optic biosensors, and immune-sensors. Enzyme engineering: Artificial enzymes. Abzymes and synzymes, Antioxidant enzymes	

PERCENTAGE OF SYLLABUS REVISED: 23 %

Course Focus On:

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input type="checkbox"/>	Employability	<input type="checkbox"/>	Innovation
<input type="checkbox"/>	Intellectual Property Right (IPR)		





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## Syllabus Revision M.Sc Biochemistry

Faculty: Biosciences

Semester: I

Course Code/ Name: 223BC2A1CD: Cellular Biochemistry

Board: Biochemistry

Unit	Existing	Changes
I	Membrane Biology Bio-membrane structure- fluid mosaic model; Membrane lipids- fluidity, Asymmetry, phase transition, Liposomes, Scott Syndrome. Membrane proteins- Types, Orientation, Mobility- Experiments, flippases, proteins on RBC membrane, Bacteriorhodopsin, Porins-aquaporin. RBC ghosts, solubilisation of proteins, lipid anchored proteins. Carbohydrates- cell surface carbohydrates-Lectins	The dynamic nature of the plasma membrane
II	Membrane transport Membrane transport- Overview, Passive diffusion, Facilitated diffusion in erythrocytes. Carriers and Ion-Channels. Ion cone. Gradients. Uniporter Catalyzed transport. Active transport systems. Transport process driven by ATP-Ion Pumps: Calcium, APT ase; Na+K+ATPase,, Gastric H+K+ATP ase,, Gastric H+K+ ATP ase, ATP ases that transport peptides and drugs. ABC superfamily- Bacterial PM permeases, Mammalian MDR proteins: Transport process driven by light and ion gradients. Co-transport by Symporters and antiporters. Group translocation Osmosis and Receptor mediated endocytosis.	
III	Energy metabolism and Cytoskeleton Mitochondria- Reduction potentials, electron transport chain Overview, Complexes, Q-cycle, Cyt-C oxidase complex, Translocation of Protons and the establishment of a proton, motive force Machinery for ATP formation. Chemiosmotic mechanism, APT Synthase Experiments. inhibitions of Oxidative phosphorylation. Uncouplers. Microtubules- Organization and dynamics, Kinesin and dynein. Microfilaments- Action- Structures, Assembly, Myosin. Cilia and Flagella- Structure and functions, Intermediary filaments. Striated muscle- structure, excitation- contraction.	Intermediate filaments assembly and Disassembly
IV	Cellular Integration Cell-Cell and Cell-matrix adhesion: An overview. Cell-Cell, interaction: ECM; Collagen, hyaluronan & proteoglycans, laminin, integrins and fibronectins. Cell-Cell adhesion- CAMs Specialised junctions- Desmosomes, Gap junctions, Adhesion molecules-Cadherins- Connexins. Cell-Cell signalling- Signalling molecules and their receptors: functions. of cell surface receptors, pathways of intracellular signal transduction, second messengers. (G-protein coupled receptors, receptor tyrosine kinases. Ras. MAP kinases).	
V	Protein Transport and degradation Protein targeting: post-translational modifications in prokaryotes and eukaryotes, role of signal peptide, role of endoplasmic reticulum and golgi apparatus. Protein targeting- signal sequence hypothesis, targeting of proteins to different compartment of mitochondria, ER, plasma membrane, lysosomes, peroxisomes and chloroplast) translocation, heat shock proteins, molecular chaperons, glycosylation, SNAPS and SNAREs, bacterial signal sequences, mitochondrial, chloroplast and nuclear protein transport, endocytosis-viral entry, ubiquitin TAG protein destruction. Sumoylation	Cell Cycle: Overview and its phases. Regulation of cell cycle and regulatory proteins (Cyclins and CDKCs). Studies of frog oocyte maturation and the discovery of Cyclins. Cell cycle control and check points in yeast and mammalian cells.

PERCENTAGE OF SYLLABUS REVISED: 20%

Course Focus On:

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input type="checkbox"/>	Employability	<input type="checkbox"/>	Innovation
<input type="checkbox"/>	Intellectual Property Right (IPR)		



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## Syllabus Revision M.Sc Biochemistry

Faculty: Biosciences

Board: Biochemistry

Semester: I

Course Code/ Name: 223BC2A1DA: Cancer biology, Diagnosis and Therapy


Unit	Existing	Changes
I	Introduction: Cancer cell-morphology and growth characteristics. Types of growth-hyperplasia, dysplasia, anaplasia and neoplasia. Types and prevalence of cancer. Nomenclature of neoplasms, classification based on origin/organ. Differences between benign and malignant tumors.	Metastasis and the cytoskeleton
II	<b>Mutation and Carcinogenesis</b> Cancer epidemiology, Cancer endocrinology. Cancer causing agents- radiation, viruses, chemicals. Multistep carcinogenesis: Initiation, Promotion, Progression. Para-neoplastic syndromes. Mutation- definition, significance, rates and frequency. Mutagenic agents. Molecular basis of mutagenesis, induced and spontaneous mutations, crossing over and segregation. Various Types of mutations- addition, deletion, inversion, reciprocal, translocation, insertional translocation and frame- shift mutations. Chemical carcinogenesis- genetic and epigenetic carcinogens, pro-carcinogens and co-carcinogens, promoters and initiators, testing for carcinogenicity, Ames test. Cancer-biology and biochemistry- Aberrant metabolism during cancer development.	
III	<b>Tumor Markers and Signal Transduction</b> Oncogenes- RNA and DNA tumor viruses, retroviruses and viral oncogenes. Src and Ras gene, mechanism and characteristic of cell transformation. Molecular mechanism of oncogenesis- proto-oncogenesis, oncogene, oncoproteins, tumour suppressor genes involved in cancer. Tumor markers: cellular proto-oncogenes- oncogene activation. Radiation- effect of ionising radiations on DNA, chromosomal aberrations. Genetic basis of cancer, metastasis, use of tumor markers in detection and monitoring of cancer. Signal transduction in cancer: cell-cell interactions, cell adhesion-invasion and metastasis - VEGF signalling and angiogenesis; role of transcription factors. Growth factors-EGF, TNF- $\alpha$ and TGF- $\beta$ and growth factor receptors. Free radicals and antioxidants in cancer. Diet and cancer .	Abrupt activation Cancer Markers
IV	<b>Cell cycle, cell death and cancer</b> Cell Cycle Regulation cancer: control of the cell cycle-cyclins and CDKs, and tumor suppressor genes p53, p21 Rb, BRAC1 and BRAC2. Telomeres, and Immortality; Epigenetics- role of DNA methylation in gene silencing- epigenetic silencing of tumor-suppressor genes. Death-signaling pathways-mitochondrial and death receptor pathways, apoptosis and cancer (Intrinsic and extrinsic pathways). Mechanism of apoptosis. Impact of apoptosis on oncogenesis. Principles and methods of cancer diagnosis- biochemical, genetic, cytotoxic, cell growth and viability tests.	Mechanism and Impact of apoptosis
V	<b>Cancer Diagnosis and Cancer Therapy, Stem Cells and Cancer</b> Diagnosis of cancer by histo-pathology, MRI scan, PET-scan, cytogenetics test, karyotype, FISH. Strategies of anticancer drug therapy- chemotherapy, gene therapy, immuno-therapy, radiotherapy and surgical therapy. Principles of cancer biomarkers and their applications. Stem Cells and Cancer.	Principles and methods of cancer diagnosis- biochemical, genetic, cytotoxic, cell growth and viability tests.

PERCENTAGE OF SYLLABUS REVISED: 21%

Course Focus On:

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|--|--|
| <input checked="" type="checkbox"/> Skill Development      | <input type="checkbox"/> Entrepreneurial Development |
| <input type="checkbox"/> Employability                     | <input type="checkbox"/> Innovation                  |
| <input type="checkbox"/> Intellectual Property Right (IPR) |  |



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**Syllabus Revision**  
**M.Sc Biochemistry**

**Faculty: Biosciences**

**Board: Biochemistry**

**Semester: I**

**Course Code/ Name: 223BC2A1CP : Enzymes and Cellular Biochemistry**

Experiments	Existing	Changes
1	Observation of prokaryotic and eukaryotic cells with the help of light microscope	Preparation of permanent slides and observation of prokaryotic and eukaryotic cells with the help of light microscope
2	Mitosis and cell cycle in Onion root-tip cell	Mitosis and cell cycle in Onion root-tip cell
3	Cell counting and viability (Yeast/Bacteria)	Cell counting and viability (Yeast/Bacteria).
4	Determination of osmotic fragility of a cell (Goat RBC)	Determination of osmotic fragility of a cell (Goat RBC) and RBC ghost cell preparation
5	Desalting of proteins by dialysis.	Study of cell viability/ death assay by use of trypan blue or MTT assay
6	Effect of pH on enzyme activity of catalase.	Isolation of organelles by subcellular fractionation
7	Effect of Temperature on enzyme activity of catalase.	Partial purification of catalase from natural source
8	Effect of substrate concentration on enzyme activity of catalase.	Assay of enzyme activity and specific activity of catalase
9	Purification of acid phosphatase from potato.	Effect of pH, Temperature, Substrate concentration on catalase and determination of Km and Vmax using Lineweaver-Burk graph
10	Immobilization of enzyme and measurement of its activity.	Immobilization of enzyme and measurement of its activity
11	Kinetics of activity loss of an enzyme in the presence of trace amounts of metals.	Kinetics of activity loss of an enzyme in the presence of trace amounts of metals.
12	Study of cell viability/ death assay by use of trypan blue or MTT assay.	Separation of isoenzymes by Native PAGE and SDS PAGE (Demonstration)

Note: End Semester Practical Examination requires completion of 10 experiments out of 12.

Percentage of syllabus Revised: 58%

Course Focus On:

<input checked="" type="checkbox"/> Skill Development	<input type="checkbox"/> Entrepreneurial Development
<input type="checkbox"/> Employability	<input type="checkbox"/> Innovation
<input type="checkbox"/> Intellectual Property Right (IPR)	



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### Syllabus Revision M.Sc Biochemistry

Faculty: Biosciences

Board: Biochemistry

Semester: I

Course Code/ Name: 223BC2A1CQ: Biomolecules and Biochemical Techniques

Experi-ments	Existing	Changes
1	Isolation and estimation of starch from potato	Isolation and estimation of Starch from potato
2	Isolation and estimation of DNA and RNA from goat liver (genomic)	Isolation and estimation of Glycogen from the liver
3	Isolation and estimation of Bacterial Nucleic acids	Hemagglutination assay of lectins
4	Estimation of sodium by flame photometry	Isolation and estimation of DNA and RNA from goat liver
5	Agarose gel electrophoresis of genomic and plasmid DNA	Isolation and Estimation of Phospholipids
6	Separation of sugars by thin layer chromatography	Isolation and estimation of Casein from Milk
7	Separation of lipids by thin layer chromatography	Estimation of sodium by Flame photometry
8	Separation of amino acids by thin layer chromatography	Isolation of lymphocytes from Whole blood using Density Gradient Centrifugation
9	Separation of plant pigments by column chromatography	Separation of amino acids/ Sugars by thin layer chromatography
10	PCR Technique (demonstration)	Separation of plant pigments by column chromatography
11	Separation of serum protein by PAGE	Agarose gel electrophoresis of genomic and plasmid DNA
12	Isolation and estimation of glycogen from the material	Analysis of secondary metabolites using HPLC and HPTLC (Demonstration)

Note: End Semester Practical Examination requires completion of 10 experiments out of 12.

Percentage of syllabus Revised: 50%

Course Focus On:

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|--|--|
| <input checked="" type="checkbox"/> Skill Development      | <input type="checkbox"/> Entrepreneurial Development |
| <input type="checkbox"/> Employability                     | <input type="checkbox"/> Innovation                  |
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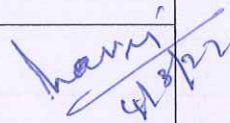

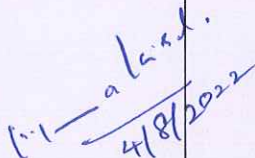


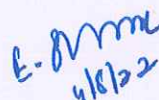

## ATTENDANCE OF THE THIRTEENTH BOARD OF STUDIES MEETING

Faculty: Bioscience

Name of Board: Biochemistry

Venue: Innovation Lab Date: 04/08/2022, Time : 09.30 a.m

The following members were present for the board of studies meeting

S. NO.	NAME	DESIGNATION	SIGNATURE
1	Dr. Gowri.S Professor and Head, Department of Biochemistry, Dr. N.G.P. ASC	Chairman	 4/8/22
2	Dr. A. Vijaya Anand Professor Dept. of Human Genetics and Molecular Biology Bharathiar University, Coimbatore- 641046	VC nominee	 4/8/22
3	Dr. Kalaiselvi Senthil Associate Professor Department of Biochemistry, Biotechnology and Bioinformatics Avinashilingam Institute for Home Science and Higher Education for Women Coimbatore -641043	Subject Expert	 4/8/2022
4	Dr. D. Amirtham, ICAR-Post Doctoral Fellow Asst. Professor (Biochemistry) Dept. of Biochemistry Centre for Plant Molecular Biology & Biotechnology Tamil Nadu Agril. University Coimbatore-641003	Subject Expert	 4/8/22
5	Dr. M.G. Sridhar Professor and Head, Dept of Biochemistry and Vice Principal, KMCH Institute of Health Sciences and Research, Coimbatore	Subject Expert & Special Invitee	 4/8/2022
6	Dr. E. Santhini Senior Scientific Officer- B/ Technical Manager Centre of Excellence for Medical Textiles The South India Textile Research Association Coimbatore-641014	Industrial Expert	 4/8/22
7	Dr. S. Vadivel HOD of Clinical Biochemistry and Quality Control System K.G. Hospital, Coimbatore- 641018	Alumni	





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8	Dr.S.Balasubramanian Dean Research and Development, Dr. N.G.P. ASC	Member	<i>S. Balasubramanian</i> 04/08/22
9	Dr.N.Kuppusamy Department of Tamil, Dr. N.G.P. ASC	Co-opted Member	<i>N. Kuppusamy</i> 4/8/22
10	Dr.Vidhyaprabha, R Department of English, Dr. N.G.P. ASC	Co-opted Member	<i>R. Vidhyaprabha</i> 4/8/22
11	Dr.Suganthi. Department of Chemistry, Dr. N.G.P. ASC	Co-opted Member	<i>Suganthi</i> 4-8-22
12	Dr.Selvakumar C Department of Physics, Dr. N.G.P. ASC	Co-opted Member	<i>Selvakumar C</i> 04/08/22
13	Dr.M.Sangeetha, Department of Mathematics, Dr. N.G.P. ASC	Co-opted Member	<i>M. Sangeetha</i> 4/8/22
12	Dr.N.Kumaresh Department of Artificial Intelligence and Machine Learning, Dr.N.G.P ASC	Co-opted Member	<i>N. Kumaresh</i> 4/8/22
13	Dr.N.Kannikaparameswari Department of Biochemistry, Dr. N.G.P. ASC	Member	<i>N. Kannikaparameswari</i> 4/8/22
14	Dr.T.Indhumathi Department of Biochemistry, Dr. N.G.P. ASC	Member	<i>T. Indhumathi</i> 4/8/22
15	Dr.K.Rajathi Department of Biochemistry, Dr. N.G.P. ASC	Member	<i>K. Rajathi</i> 4/8/22
16	Ms.Miruthula.S II M.Sc Biochemistry	Student Representative	<i>Miruthula.S</i>
17	Ms.Manorida. G III B.Sc Biochemistry	Student Representative	<i>Manorida. G</i>

Date :04/08/2022

*Gowri*

(Dr.S.Gowri)

Chairman,BoS Biochemistry

BoS Chairman/HoD  
Department of Biochemistry  
Dr. N. G. P. Arts and Science College  
Coimbatore - 641 048



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