	Dr. N.G.P. ARTS AND SCIENCE COLLEGE (An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore) Approved by Government of Tamil Nadu and Accredited by NAAC A++ Grade (3 rd Cycle- 3.64 CGPA) Dr. N.G.P.-Kalapatti Road, Coimbatore-641048, Tamil Nadu, India Web: www.dnrgpasc.ac.in Email: info@dnrgpasc.ac.in Phone: +91-422-2369100	BoS
		18th

Department of Clinical Laboratory Technology

Board of Studies Meeting

The minutes of the 18th meeting of Board of Studies held on 08.11.2024 at 10.30 am at the Placement Board Room.

Members Present:

S.No.	Name	Category
1	Dr. S. Kokila	Chairman
2	Dr.K.R.Muthusami, Chief Biochemist, KMCH, Coimbatore	University Nominee
3	Dr. T.M. Kartikeyan Professor, KMCH Institute of Health Sciences & Research, Coimbatore	Subject Expert
4	Dr. M.Thiruselvi	Member
5	Dr. S.Sasikala	Member
6	Dr. K.Anbalagan	Member
7	Ms. Rasika K	Member
8	Dr. R Rengaramanujam	Co-opted Member
9	Dr.A. Adhiselvam	Co-opted Member

The HoD and Chairman of the Department of Clinical Laboratory Technology welcomed and introduced all the members and appreciated them for their continuous support and contribution for the development of academic standard and enrichment of the syllabus.

Further, Chairman informed the inability of the following members to attend the meeting and requested to grant leave of absence.

1. Dr. R. Rangunathan, Director, CBNR, Coimbatore- Industrial Expert
2. Dr. S. Gayathri Devi, Professor, Avinashilingam University, Coimbatore- Subject Expert
3. Mr. M. Vasanth Kumar, Assistant Professor, CMS College of Science and Commerce, Coimbatore - Alumni
4. Ms G. Rethanya, III B.Sc CLT- Student Representative



After brief discussion the items of the agenda were taken one by one for discussion and the following resolutions were passed.

Item 18.1: *To review and approve the minutes of the previous meeting held on 05.04.2024.*

The chairman of the Board presented the minutes of the previous meeting held on 05.04.2024 and requested the members to approve. After brief discussion the following resolution was passed.

Resolution:

Resolved to approve the minutes of the previous meeting held on 05.04.2024.

Item 18.2: *To consider and approve the scheme and syllabi for II semester for the students admitted during the academic year 2024-2025.*

The chairman presented the detailed Scheme and Regulation for the students admitted during the academic year 2024-25 and syllabi for the II semester. The members deliberated in detail about the modification required. After discussion it is unanimously decided to adopt the following changes.

Changes Made:

Course Code	Course	Change and Reason
24CLU2CA	Core: Bioanalytical Techniques	Dr. Karthikeyan suggested to include Calibration in Unit I & in Unit V as it is mandatory topic under Buffer solutions and centrifugations.
24CLU2CP	Practical: Clinical Biochemistry – I	Dr. Muthusami suggested to incorporate Calibration experiment under preparation of Buffer solutions

After discussion the following resolution was passed.

Resolution:

Resolved to approve the above modification and adopt the revised syllabi for the students admitted during the academic year 2024-2025.

Item 18.3 : *To consider and approve the syllabi for IV Semester for the students admitted during the academic year 2023-24.*



The chairman presented the detailed syllabi for IV Semester for the students admitted during the academic year 2023-24. The members deliberated in detail about the modification required. After discussion it is unanimously decided to adopt the following changes.

Changes Made:

Course Code	Course	Change and Reason
233CL1A4CA	Core: Molecular Biology	Dr. K.R. Muthusami recommended to include Difference between RNA and DNA in Unit I in order to compare the features of nucleic acids
233CL1A4CP	Core Practical: Clinical Biochemistry II	Dr.Muthusami suggested to include the Blood storage under blood collection and serum separation experiment due to its significance.
233CL1A4SA	SEC: Blood Banking and Blood Transfusion	As per the recommendation of Dr. Karthikeyan, following contents are included to enrich the concepts in Blood banking. Unit 2: Warm and cold cross matching, Preservation and storage Documentation of blood bank Unit 4: Transfusion reaction- reporting system Transfusion reaction analysis Unit 5 : Blood bank and its regulatory requirements Reference SOP of blood bank.

After discussion the following resolution was passed.

Resolution:

Resolved to approve the above modification and adopt the revised syllabi for students admitted during the academic year 2023-2024.

Item 18.4: *To consider and approve the changes in the syllabi for VI Semester for the students admitted during the academic year 2022-23.*

The chairman presented the detailed syllabi for the semester VI to the students admitted during the academic year 2022-23. The members deliberated in detail about the modification required. After discussion it is unanimously decided to adopt the following changes.

Changes Made:

Course Code	Course Code	Change and Reason
223CL1A6CA	Core: Cytology	Dr.Karthikeyan suggested to include the following topics inorder to gain in depth skill in the subject Unit 3 : Types of liquid based cytology Unit 5: Monoclonal Antibodies - preparation and dilution, Antigen Retrieval, Basic principles in flurescence



		reactions.
223CL1A6CB	Core: Diagnostic Molecular Techniques	To ascertain the importance of molecular tests, the below mentioned topics has been included as recommended by Dr.Muthusami. Unit I: Storage and Discarding of samples Unit II: Title to be renamed as infectious disease of bacteria, viruses and fungi and its diagnosis. Dr.Karthikeyan suggested to include the topics Dominant and recessive allele in Unit 3 and Sanger's sequencing methods and its principle in Unit V
223CL1A6DA	DSE : Good laboratory Practices and Professional Ethics	Dr.Muthusami insisted to add following topics to acquire skills in GCLP Unit I: Storage of reagents and materials; Methods of disposal Unit III: Specimen collection and transport, Turn around time and Critical value Unit V: Validation and verification in Quality Assurance
223CL1A6DC	DSE :Forensic Science and Toxicology	Dr.Karthikeyan suggested to include Different types of toxic substances and its analysis in Unit II.
223CL1A6DD	DSE - Bio-safety and Bio waste Management	To understand the essence of lab safety, Dr.Muthusami suggested to incorporate following topics. Unit I: Standard precautions, Hazard identification and risk analysis Unit II: Segregation of biowastes, Concern to air and water, biomedical authorization and environmental clearance Unit V: Hazardous gases and its safe disposal
223CL1A6DF	DSE- Tumor markers and Immunohistochemistry	To learn the basic concepts in Oncogenes, Dr. Muthusami suggested to add the topic, Hereditary oncogenes in Unit I. Dr.Karthikeyan suggested to replace D- dimers instead of FDP and fibrin in order to update the technique involved in Bladder tumour antigen in unit IV.

New Course Introduced:

Course Code	Course	Reason
223CL1A6SP	Cytological and Molecular Diagnostics	Dr.Karthikeyan suggested to introduce the practical course as it plays a significant role in disease diagnosis and provide employability skills.



After discussion the following resolution was passed.

Resolution:

Resolved to approve the above modification and adopt the revised syllabi for students admitted during the academic year 2022-23.

Item 18.5: *To consider and approve the PG Diploma in Clinical Laboratory Techniques and Skill oriented courses to be offered during the academic year 2024-25.*

The Chairman presented the detailed scheme for PG Diploma and Skill oriented courses to be offered to the students admitted during the academic year 2024-25. The members deliberated in detail about the modification required. After discussion the following resolution was passed.

Resolution:

Resolved to retain the existing syllabus of 2022-23 batch without any modification for the students admitted from the academic year 2024-25.

Item 18.6: *To approve the panel of examiners for question paper setting and evaluation of answer scripts for the Even semester of the academic year 2024-2025.*

The chairman presented the panel of examiners for question paper setting, question paper scrutiny and conduct of practical and theory examinations are submitted to CoE for exam related work.

Resolution:

Resolved to approve the panel of examiners for question paper setting and evaluation of answer scripts for the Even semester of the academic year 2024-2025.

Item 18.7: *To consider and approve the syllabi of Self-study courses offered in III semester for the students admitted during 2024-25.*

The chairman presented the syllabi for Self-study courses for the students admitted during the academic year 2024-2025. The members deliberated in detail about the modification required.

After discussion the following resolution was passed.

Resolution: Resolved to retain the existing syllabus of 2023-24 batch without any modification for the students admitted during the academic year 2024-25.



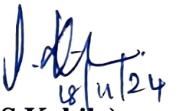
Item 18.8: *To consider and approve the course offered by NPTEL and get exemption for the course offered in V semester for the students admitted during the academic year 2023-24.*

The chairman presented the detailed syllabus of V semester of the students admitted during the academic year 2023-24. After discussion the following resolution was passed.

Resolution: Resolved to approve the course equivalent to the course offered by NPTEL in V semester for the students admitted during 2023-24.

Finally, the chairman thanked all the members for their cooperation and contribution in enriching the syllabus with active participation in the meeting and sought the same spirit in the future also. The meeting was closed with formal vote of thanks proposed by Dr.S.Kokila, Head and Chairman - Clinical Laboratory Technology.

Date: 18.11.2024


(Dr. S.Kokila)

BoS Chairman/Head
Department of Clinical Laboratory Technology
Dr. N. G. P. Arts and Science College
Coimbatore - 641 048



Syllabus Revision

Faculty: Bio Sciences

Board: Clinical Laboratory Technology

Semester: II

Course Code/ Name: 24CLU2CA, Bioanalytical Techniques

Unit	Existing	Changes
I	<p>Buffers pH meter-principle, instrumentation. pH scale, Henderson Hasselbalch equation, Buffer solutions, Acidic buffer and basic buffers, Buffer systems of blood Haemoglobin, Protein and Phosphate buffer system. Various ways of expressing the solute and solvent concentrations - molality, molarity, normality, mole fraction - Definitions only.</p>	Calibration
II	<p>Chromatographic Techniques Paper chromatography-principle, materials, methods and applications. Thin Layer chromatography- principle, Technique and applications. Gas liquid chromatography principle and applications. Ion-exchange chromatography, Affinity chromatography and Molecular sieve chromatography- Principle and applications. High Performance Thin Layer Chromatography (HPTLC) - Principle, Instrumentation, Application, High performance Liquid Chromatography (HPLC), Fast protein liquid chromatography (FPLC), Gas chromatography-mass spectrometry (GC-MS) [principles only].</p>	-
III	<p>Electrophoretic Techniques and Immunoassays Principles and applications of paper electrophoresis, Gel electrophoresis- Agarose gel, and SDS-PAGE. Immuno electrophoresis- principle and technique, applications of Immuno electrophoresis. Principles and applications of Immunoassays- Radio immuno Assay, Isoelectric focusing Enzyme Linked Immuno Sorbent Assay.</p>	-
IV	<p>Photometry Colorimetry- Principle- Beer - Lambert's Law. Types of filters, instrumentation and applications of colorimeter. Spectrophotometer- principle,</p>	-



	Components of spectrophotometer and its applications, Difference between Colorimeter and spectrophotometer. Spectrofluorimeter principle, components and applications of spectrofluorimeter. Flame photometry- principle, basic components of flame photometer. Types- Emission flame photometer, atomic absorption spectrophotometer, Basic maintenance, Quality control and Calibration of instruments.	
V	Centrifugation Principle of Centrifugation. Centrifuges - Rotors, types - Fixed angle, swinging bucket, vertical rotors and functions of rotor. Types of Centrifuge - Bench top, High speed, Ultra centrifuge, Analytical centrifuge and Refrigerated centrifuge - Principles and applications. Determination of Molecular weight by sedimentation velocity method. Differential centrifugation - principle, separation of cell organelles by differential centrifugation.	Calibration

PERCENTAGE OF SYLLABUS REVISED: 2.5%

COURSE FOCUS ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics



Syllabus Revision

Faculty: Bio Sciences

Board: Clinical Laboratory Technology

Semester: II

Course Code/ Name: 24CLU2CP, Practical: Clinical Biochemistry - I

Existing	Changes
1 Preparation of buffers 2 Measurement and adjustment of pH 3 Urine collection and Preservation 4 Quantitative analysis of urea in urine 5 Quantitative analysis of uric acid in urine 6 Quantitative analysis of creatinine in urine 7 Quantitative analysis of phosphorus in urine 8 Quantitative analysis of calcium in urine 9 Quantitative analysis of protein in urine 10 Quantitative analysis of sodium and potassium in urine 11 Separation of amino acids by paper chromatography 12 Separation of sugars by thin layer chromatography	Calibration

PERCENTAGE OF SYLLABUS REVISED: 8%

COURSE FOCUS ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics



Syllabus Revision

Faculty: Bio Sciences

Board: Clinical Laboratory Technology

Semester: IV

Course Code/ Name: 233CL1A4CA, Core: Molecular Biology

Unit	Existing	Changes
I	Genetic material DNA- structure and types, DNA as a genetic material: - Griffith, Hershey –Chase experiment. Central dogma of life, Concepts of Gene and Genome. Genetic code. Codon and anticodon.	Difference between RNA and DNA
II	Replication DNA replication in Prokaryotes-Enzymes involved- Mechanism of replication, Theta type replication. DNA replication in Eukaryotes - Enzymes and mechanism of replication. Regulation of replication in prokaryotes and eukaryotes.	-
III	Transcription Prokaryotic transcription mechanism - Enzymes and Transcription factors, transcription mechanism. Eukaryotic transcription - Enzymes and transcription factors, Mechanism of transcription. Post transcriptional modification - Capping, polyadenylation, splicing, Micro RNA, RNA editing and gene silencing.	-
IV	Translation Protein synthesis in prokaryotes and eukaryotes- activation, initiation, elongation and termination of protein synthesis. Inhibitors of protein synthesis, Post translational modification, Gene regulation- lac operons and trp operons.	-
V	Mutation Definition, causes of mutation; mutagens and carcinogens; Types of mutation missense, nonsense, insertion, deletion, duplication, frame shift mutation; Transposons, site directed mutagenesis. DNA repair mechanisms -Direct enzymatic repair, Base excision repair, Nucleotide excision repair, Mismatch repair, Recombinational repair mechanism.	-

PERCENTAGE OF SYLLABUS REVISED: 2%



COURSE FOCUS ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

Syllabus Revision**Faculty: Bio Sciences****Board: Clinical Laboratory Technology****Semester: IV****Course Code/ Name: 233CL1A4CP, Core Practical: Clinical Biochemistry II**

Existing	Changes
1 Blood Collection and Serum Separation	Storage
2 Estimation of Urea in Serum.	
3 Estimation of Uric acid in Serum	
4 Estimation of Creatinine in Serum.	
5 Estimation of Phosphorus in Serum.	
6 Estimation of Protein in Serum.	
7 Estimation of Glucose in Serum.	
8 Estimation of Cholesterol in Serum	
9 Estimation of Sodium and potassium in Serum.	
10 Assay of Alkaline phosphatase in Serum.	
11 Assay of Alpha- Amylase in Serum.	
12 Assay of SGPT & SGOT in Serum.	

PERCENTAGE OF SYLLABUS REVISED: 8%**COURSE FOCUS ON:**

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics



Syllabus Revision

Faculty: Bio Sciences

Board: Clinical Laboratory Technology

Semester: IV

Course Code/ Name: 233CL1A4SA, SEC: Blood Banking and Blood Transfusion

Unit	Existing	Changes
I	Blood Grouping System Blood Grouping System; ABO Blood group system, Rh typing and weaker variants in Rh system, Subgroup and weaker variants of A and B and Bombay phenotype.	-
II	Antibodies and Cross matching Antibodies and Cross matching: Coomb's cross matching - Direct and Indirect method, Preparation and standardization of anti human globulin reagent, Auto and allo antibodies, Major and Minor Cross matching – Tube method, Slide method and Gel method.	Warm and cold cross matching, preservation and storage and documentation of blood bank
III	Donors and blood donation Donors and blood donation: Donor selection – donor eligibility criteria, Importance of Donor consent. Phlebotomy- Blood collection methods, Storage of whole blood , Serological screening test on donor's blood sample. Autologous donation and specialized donation. Apheresis and plasmapheresis. Role of irradiation, Discarding of positive and expired blood.	-
IV	Transfusion Reaction Transfusion Reaction: Storage of whole blood, Preparation of blood components Anticoagulants, Preservation and storage. Hemolytic disease of newborn, blood transfusion reaction-acute transfusion reactions and delayed transfusion reactions, Transfusion related complications- Transfusion-related acute lung injury (TRALI), Transfusion associated circulatory overload and investigation of transfusion reaction, Documentation in blood bank.	Transfusion reaction-reporting system Transfusion reaction analysis
V	Organization of blood bank Area for whole blood and components, staff requirement, equipment requirement for whole and component blood preparation, process of licensing. Discarding of blood bank wastes.	Blood bank and its regulatory requirements Reference sop of blood banking



PERCENTAGE OF SYLLABUS REVISED: 14%

COURSE FOCUS ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

Syllabus Revision

Faculty: Bio Sciences

Board: Clinical Laboratory Technology

Semester: VI

Course Code/ Name: 223CL1A6CA, Core: Cytology

Unit	Existing	Changes
I	Cell structure and Staining Normal cell structure and function, Normal Histology and cytology of epithelial and connective tissue, Collection and preparation of samples Fixation, fixatives, Staining - Principles, Preparations of reagents, techniques: a. Papanicolaou's stain, b. May – Grunwald Giemsa stain.	-
II	FNAC and non-gynae cytology Normal and malignant cytology in Gastrointestinal tract, Respiratory tract, Effusions, CSF and Urinary tract. FNAC of Breast, Lymph node, Thyroid and Salivary glands, liver, pancreas and biliary system.	-
III	Gynae cytology Normal cervix, cervical neoplasia, Pathogenesis of cervical cancer, cervical screening, cervical cytopathology. Collecting cellular samples from the cervix: Conventional Pap smear, Liquid based cytology.	Types of liquid based cytology
IV	Flow cytometry Flow cytometry Principles, General components of a flow Cytometer: (a) Fluidics (b) Optics: Laser (argon), Dichroic Filters and Mirrors, Photodiode, PMT (photo multiplier tubes) (c) Detectors (d) Electronics. Fluorochromes, Fluorochrome eonjugated Antibodies, Benchtop Flow Cytometers, Immunophenotyping, Data analysis and gating, procedure and evaluation. Image analysis Clinical applications and Research	-



	applications.	
V	Immuno-cytochemistry Introduction, Basic concepts of immunocytochemistry - Antigen, Antibody, Antigen - Antibody interaction, HLA B27, CD4, CD8, Monoclonal antibodies and their preparations, Polyclonal antibodies, Fluorescence reactions.	Monoclonal antibodies preparation and dilutions, Antigen Retrieval, Basic principles in fluorescence reactions

PERCENTAGE OF SYLLABUS REVISED:9.5%

COURSE FOCUS ON:

✓	Skill Development		Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
✓	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

Syllabus Revision

Faculty: Bio Sciences

Board: Clinical Laboratory Technology

Semester: VI

Course Code/ Name: 223CL1A6CB, Diagnostic Molecular Techniques

Unit	Existing	Changes
I	Diseases and sample preparation Introduction: Diseases- infectious diseases, physiological and metabolic errors, genetic basis and inherited diseases. General approach to clinical specimens - Sample collection, transport and processing of samples for diagnosis	Storage and Discarding
II	Infectious disease diagnosis Infectious disease diagnosis: Diagnosis of infection caused by Streptococcus, Salmonella, Vibrio and Mycobacterium sp., Diagnosis of fungal diseases: Candidiasis and	Infectious disease of bacteria, viruses and fungal and its diagnosis.



	Dermatophytosis. Diagnosis of RNA and DNA viruses - Pox viruses, Adenoviruses, Hepatitis Viruses and Retroviruses, Corona virus. Diagnosis of Protozoan diseases and helminthic disease: Amoebiasis, Malaria and Filariasis.	
III	Inherited diseases and Diagnosis Genetic disorders and sex-linked disorders –Hemophilia, Sickle cell anemia, Retinoblastoma, Cystic Fibrosis, Duchenne muscular Dystrophy, Identification of inherited disorders, Cancer genetics - oncogenes and tumor suppressor genes.	Dominant and recessive allele
IV	Molecular Diagnostic Tools Nucleic acid amplification methods - PCR and its types- Reverse Transcription PCR (RT-PCR), Real time PCR, Inverse PCR. Proteins and Amino acids - Qualitative and quantitative techniques: Amino acid sequence analysis	-
V	Hybridization techniques and DNA sequencing methods Blotting Techniques- Southern, Northern, and Western blotting, In-situ hybridization - FISH, DNA microarrays – types and applications, Automated DNA sequencing Principle and application, Advances in DNA sequencing- New Generation sequencing Methods and Pyrosequencing	Sanger's sequencing methods and its principle

PERCENTAGE OF SYLLABUS REVISED: 13.7%

COURSE FOCUS ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics



Syllabus Revision

Board: Clinical Laboratory Technology

Faculty: Bio Sciences

Semester: VI

Course Code/ Name: 223CL1A6DA, Good Laboratory Practices and Professional Ethics

Unit	Existing	Changes
I	Scope and Levels of laboratories Scope, Levels of laboratories, Infrastructure, Personnel, Training & development, Equipment, Reagents and materials, Standard operating procedure, Safety in laboratories, Ethical considerations.	Storage of reagents and materials and methods of disposal
II	Laboratory facilities Laboratory facilities- design and physical aspects of design. Laboratory equipment management-Instrument selection, budgeting, installation, training and maintenance.	-
III	Record and data management Requisition form, Accession list, specimen collection, worksheet, reporting test results, specimen rejection record and data management.	Specimen collection and transport, turn around time and Critical value
IV	Documentation practices Good documentation practices, purpose of laboratory documentation, types of documentation and records, documentation process and errors, principles of good documentation practices and benefits.	-
V	Quality assurance Quality assurance, quality assurance programme, internal quality control, external quality assessment, internal audit, summary of QAP activities.	Validation and Verification

PERCENTAGE OF SYLLABUS REVISED: 17%

COURSE FOCUS ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization



✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics
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Syllabus Revision

Faculty: Bio Sciences

Board: Clinical Laboratory Technology

Semester: VI

Course Code/ Name: 223CL1A6DC, Forensic Science and Toxicology

Unit	Existing	Changes
I	Forensic Pharmacology Pharmacology and its branches, Forensic Pharmacological studies, absorption, distribution, pharmacokinetics, metabolic pathways of common drugs and poisons, Drug toxicity, excretion of drugs and poisons.	-
II	Forensic Toxicology Introduction and scope of forensic toxicology. Types of poisons, Different routes of ingestion, toxicity of poisons. Fate of drug in body. Samples in fatal and non- fatal cases. Packing and preservations of viscera.	Different types of toxic substance and its analysis
III	Radioactive isotopes and compounds Radioisotopes, radioactive sources of exposure and contact, acute and chronic effect on the organs of the body, methods of detection and measurements, handling and disposal of body and tissues containing radioactive material.	-
IV	DNA Profiling Introduction, DNA typing systems- RFLP analysis, PCR amplifications, Analysis of SNP, Y- STR. Mitochondrial DNA, Quality control, Certification and Accreditation.	-
V	Forensic Significance of DNA profiling Applications in disputed paternity cases, child swapping, missing person's identity- civil immigration. The Combined DNA Index System (CODIS - legal standards for admissibility of DNA profiling, procedural and ethical concerns, technologies - DNA chips, SNPs and limitations of DNA profiling.	-

PERCENTAGE OF SYLLABUS REVISED: 2.7%



COURSE FOCUS ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

Syllabus Revision

Faculty: Bio Sciences

Board: Clinical Laboratory Technology

Semester: VI

Course Code/ Name: 223CL1A6DD, Bio-Safety and Bio Waste Management

Unit	Existing	Changes
I	Biosafety Biosafety in laboratory, Laboratory associated infections and other hazards; Code of good and safe laboratory practice for support staff and responsibilities of the workers regarding biosafety. Personal safety measures- Use of glove, mask and personal grooming. Set up of a laboratory on the basis of safety priority and Laboratory Biosafety Guidelines. Laboratory Biosafety Level Criteria (BSL-1- 4).Chemical, electrical, fire and radiation safety. General Safety checklist, Hazardous properties of instruments and Laboratory chemicals.	Standard precautions, Hazard identification and risk analysis
II	Bioethics Co-operation and working relationship with other health professionals, Confidentiality of patient information and test result- dignity and privacy of patient, Responsibility from acquisition of the specimen to the production of data, Accountability for quality and integrity of clinical laboratory services. Institutional ethical committee and its role, Health & Medical surveillance.	Segregation of biowastes, Concern to air and water, biomedical authorization and environmental clearance
III	Biowaste regulations Categories of Biowaste, Regulatory Requirements - State and Central regulation regarding biomedical	-



	waste disposal and management.	
IV	Types of biowaste & segregation 07 h Sources of biomedical waste; Types and color coding for different biomedical wastes, Importance of segregate at source ,Types of health care waste: Infectious and non-infectious waste, hazardous waste, solid and liquid waste, biodegradable and non-biodegradable waste.	-
V	Biowaste management 07 h Wastes management- life cycle of bio-medical wastes. Decontamination and disposal: Disinfection methods – Sterilization - steam sterilizing (Auto claving) - Non-burn treatment technology, Microwave, wet thermal treatment, dry thermal treatment, chemical based technologies. Disposal of hazardous wastes and radioactive wastes. Generation of Biogas from food wastes.	Hazardous gases and its safe disposal

PERCENTAGE OF SYLLABUS REVISED: 16%
COURSE FOCUS ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
✓	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

Syllabus Revision

Faculty: Bio Sciences
Semester: VI

Board: Clinical Laboratory Technology

Course Code/ Name: 223CL1A6DF, Tumor Markers and Immunohistochemistry

Unit	Existing	Changes
I	Carcinogens and Oncogenes Introduction to cancer. Carcinogens - definition. Oncogene – definition. General mechanism of Oncogenes. Characteristics of growing tumor cells-general and morphological changes, biochemical changes.	Hereditary oncogenes in
II	Tumor Markers Tumor Markers- Introduction, Clinical applications of tumor markers. Enzymes as tumor markers, Alkaline Phosphatase (ALP), Creatine kinase (CK),	-



	Lactate dehydrogenase (LDH), Prostate specific antigens (PSA).	
III	Hormone tumor markers Hormones as tumor markers- Structure and mechanism. Oncofetal antigens. Alpha feto protein (AFP), Beta Human Chorionic Antigen (β HCG), Carcino embryonic antigen (CEA) Squamous cell carcinoma (SCC) antigen. Carbohydrate markers - CA 15-3, CA 125.	-
IV	Bladder cancer markers Blood group antigen (brief introduction of each type) CA 19-9, CA 50, CA 72-4, CA 242. Bladder cancer markers (introduction in brief) - Bladder tumor antigen (BTA) Fibrin, Fibrinogen degradation product (FDP) . Nuclear matrix protein (NMP22). TRAP assay, hyaluronic acid and Hyaluronidase.	D- dimers
V	Immunological techniques Immunological techniques - immunofixation, Antigen retrieval, immunochemistry, turbimetry Immunohistochemistry – Polyclonal and monoclonal antibodies, Direct and Indirect immunohistochemistry, labels, detection, tissue preparation, antigen retrieval, blocking, rinsing, controls. Tumour markers – AFP, B2M, Beta hCG.	-

PERCENTAGE OF SYLLABUS REVISED: 3.3%

COURSE FOCUS ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
✓	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics



Syllabus Revision

Faculty: Bio Sciences

Board: Clinical Laboratory Technology

Semester: VI

Course Code/ Name: 223CL1A6SP, Core Practical: Cytological and Molecular Diagnostics

Existing	Changes
1.Collection of sample and processing 2.Cytological fixatives and fixation 3.Collection and preparation of fluid sediment for cytological examination 4.Preparation and fixation of sputum smears for cytology. 5.Papanicolaou staining-principles and staining procedure. 6.Identification of malignant and benign cells 7.Isolation of DNA from biological sample 8.Isolation of RNA from biological sample 9.Identification of viral antigen by ELISA technique 10.Conventional PCR- Setting up and optimization of PCR reaction 11.RT-PCR for mRNA analysis- Demonstration 12.Quality Control and Validation in Molecular Diagnostics	-

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUS ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics





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

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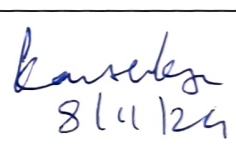
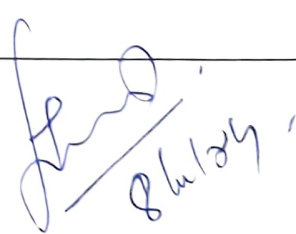
APPROVAL


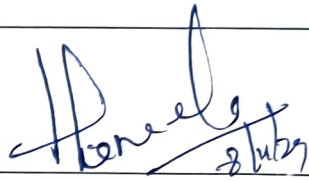

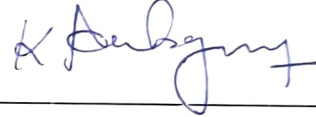

AY 2024-25

ATTENDANCE OF THE EIGHTEENTH BOARD OF STUDIES MEETING

Faculty: Biosciences

Board: Clinical Laboratory Technology

S. No.	Name	Position	Signature
1	Dr.S.Kokila Associate Professor & Head Department of Clinical Lab Technology Dr. N. G. P. Arts and Science College, Coimbatore	Chairman	 8/11/2024
2	Dr.K.R.Muthusami Chief Biochemist, Department of Biochemistry KMCH Institute of Laboratory Medicine KMCH, Coimbatore - 641 048.	Member (Subject Expert) VC Nominee	 8/11/24
3	Dr. T.M. Kartikeyan Professor, Department of Pathology KMCH Institute of Health Sciences & Research, Coimbatore - 641 014.	Member (Subject Expert)	 8/11/24
4	Dr. S.Gayathri Devi Professor, Department of Biochemistry Biotechnology & Bioinformatics Avinashilingam University Coimbatore - 641043	Member (Subject Expert)	ABSENT
5	Dr.R.Ragunathan Director, Centre for Bioscience and Nanoscience Research Coimbatore - 641021	Member (Industry Expert)	ABSENT
6	M. Vasanth Kumar Assistant Professor, Department of Criminology, CMS College of Science and Commerce ,Coimbatore .	Alumni	ABSENT
7.	Dr. Renga Ramanujam Professor & Head Department of Microbiology Dr. N. G. P. Arts and Science College, Coimbatore	Co-opted Member	 8/11/24

8	Dr.A. Adhiselvam Associate Professor & Head i/c Department of Information Technology Dr. N. G. P. Arts and Science College, Coimbatore	Co-opted Member	
9	Ms.G.Rethanya III B.Sc. CLT Dr.N.G.P. Arts and Science College	Student Representatives	ABSENT
10	Dr.M.Thiruselvi Associate Professor Dept of CLT Dr.N.G.P.Arts and Science College	Member	
11	Dr.S.Sasikala Associate Professor Dept of CLT Dr.N.G.P.Arts and Science College	Member	
12	Dr.K.Anbalagan Assistant Professor Dept of CLT Dr.N.G.P.Arts and Science College	Member	
13	Ms. Rasika.K Assistant Professor Dept of CLT Dr.N.G.P.Arts and Science College	Member	

Date: 8/11/2024




8/11/2024
Board Chairman

(Dr.S.Kokila)

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