



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited A++ Grade by NAAC | 12B Status by UGC | Approved by AICTE

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School of Allied Health Sciences

Department of Medical Laboratory Technology

1.1.3 Total number of courses having focus on employability/ entrepreneurship/ skill development offered by the University during the year

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SAMA1105	COMPUTER APPLICATIONS IN HEALTH SCIENCES	L	T	P	CREDITS	TOTAL
		3	0	0	3	100

Course Objectives:

- To have a basic understanding of the evolution of computers, internet and the basics of programming
- To effectively use them in the work / hospital environment and an introduction to nutrigenomics

UNIT I Introduction

Introduction to computers – I/O devices – memory – RAM and ROM – Different kinds of ROM – kilobytes, MB, GB their conversions – large computers – Medium, Micro, Mini computers

UNIT II Number Systems and Languages

Different computer languages – Number system – Binary and decimal conversions – Different operating system

UNIT III The Command Line

MS DOS – Basic commands – MD, CD, DIR, TYPE and COPY CON commands – Networking – LAN, WAN, MAN (only basic ideas)

Unit IV Microsoft Office

Typing text in MS word – Manipulating text – Formatting the text – using different font sizes, bold, italics – Bullets and numbering – Pictures, file insertion – Aligning the text and justify – choosing paper size – adjusting margins – Header and footer, inserting page numbers in a document Printing a file with options – Using spell check and grammar – Find and replace - Mail merge – inserting tables in a document.

UNIT V Excel

Creating table in MS-Excel – Cell editing – Using formulas and functions – Manipulating data with excel – Using sort function to sort numbers and alphabets – Drawing graphs and charts using data in excel – Auto formatting – Inserting data from other worksheets.

UNIT VI Power point

Preparing new slides using MS power point – Inserting slides – slide transition and animation – Using templates – Different text and font sizes – slides with sounds – Inserting clip arts, pictures, tables and graphs – Presentation using wizards.

UNIT VII Networking and The Internet

Introduction to Internet – Using search engine – Google search – Exploring the next using Internet Explorer and Navigator – Uploading and Download of files and images – E-mail ID creation – Sending messages – Attaching files in E-mail

UNIT VIII Basics of Programming and Applications in Medicine

Introduction to Perl / Python language – Different variables, declaration, usage – writing small programs using functions and sub – functions – Concept and applications in medicine - Email, social networking, browsing journals and article using an internet.

Course Outcomes:

On completion of the course, students will be able to

CO1 Promote basic understanding of computational principles

CO2 Tour computer hardware, software, data, number systems and computer networks

CO3 Familiar with the use of routine tasks using word processing packages and applications

CO4 Use the internet, email and basic programming, effectively in healthcare applications
CO5 Expose to the advances in the scope and application of computers in laboratory medicine
CO6 Implement algorithms in real world applications using a programming language

Text / Reference Books

1. Introduction to Computers Paperback by Peter Norton (July 2-17)
2. Introduction to Computers (With YouTube AV: All About the Hardware and Software Used in Computers, Operating Systems, Browsers, Word, Excel, PowerPoint, Emails, Printing Etc. (With CD) Paperback – 1 January 2013 by Ms. Shikha Nutiyal (Author)
3. Microsoft Office 2010 Made Easy: Introduction to Microsoft Office 2010 Paperback – Import, 8 August 2013 by Jr. Fisher, Harold L.

SHSA1103	GENERAL ENGLISH LANGUAGE LEARNING (NON-SEMESTER PATTERN)	L	T	P	CREDITS	TOTAL
		3	0	0	3	100

Course objectives:

- To develop the four basic skills of listening, reading, speaking, and writing, through an integrated approach.
- To improve the comprehension and critical thinking skills.

UNIT I Language at the word level

Parts of Speech – Kinds of sentences- Tense- Voice-Impersonal Passive – Reading: Comprehension passages – Writing: Letter writing – Job Application with CV- Speaking: Self Introduction, Listening: Introduction to Internet & World Wide Web - Creating and Managing Email Accounts

UNIT II Language at the sentence level

Concord- Phrases and Clauses-Adjectives and adverbs-Modals - Prefix-Suffix–Identifying topic sentence, Connectives and discourse markers - Writing: Paragraph Writing- Compare/ contrast paragraphs, Bar diagrams- Tabular columns– Listening: Using audio and video to learn vocabulary and grammar.

UNIT III Writing for the screen

Reported Speech, Compound nouns, Abbreviations/ Acronyms- Types of Sentences- Simple, Compound, Complex-Transformation of sentences- Flow Chart-Writing process descriptive paragraphs/drawing diagram from the paragraph –Creating and writing online quiz tests using Kahoot application- E-mail writing- letters inviting dignitaries-Accepting and Declining

UNIT IV Language at discourse level

Cloze reading exercises- Developing dialogues- Question tags- Instructions- Recommendations-Group Presentations-Preparing Checklist-Posting Online feedback for any article- Writing classified Advertisements- Argumentative Essay writing- Creating Blogs using wordpress.com

UNIT V Social Media Strategies

Editing the passage with respect to spelling, grammar and punctuation-Rearranging Jumbled sentences - Writing effective headlines – Giving feedback online-Letter to the editor- Problems and Solutions- Campaign Leaflet and Writing Film Review

UNIT VI Language Focus

WH questions-Framing open-ended questions -Auxiliaries - Finites - Non – finites: Modal auxiliaries: Verbs: use of Transitive, Intransitive verbs - Phrasal verbs – Quantifiers- Identifying the odd word out- Collocations- Writing informal mails to friends and relatives

UNIT VII Professional Writing

Simile, Metaphor- Connotations- denotations- Idioms and Phrases-Letter to the editor with solutions to current problems –Essay writing- Paragraph writing – Line Graph- Creating Accounts - On line Groups - Twitter- Face book - Skype- Linked in - Research Gate-You Tube - Flickr.

UNIT VIII Creative Writing for Interactive Media

Report Writing- Letter writing- Request for practical training-Projects – Creating PowerPoint Presentation and uploading – Creating Blogs and uploading data – Creative writing -stories and poems – article writing and presentation

Course Outcomes:

On completion of the course, students will be able to

CO1 Attain and enhance competence in the four modes of literacy: writing, speaking, reading and listening

CO2 Acquire varied range of vocabulary; understand increased complexity of sentence structures both in reading and writing

CO3 Develop abilities in grammar, oral skills, reading, writing and study skills

CO4 Attain basic proficiency like, developing ability to express one's own thoughts orally and in writing in a meaningful way in English language

CO5 Improve their accuracy and fluency in producing and understanding spoken and written English

CO6 Participate in critical conversations and prepare, organize, and deliver their work to the public

Text / Reference Books

1. Bhattacharya, Indrajit. An Approach to Communication Skills, Dhanpat Rai Co. Pvt Ltd; New Delhi.
2. Jones, Leo. Cambridge Advanced English: Student's Book New Delhi: Cambridge University Press, 1998
3. Mohan, Krishna and Meenakshi Raman. Advanced Communicative English. New Delhi: Tata McGraw Hill Company Ltd., 2010
4. Rajendra, Pal and Korlhalli. Essentials of Business Communication. J.S.Sultan Chand & Sons, 2007
5. Seely, John. The Oxford Guide to Writing and Speaking Oxford: Oxford University Press, 1998
6. English for Science and Technology (2013) by Department of English, Sathyabama IST.

 - Employability

SAMA1302	CLINICAL BIOCHEMISTRY	L	T	P	CREDITS	TOTAL
		4	0	0	5	100

Course Objectives:

- To impart experiential learning to the students in order to develop a desired workforce to combat ever increasing demand of medical lab technicians in the healthcare sector.
- To enable the students to function efficiently, confidently and safely in clinical laboratory settings including hospital environments.

UNIT I Photometry

Definition, laws of photometry, absorbance, transmittance, absorption maxima, instruments, parts of photometer, types of photometry–colorimetry, spectrophotometry, flame photometry, fluorometry, choice of appropriate filter, measurements of solution, calculation of formula, applications.

UNIT II Water, Vitamins & Mineral Metabolism

Distribution of fluids in the body, ECF & ICF, water metabolism, dehydration, mineral metabolism, macronutrients (principal mineral elements) & trace elements. Fat & water soluble vitamins, sources, requirement, deficiency disorders & biochemical functions.

UNIT III Liver & Renal Functions & their Assessment

Based on: 1-Carbohydrate metabolism 2-Protein metabolism 3- Lipid metabolism 4-Measurements of serum enzyme levels 4-Bile pigment metabolism, Jaundice, its types and their biochemical findings. Various Tests, GFR & Clearance

UNIT IV Techniques on Immunology

Immunodiffusion Techniques, Radioimmunoassay & ELISA-Principles & Applications.

UNIT V Electrophoresis

Definition, Principle, Types & Applications.

UNIT VI Polymerase Chain Reaction

Definition, Types, Principle & Applications

UNIT VII Lipids and Cardiac Profile

In brief Hypertension, Angina, Myocardial Infarction, Pattern of Cardiac Enzymes in heart diseases, Different methods of Cholesterol Estimation- Principle, advantage and disadvantage of different methods.

UNIT VIII Carbohydrate Profile and Autoanalyzer

Auto analyzers - Principle & Applications, Different methods of Glucose Estimation- Principle advantage and disadvantage of different methods.

Course outcomes:

On completion of the course, students will able to

CO1 Understand the different analytical techniques for analyzing samples

CO2 Acquire knowledge about various diseases and their causes

CO3 Learn different types of immune techniques and its analysis of various microorganism

CO4 Demonstrate on various types of glucose estimation and its interpretation

CO5 Implement various methods to diagnose the lipid profile.

CO6 Understand various deficiency diseases of vitamins.

1. Textbook of Medical Biochemistry by MN Chatterjea & Rana Shinde, 7th Edition, Jaypee Publishers. 2. Analytical Biochemistry by Dr.P.Asokan, Chinnaa publications edition 3, 2010 3. Analytical Biochemistry by Asima Hamid, Mohammad Raies, Gulzar Ahmad Book Enclave publisher, first edition, 2019 4. Principles of Biochemistry by Voet & Voet fourth edition, 2018 , Wiley publishers. 5. Wilson and Walkers Principles And Techniques Of Biochemistry And Molecular Biology 8th edition Cambridge University Press, 2018.

 - Employability

SAMA1502	SYSTEMIC BACTERIOLOGY, MYCOLOGY & VIROLOGY	L	T	P	CREDITS	TOTAL
		4	0	0	5	100

Course Objectives:

- To describe about the important medically important bacteria its mode of disease transmission, pathogenesis, diagnosis, prophylaxis and treatment.
- To aims at understanding important medically important virus and fungi its mode of disease transmission, pathogenesis, diagnostic method and treatment.

UNIT I Cocci and Acid-fast bacillus

Systematic Bacteriology - Staphylococcus, Streptococci, Neisseria, Corynebacterium and related organisms. Mycobacterium - typical and atypical. Aerobic pathogenic Actinomycetes

UNIT II Enterobacteriaceae

Vibrios, Helicobacter Pseudomonas, Brucella, Haemophilus, Bordetella. Enterobacteriaceae, Salmonella, Shigella, Proteus, Escherichia, Klebsiella

UNIT III Bacilli and Spirochetes

Bacillus, B.anthraxis Clostridia, Mycoplasma, Rickettsia, Spirochetes, Treponema, Leptospira and Borrelia.

UNIT IV Laboratory diagnosis is bacterial pathogens

Recommendation for collection, transport of specimens, isolation of bacteria from clinical specimens. Primary media for isolation and their quality control - Antibiotic sensitivity discs, testing procedures and their quality control.

UNIT V Superficial and opportunistic mycoses

Introduction to Mycology, Dermatophytes and agents of superficial mycoses, Trichophyton, Epidermophyton and Microsporum. Opportunistic mycoses, Candidiasis, Cryptococcosis, Aspergillosis,

UNIT VI Subcutaneous and systemic mycoses

Systemic mycoses Histoplasmosis, Coccidioidomycosis, Blastomycosis. Subcutaneous mycoses, Mycetoma, Morphology, cultural characteristics, pathogenesis/disease caused & lab diagnosis.

UNIT VII Medical importance of DNA Virus

Introduction to Virology General characteristics of virus, Classification of virus, Pox, Herpes, Hepatitis B virus, Adeno virus

UNIT VIII Medical importance of RNA Virus

Orthomyxovirus, paramyxovirus, Adenovirus, Arbovirus, HIV, Rabies, Morphology, cultural characteristics, pathogenesis/disease caused & lab diagnosis.

Course Outcomes:

On completion of the course, students will be able to

CO1 Understand basic bacterial structure and staining.

CO2 Learn an overview of medically important bacterial families like Enterobacteriaceae

CO3 Familiarize with bacilli and spirochetes

CO4 Understand laboratory diagnosis of bacterial pathogens

CO5 Learn about superficial, systemic and opportunistic mycoses.

CO6 Learn and understand diagnosis of medically important viruses

Text / Reference Books

1. David Greenwood, Richard CD., Slack, John Forrest Peutherer. (1992). Medical Microbiology. 16th edition. ELBS with Churchill Livingstone.
2. Ananthanarayan, R. and JeyaramPaniker, C.K. (1994) Text Book of Microbiology, 6th Edn. Orient Longman, Chennai.
3. Alexopoulos CJ and C W. Mims.(1993).Introductory Mycology (3rd edition) Wiley Eastern Ltd, New Delhi.
4. Jagadish Chander (1996) A Text Book of Medical Mycology. Interprint, New Delhi.
5. Jewetz, E., Melnic, J.L. and Adelberg, E.A. (2000) Review of Medical Microbiology, 19th Edn. Lange Medical Publications, U.S.A
6. Topley & Wilson's. (1990) Principles of Bacteriology, Virology and Immunity, VIII edition, Vol. III Bacterial Diseases, Edward Arnold, London.

SAMA1504	COAGULATION STUDIES	L	T	P	CREDITS	TOTAL
		4	0	0	4	100

Course Objectives:

- To understand the mechanism and factors involved in coagulation
- To apply the concepts of coagulation in analyzing the associated disorders

UNIT I

Hemostasis - Definition, Basic concept and principle, Basic steps involved in Hemostasis.

UNIT II

Coagulation - Basic Physiology, coagulation factors, Mechanism of blood coagulation, Extrinsic Pathway, Intrinsic Pathway

UNIT III

Regulators of blood coagulation – Factors, Regulation, Clinical Significance

UNIT IV

Blood coagulation tests I, Bleeding Time, Duke's method, Clotting Time- Capillary tube method & Lee white's method.

UNIT V

Blood coagulation tests II - PT, aPTT, TT, Clot retraction time, Determination of fibrinogen.

UNIT VI

Quality Assurance for routine Hemostasis Laboratory - Introduction, Sample collection technique (Phlebotomy, Sample preparation, Anticoagulant used, Importance of use of Sodium

UNIT VII

Bleeding disorders I: Coagulation factor deficiencies – congenital, acquired Fibrinolytic defects

UNIT VIII

Bleeding disorders II: Vascular disorders, Platelet disorders

Course Outcomes:

On completion of the course, students will be able to

- CO1 Understand the physiological and biomechanical aspects of coagulation. CO2 Identify factors and pathways of blood coagulation. CO3 Recognise the regulators and clinical significance of coagulation. CO4 Apply the various coagulation tests in diagnostic and clinical services. CO5 Appreciate the need of quality practices. CO6 Understand pathophysiology and management of coagulation disorders.

Text / Reference Books

1. RamnikSood, Concise Book of Medical Laboratory Technology (Methods and interpretation), 2nd Ed., N.A.Publishers, 2015
2. Satish Gupta Short text book of Medical Laboratory for technician J.P. Bros, New Delhi, 2014
3. Shirley Mitchell Lewis , Barbara J. Bain , Imelda Bates (2006) Dacie And Lewis Practical Haematology, 10th Ed, Churchill Livingstone/Elsevier.

- Employability

SAMA1503	THEORY OF QUALITY MANAGEMENT & AUTOMATION	L	T	P	CREDITS	TOTAL
		4	0	0	5	100

Course Objectives:

- To introduce the concept of quality management
- To apply the significances of analyzers in automation

UNIT I

Automation - Introduction, meaning, advantages, history

UNIT II

Continuous flow analyzers, Single channel continuous flow analyzers-advantages, disadvantages

UNIT III

Multi-channel flow analyzers, discrete auto analyzers - basic features, types, semi-automated, fully automated Batch analyzers

UNIT IV

Random access analyzers (RAA), Component steps in fully automated analyzers, Auto analyzers based on immunoassay techniques

UNIT V

Micro particle enzyme immunoassay (MEIA), various random-access analyzers - Hitachi- 704, BM/Hitachi -717

UNIT VI

Centrifugal analyzers, ASCA, Dry chemistry analyzers, Dimension RxL clinical chemistry system, The Heterogeneous Immunoassay module components, Beckman Array 360system, Mini Vidas analyzers

UNIT VII

Immolute automated immunoassay analyzers, Latest trends in Automation

UNIT VIII

Biochips, Lab on a chip (LoC), Nano sensors - advantages and disadvantages, PCR & its applications.

Course Outcomes

On completion of the course, students will be able to

CO1 Understand the principles of automation.

CO2 Identify role of automation in flow analyzers.

CO3 Recognise the types of analyzers and their significance.

CO4 Apply the theoretical understanding to practical usage.

CO5 Recognise the latest trends and quality practices.

CO6 Bridge the gap between clinical and industry in theory and and practice of automation.

Reference Books

1. Laboratory management – Quality in Laboratory diagnosis – Candis A Kinkus, Demos medical publishers, 2011

2. Quality control in Laboratory – Gaffar Sarwar Zamman, Intech open publishers, 2011 3. Clinical Diagnosis and Management by Laboratory Methods, Henry 23rd edition, 2016

- Entrepreneurship

SAMA1103	GENERAL MICROBIOLOGY & PATHOLOGY	L	T	P	CREDITS	TOTAL
		3	0	0	5	100

Course Objectives:

- To develop an understanding of the basic concepts and terminology in general pathology and microbiology.
- To understand the methods of microbial staining, media, transport and control of microbial pathogens.

UNIT I General Pathology

Homeostasis and Cellular Adaptations - Normal Cell - Cell Injury - types of cellular adaptations - Cellular adaptations-atrophy, hypertrophy, hyperplasia and dysplasia.

UNIT II Cell Injury and Cell Death

Etiology of cell injury, morphology of cell injury, cellular swelling - Cell death: Types autolysis, necrosis, apoptosis and gangrene

UNIT III Inflammation

Inflammation - Acute inflammation - vascular event, cellular event, inflammatory cells - Chronic Inflammation - general features, granulomatous inflammation, tuberculoma.

UNIT IV Disorders, Neoplasia and Healing

Haemodynamic Disorders: Oedema, hyperemia, congestion, hemorrhage, circulatory disturbances, thrombosis, ischaemia & infarction - Neoplasia - Definition, how does it differ from hyperplasia, difference between benign tumor and malignant tumor – Healing - Definition, different phases of healing, factors influencing wound healing.

UNIT V General Microbiology

General characters and classification of Bacteria - Characteristics of Bacteria - Morphology - Shape, Capsule, Flagella, Inclusion, Granule, Spore - Growth and Maintenance of Microbes - Bacterial division, Batch Culture, Continuous culture, bacterial growth- total count, viable count, bacterial nutrition, oxygen requirement, CO₂ requirement, temperature, pH, light.

UNIT VI Control of Microbes

Sterilization and Disinfection - Physical agents- Sunlight, Temperature less than 100°C, Temperature at 100°C, steam - at atmospheric pressure and steam under pressure, irradiation, filtration. Chemical Agents- Alcohol, aldehyde, Dyes, Halogens, Phenols, Ethylene oxide

UNIT VII Media & Staining

Culture Media - Definition, uses, basic requirements, classification, Agar, Peptone, Transport Media, Sugar Media, Anaerobic Media, Containers of Media, Forms of Media – Staining Methods - Simple, Gram's staining, Ziehl – Neelsen staining or AFB staining, Negative Impregnation.

UNIT VIII Collection and Transportation

Collection and Transportation of Specimen - General Principles, Containers, Rejection, Samples- Urine, Faeces, Sputum, Pus, Body fluids, Swab, Blood.

Course Outcomes:

On completion of the course, students will be able to

CO1 Understand the basic elements in cell injury, and the cellular adaptations.

CO2 Demonstrate about the necrosis, apoptosis of the damaged cells.

CO3 Describe the role of immune cells in inflammation process.

CO4 Explore the scope of microbiology, microbial structure and their growth.

CO5 Carry out the process of sterilisation, media preparation, staining methods to control microbes.

CO6 Acquire the knowledge to process various clinical samples and interpret the results.

Text / Reference Books

1. Microbiology with Diseases by Taxonomy Paperback by Bauman Robert W. (Author) June 2017
2. Textbook of Pathology - Harsh Mohan - 8th Edition (English) Paperback – 1 January 2019
3. Robbins & Cotran Pathologic Basis of Disease: South Asia Edition Paperback – 14 August 2014

SAMA1104	HEMATOLOGY	L	T	P	CREDITS	TOTAL
		3	0	0	5	100

Course Objectives:

- To understand basic disorders related to quantitative and qualitative abnormalities of red cells, WBC and platelets
- To understand laboratory techniques used in diagnosis of blood cell disorders

UNIT I

Overview of hematopoiesis and blood cells, Components of blood and their functions, Hematopoietic system of the body

UNITII

Red cell disorders, Anemias- classification and approach to diagnosis, Iron deficiency anemia, megaloblastic anemia, hemolytic anemias: Definition, causes and laboratory diagnosis

UNITIII

White cell and Platelet disorders, Neoplastic and non-neoplastic disorders of WBC, classification and lab diagnosis of leukemia, chronic myeloproliferative disorders and other malignant disorders of the hematopoietic system, Platelet Disorders

UNIT IV

Coagulation and anticoagulants, Coagulation Mechanism, Hemostasis, laboratory tests for coagulation, Anticoagulants - EDTA, Citrate, Oxalate, Heparin, sodium fluoride

UNIT V Blood collection- Basic steps

preparation of specimen collection material, Lab. request form, Basic steps for drawing a blood specimen by vein puncture, Complications of vein puncture, Patient after care, Specimen rejection criteria for blood specimen, Hemolysis of blood, Blood collection by skin puncture (Capillary Blood), Arterial puncture, Deciding specimen types and selection of anticoagulants

UNIT VI Blood collection - Process

Separation of serum, Separation of plasma, Changes in blood on keeping, Maintenance of specimen identification, Transport of the specimen, Effect of storage on Blood Cell Morphology, Discarding procedures

UNIT VII Basic hematology techniques

Cleaning of laboratory glassware in hematology, Determination of Hemoglobin concentration, Calculation of blood cell indices - MCV, MCH & MCHC, Estimation of erythrocyte sedimentation rate, Estimation of packed cell volume

UNIT VIII Introduction to automation in hematology

Principle, advantages, cautions, basic interpretation of histograms

Course Outcomes:

On completion of the course, students will be able to know

CO1 The components of blood and the production of blood cells

CO2 The basic disorders related to quantitative and qualitative abnormalities of red cells

CO3 The basic disorders related to quantitative and qualitative abnormalities of White blood cells

CO4 The various anticoagulants used in blood collection

CO5 The process of blood collection by venipuncture and skin prick methods

CO6 Basics of automation in hematology

Text / Reference books 1. Dacie and Lewis Practical Haematology/ edition 12 (2017) by Barbara J. Bain

2. Hand book of Medical laboratory technology, 2nd edition by Robert H Carman, Christian Medical Association of India (publishers)

3. Henry's Clinical Diagnosis and Management by Laboratory Methods / Edition 21 by Richard A. McPherson MD, MSc, Matthew R. Pincus MD, PhD, Matthew R. Pincus

4. Textbook of Medical Laboratory Technology/ edition 3 (2020) by Godkar P.B

 - Skill Development

SAMA1501	HISTOPATHOLOGY & CYTOLOGY TECHNIQUES	L	T	P	CREDITS	TOTAL
		4	0	0	5	100

Course Objectives:

- To be able to fix, process, embed tissues and make sections for micro section studies
- To be competent to make routine cytological preparation

UNIT I

Introduction to Histopathology and Cytopathology Techniques – Basic concepts and principles.

Applications

UNIT II

Reception of specimens– Criteria, Requisites, Container, Identity, Labeling, Rejection

UNIT III Tissue processing- Micro techniques I

Basic steps, fixing – Types of fixatives, Factors, Dehydration, Embedding

UNIT IV Micro techniques II

Microtomy, Staining, Mounting, Methods of decalcifications

UNIT V Equipment

Microscope, Microtome -Types, Uses, Parts, different types of microtome knives, care and maintenance, Automated tissue processor- components, working and precautions during use, Tissue floating bath

UNIT VI Staining

Hematoxylin and Eosin staining, preparation of hematoxylin and eosin stains, Reticulin stain, PAP staining- components and methods.

UNIT VII Cytology

Introduction to FNAC and Exfoliative cytology, Processing of fluids- Sputum, bronchial aspirates, bronchial washings, gastric washings, Urine and other watery fluids, Cerebrospinal fluid

UNIT VIII Museum techniques

The mounting of pathological specimens - Introduction., Preparation of specimen, Fixation of specimen- Kaiserling solution-1 and Kaiserlingsolution-2, Precaution taken for the Fixation of Specimens, Storage of Specimens, Mounting of Museum Specimens, Filling and Scaling

Course Outcomes:

On completion of the course, student will be able to

CO1 Identify the basic structure of cells, tissues and organs and describe their contribution to normal function.

CO2 Interpret light- and electron-microscopic histologic images and identify the tissue source and structures.

CO3 Demonstrate common histology procedures such as embedding tissue in paraffin, tissue sectioning and mounting, or routine staining of tissue sections

CO4 Describe common histology laboratory procedures used to prepare stained slides from tissue samples.

CO5 Outline the principles of histochemistry and types of microscopies utilized in histology

CO6 Understand professional procedures in museum display, collections, care and preservation

Reference books

1. Bancroft's Theory and Practice of Histological Techniques by John D Bancraft /Edition 8 (2018)
2. Handbook of Histopathological and Histochemical Techniques: Including Museum Techniques / edition 3 (1974) by C. F. A. Culling
3. Hand book of Medical laboratory technology, 2nd edition by Robert H Carman, Christian Medical Association of India (publishers)
4. Textbook of Medical Laboratory Technology/ edition 3 (2020) by Godkar P.B

 - Skill Development