

Course Overview

Technique Histology

Course code :	LMT603
Course title:	Histology Technique
Level/semester	Sixth Semester
PRECEDING COURSES	(a)Anatomy and physiology (b) Knowledge of light microscopy and Electron microscope (c) How to prepare solutions in the Laboratory
Credit hours: 3	Theoretical: 2
	Practical: 2

CURRICULUM CONTENTS (THEORY)

Unit	Contents	Hours
Unit 1	Safety measures: (a) Precautions during cutting sections (b) Precaution during decalcification (c) Precaution in handling; flammables, corrosives, clearing agents, carcinogens, Heavy metals, fixatives and fresh tissues	2
Unit 2	Microtomes: (a)Definition (b) Types (c) Uses	2
Unit 3	Microtome Knives: (a) Types (b) Selection (c) Material used for sharpening including honing and polishing.	2

Unit 4	<p>Section cutting:</p> <p>(a) Equipment required</p> <p>(b) Preparation of paraffin section</p> <p>(c) Technique for sectioning (cutting)</p> <p>(d) Tissue thickness and 2 faults during cutting</p> <p>(e) Floatation and picking up of sections on slides</p> <p>Section adhesives</p>	2
Unit 5	<p>Frozen sections:</p> <p>(a) Definition</p> <p>(b) Indications</p> <p>(c) Methods of freezing the tissue</p> <p>(d) The use of cryostat</p> <p>(e) Quenching</p> <p>(f) Staining</p>	2
Unit 6	<p>Staining:</p> <p>☐ Significance of staining</p> <p>☐ Types of staining – Natural and Artificial</p> <p>☐ Theories of staining (selective, metallic, etc)</p> <p>☐ Staining methods (vital, direct, direct & indirect, regressive, progressive, basic acidic, neutral and physical dye- mordant, Auxochrome, chromogen,)</p> <p>☐ Routine staining:</p> <p>☐ Haematoxyllin and Eosin</p> <p>☐ Special staining:</p> <p>(a) Perls Prussian Blue</p> <p>(b) Periodic Acid Schiff</p> <p>(c) Oil Red O or Sudan stain</p> <p>(d) Ziehl Neelsen</p>	8

	<ul style="list-style-type: none"> (e) Giemsa stain (f) Methamine silver (g) Reticulin stain (h) Masson trichrome (i) Brown and Brenn (j) Weigerts Van Gieson Stain (k) Papanicolaou staining 	
Unit 7	<p>Immunocytochemistry:</p> <ul style="list-style-type: none"> (a) Definition (b) Fixation (c) Enzyme digestion method (d) Immunocytochemical technique (e) DNA probes and their applications 	2
Unit 8	<p>Mounting media:</p> <ul style="list-style-type: none"> (a) Definition (b) Characteristics of a good mountant media (c) Types of Ringing media (d) Technique for mounting 	2
Unit 9	<p>Exfoliative Cytology:</p> <ul style="list-style-type: none"> (a) Definition (b) Importance of preparation of smears (c) Collection of specimen for cytological studies from different parts of the body eg Gynaecological, Respiratory tract, Body fluidsPleural & Ascitic, Genital urinary tract, Breast and Fine needle aspirate (FNAC). (d) Examinaton of sex chromatin (Buccal smear) 	4

Unit 10	Specimen collection, receiving and Labeling: (a) Type of specimens – Surgical, Gynaecological smear, Non Gynaecological as body fluids, nipple discharge, scrape smear from eye, buccal etc, fine needle aspiration, semen analysis (b) Labelling of specimens and registration (c) Rejection of specimen policy	2
Unit 11	Quality Control: (a) Definition (b) Objective measures (c) Preventive measures	2

Histocytotechnology –Practical:

Weeks	Contents	Hours
Week 1	Safety measures on: (a) Biological hazards such as blood and pathological material (b) Mechanical hazards such as glass, knives and electrical (c) Chemical hazards such as Toxic materials, carcinogens, corrosives, explosions (d) Labeling of containers (e) Definition of toxic substances, Permissible exposure limit(PEL).	4 hours
Week 2	Microtome and	4 hours

	<p>Microtome knives:</p> <p>(a) Identification of different types</p> <p>(b) Parts of the microtome</p> <p>(c) Different types of knives and selection</p> <p>(d) Automatic knife sharpener and its operation</p>	
Week 3	<p>Section cutting :</p> <p>(a) Equipment required</p> <p>(b) Procedure and thickness of the ribbon</p> <p>(c) Water bath floatation, picking section on slides</p> <p>(d) Labelling of slides</p> <p>(e) Drying of sections in oven</p> <p>(f) Problems experienced during cutting</p> <p>(g) Preparation and the use of adhesives</p>	4 hours
Week 4	Section cutting continued	4 hours
Week 5	<p>Frozen Sections:</p> <p>(a) Cryostat technique</p> <p>(b) Cryostat temperature</p> <p>(c) Ant roll plate</p> <p>(d) Aerosol spray</p> <p>(e) Picking up sections on to slides</p>	4 hours
Week 6	<p>Haematoxylin and Eosin:</p> <p>(a) Principle reagents used</p> <p>(b) Method of staining</p> <p>(c) Results</p>	4 hours
Week 7	<p>PAS (Periodic Acid Schiff):</p> <p>(a) Principle reagents including controls</p> <p>(b) Method</p> <p>(c) Results</p>	4 hours

Week 8	Perls Prussian Blue: (a) Principle reagents and controls (b) Method (c) Results	4 hours
Week 9	Sudan III / Oil Red O: (a) Principle Reagents and controls (b) Method (c) Results	4 hours
Week 10	Pap's smears: (a) Principle reagents (b) Method (c) Use of Automatic stainer (d) Results	4 hours
Week 11	Gram stain: (a) Principle reagents and controls (b) Method (c) Results	4 hours
Week 12	Van Gieson Stain: (a) Principle reagents and controls (b) Methods (c) Results	4 hours
Week 13	Cover slipping and Mounting: (a) How to apply cover slip (b) Choice of appropriate cover slip size (c) Choice of mounting media (d) How to remove air bubbles	4 hours
Week 14	Immunocytochemistry: (a) Fixation (b) Reagents used (c) Methods (d) Results	4 hours

Week 15	Quality Control and filing (a) Proper handling of specimens (b) Checking of staining reagents and other solutions regularly (c) Identification of various filling systems for blocks, slides, and reports	4 hours
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