

STUDY & EVALUATION SCHEMES
OF
BACHELOR OF SCIENCE IN
MEDICAL LABORATORY TECHNOLOGY (BSc.MLT)
(B. Sc. MLT- II SEMESTER)

[Applicable w.e.f. Academic Session 2020-21]



INTEGRAL UNIVERSITY, LUCKNOW
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Syllabus approved by Board of Study, Faculty Board, Academic Council, Executive Council of the Integral University, Lucknow

INTEGRAL UNIVERSITY, LUCKNOW
INTEGRAL INSTITUTE OF ALLIED HEALTH SCIENCES & RESEARCH
DEPARTMENT OF PARAMEDICAL & HEALTH SCIENCES

STUDY & EVALUATION SCHEME
B.Sc. in MEDICAL LABORATORY TECHNOLOGY (BMLT)
(w.e.f. Session 2020)

I-Year

II- Semester

S. No.	Code	Subject	Periods			Credits C	Evaluation Scheme				Subject Total
			L	T	P		Sessional			Exam	
							CT	TA	Total	ESE	
1.	LT108	Human Anatomy-II	2	1	0	3	40	20	60	40	100
2.	LT109	Human Physiology-II	2	1	0	3	40	20	60	40	100
3.	LT110	Medical Biochemistry-I	3	1	0	4	40	20	60	40	100
4.	LT111	Introduction to Pathology, Hematology & Clinical Pathology	3	1	0	4	40	20	60	40	100
5.	LT112	Medical Law & Ethics	3	1	0	4	40	20	60	40	100
6.	LN201	Advance Professional Communication	2	1	0	3	40	20	60	40	100
7.	LT113	Human Anatomy-II - Lab	0	0	2	1	40	20	60	40	100
8.	LT114	Human Physiology-II - Lab	0	0	2	1	40	20	60	40	100
9.	LT115	Medical Biochemistry-I – Lab	0	0	2	1	40	20	60	40	100
10.	LT116	Introduction to Pathology, Hematology & Clinical Pathology- Lab	0	0	2	1	40	20	60	40	100
Total			16	06	08	25	400	200	600	400	1000

L: Lecture

T: Tutorials

P: Practical

CT: Class

Test

TA: Teacher Assessment

ESE: End Semester Examination

Sessional Total: Class Test + Teacher Assessment

Subject Total: Sessional Total + End Semester Examination (ESE)

SUBJECT: HUMAN ANATOMY- II
SUBJECT CODE: LT108
(w.e.f. Session-2020)

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LEARNING OBJECTIVE:

This syllabus is extension of the part-I. The syllabus justifiably divides the body systems into two semesters to ensure complete and comprehensive knowledge of all functionalities of the body.

UNIT I- RESPIRATORY SYSTEM: (10Hours)

1. Orientation of Thoracic cage- boundaries, inlet, outlet & wall
2. Intercostal muscles - origin, insertion, nerve supply
3. Diaphragm - origin, insertion, nerve supply
4. Nose, pharynx, Larynx-- extent, walls. enumerate associated cartilages & muscles
5. Trachea- extent & brief structure, concept of Tracheobronchial tree
6. Lungs- Surfaces, borders, lobes, fissures
7. Joints of Thorax- enumerate and its type

UNIT II – DIGESTIVE SYSTEM: (10Hours)

1. Oral cavity (boundaries), tongue - parts, enumerate muscles & papillae, salivary glands- brief enumerate & discuss in brief its opening)
2. Pharynx (extent, parts & boundaries) and Oesophagus (parts, extent, constrictions, sphincters)
3. Stomach - location, parts, surfaces, curvatures, nerve supply
4. Small Intestine parts, difference between duodenum, jejunum & ileum, nerve supply
5. Large intestine - parts & their features in brief
6. Liver- location, surfaces, border, lobes, Gall bladder-location, parts & function, Pancreas -location, parts, surfaces, borders & its ducts
7. Blood vessel and layers of GIT

UNIT III - URINARY SYSTEM: (6Hours)

1. Introduction and Parts of Urinary system
2. Kidney- Structure (surfaces, poles, borders, hilum) & function
3. Structure of nephron
4. Ureter(length, parts, constrictions), Urinary bladder(location, capacity, surfaces, borders, parts, openings) and Urethra (parts)

UNIT IV- ENDOCRINE GLAND: (7Hours)

1. Introduction and function of Endocrine Gland
2. Pituitary gland- location, parts, enumerate types of cells & hormones secreted
3. Thyroid gland- location, parts, features & blood supply
4. Parathyroid gland - location, enumerate types of cells & hormone secreted
5. Adrenal gland- location, shape, enumerate its components & hormones

UNIT V – LYMPHATIC SYSTEM:**(7Hours)**

1. Introduction to Lymphatic System
2. Lymph nodes- structure and functions
3. Spleen - location, surfaces, borders, poles, hilum
4. Thymus - location, structure & functions
5. Tonsil – types according to location, palatine tonsil in brief

LEARNING OUTCOME:

This curriculum can stimulate the students to understand the basic anatomy of included system and the resultant unified organization thereupon.

RECOMMENDED BOOKS:

1. Ross & Wilson,(2014),Anatomy & Physiology in health & illness,11th edition, Elsevier Publications
2. Chaurasia B D, (2016), Human Anatomy, 7th edition, CBS publishers
3. Gerard J. Tortora and Bryan H. Derrickson, (Principles of Anatomy and Physiology,14th edition, Wiley publications.

SUBJECT: HUMAN PHYSIOLOGY-II
SUBJECT CODE: LT109
(w.e.f. Session-2020)

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LEARNING OBJECTIVE:

This subject imparts the knowledge of the structure and function of included organs and organ systems in normal human body.

UNIT I-DIGESTIVE SYSTEM: (08 Hours)

1. Digestive system introduction, structure of GI wall and functions.
2. Basic physiology of organs of digestive system (Salivary glands, Gastric glands, Pancreas, Liver, Gall bladder).
3. Physiological functions of Liver
4. Digestion and Absorption of carbohydrate, fat and proteins.

UNIT II- CENTRAL NERVOUS SYSTEM: (06 Hours)

1. Nervous System: general organization of CNS, function of important structure and spinal cord, neuron, nerve impulse, type of nerves according to function, Autonomic nervous system- organization & function
2. Special senses- general organization & functions

UNIT III- - ENDOCRINE GLAND: (12Hours)

1. Introduction of Endocrine system
2. Physiological Functions of Glucagon, Prolactin, Growth Hormones, insulin, oxytocin, ADH, Adrenal PTH, Thyroxin, calcitonin, Vitamin D.

UNIT IV- REPRODUCTIVE SYSTEM: (08Hours)

1. Introduction of Reproductive Systems in human
2. Spermatogenesis and Oogenesis
3. Physiological functions of Male and female Reproductive Hormones.
4. Menstrual Cycle
5. Placental Hormone (Physiological Function)

UNIT V- EXCRETORY SYSTEM: (06Hours)

Functions anatomy of Kidneys, Urine formation, (Glomerular filtration and tubular Reabsorption), Electrolytes: their balances and imbalances Introduction of acidosis and alkalosis.

LEARNING OUTCOME:

Students will be able to understand functioning of various systems as well as its applied aspects.

RECOMMENDED BOOKS:

1. Guyton and Hall,(2011) Textbook of Medical Physiology,12th Edition, Saunderson/Elsevier.
2. Sujit Chaudhury, (2011),Concise Medical Physiology, 6th edition, NCBA
3. Sembulingam k,(2012),Essentials of Medical Physiology,6th edition, Jaypee Publications
4. Gerard J. Tortora and Bryan H.Derrickson, (Principles of Anatomy and Physiology,14th edition,Wiley publications.

SUBJECT: MEDICAL BIOCHEMISTRY- I
SUBJECT CODE: LT110
(w.e.f. Session-2020)

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LEARNING OBJECTIVE: The following syllabus has been developed to impart knowledge of Equipments, Apparatus, Glassware, Reagents used in Clinical Biochemistry Laboratory along with laboratory hazards and safety measures.

UNIT – I: (8 Hours)

1. Introduction to Clinical Biochemistry, Role and Responsibility of Medical Lab Technologist
2. Laboratory ethics, Medical Legal concerns
3. Laboratory Hazards, Safety measures and Prevention, First aid in Laboratory Accidents
4. Units of measurement: SI units, Reference range, Conversion factors, units for measurement of Bio metabolite, enzymes, protein, drugs, hormones, vitamins.

UNIT – II: (8 Hours)

1. Glassware's and plastic ware's used in laboratory
2. Calibration of Pipettes and Volumetric apparatus
3. Cleaning, Care, Maintenance and Storage of Laboratory Glasswares
4. Chemicals, Purity of Chemicals and Hygroscopic substances
5. Principle, Working, Care, Maintenance and Calibration of Weighing Balance, Hot Plate, Magnetic Stirrer, Centrifuge, Incubator, Hot Air Oven, Colorimeter, Spectrophotometer, pH meter, Distillation Plant and Deionizers

UNIT – III: (8 Hours)

Preparation of Solutions and Reagents: Normal solutions, Molar solutions, Percent solutions, Buffer solutions, Dilutions, w/v, v/v, Standard solutions, Aqueous solutions

1. Inter conversion of concentration – Normal, Molar, Molal and Percentage solution
2. Concept of Acid and Base, Henderson Hasselbalch equation

UNIT – IV: (8 Hours)

1. Specimen collection and Processing of Blood, Urine and CSF, Separation of Serum and Plasma for Biochemical Analysis
2. Deproteinization of sample, Handling of specimens for Testing, Transport of specimen
3. Preservation of specimen, Factors affecting the Clinical results, Effects of Storage on sample.

UNIT – V: (8 Hours)

1. Physical, Chemical and Microscopic examination of urine
2. Bence Jones Proteinuria and its clinical significance
3. Qualitative test of Urine for Reducing sugars, Proteins, Ketone bodies, Bile salts, Bile pigments, Urobilinogen, Occult blood, Uric acid, Urea and Creatinine
4. Quantitative estimation of 24hrs urine for protein and their clinical significance

LEARNING OUTCOME:

Students will be acquainted with medical ethics. They will comprehend the basics of Reagent preparation, Instrumentation and Sample analysis.

RECOMMENDED BOOKS:

1. Bishop, Fody and Schoeff, Clinical Chemistry, techniques, principles and correlations.
2. Dr Ramnik Sood, Medical Laboratory Technology: Methods and Interpretations
3. Singh & Sahni, Introductory Practical Biochemistry
4. Praful B. Godkar, Darshan P. Godkar, Textbook of Medical Laboratory Technology
5. Ranjna Chawla, Practical Clinical Biochemistry: Methods and Interpretations

**SUBJECT: INTRODUCTION TO PATHOLOGY, HEMATOLOGY &
CLINICAL PATHOLOGY
SUBJECT CODE: LT111
(w.e.f. Session-2020)**

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LEARNING OBJECTIVE:

The haematology curriculum aims to prepare students in basic understanding of composition of blood. Students would also be introduced to laboratory waste management protocols, instrumentation, techniques and methods of estimating different parameters of blood. The academic emphasis of this module is that students would learn basic haematological techniques including blood coagulation tests, blood banking and automation.

UNIT-I: (8 Hours)

Introduction to Pathology; Organization of laboratory and Laboratory safety guidelines; Lab safety measures employed; Accidents in laboratory and their emergency management; Biomedical waste management - segregation, collection, transportation, treatment and disposal (including color coding), Personal protective equipments; Principles of light microscopy; Other types of microscopy and its uses; Light microscope and its parts, care and maintenance of monocular and binocular microscopes; Introduction to Hematology; Haematopoiesis - Mechanism of hemopoiesis, stages of cell development, sites of hemopoiesis; Blood and its composition; Morphology of blood cells;

UNIT-II: (8 Hours)

Anticoagulants, mechanism of action, types and uses, merits and demerits, effect of anticoagulants on blood cells during storage; Techniques of blood collection from different sites in patients (Venous, capillary and arterial blood); Vacutainer - types and uses, sample acceptance and rejection criteria; Important equipments used in haematology lab; Hemoglobin - structure, function and types; Hemoglobin estimation by various methods, advantages and disadvantages; Manual RBC counting; Manual total WBC counting by Neubauer counting chamber - Principle and precautions; Manual Platelet counting by Neubauer counting chamber - Principle and precautions; Absolute eosinophil count; Physiological and pathological changes in values of blood cell count; Stains used in routine staining of blood smears - Different types of stains and their uses.

UNIT-III: (8 Hours)

Preparation of thin and thick smears and its uses; staining of blood smears; Differential leucocytes count by manual and automated method; Physiological and pathological variations in leukocyte values; Theory of erythrocyte sedimentation rate; Measurement of ESR - manual and automated method; Hematocrit and red cell indices - Its use in clinical practice; Principle of automated blood cell counter; Newer parameters available with automated cell counter and their significance; Reticulocyte count - Stains used; normal values; use of reticulocyte count in clinical practice; Collection, transport and preservation of clinical specimens other than blood; Processing of various clinical Specimens; CSF examination in clinical practice

UNIT-IV:**(8 Hours)**

Semen analysis in clinical practice; Sputum examination as relevant to Pathology lab; Stool examination as relevant to Pathology lab; Mechanism of coagulation, coagulation factors; Common disorders of bleeding and coagulation; Approach to a patient with bleeding disorder; Bleeding time, clotting time, Platelet count; Prothrombin time, Prothrombin concentration, INR; Clot retraction test and APTT; Principle of automated blood cell counter; Uses, care, maintenance and calibration of automated blood cell counter; Coagulometer, automatic ESR analyzer, urine analyzer;

UNIT-V:**(8 Hours)**

Point of care testing; Pre and Post analytical variables; Introduction to immuno hematology and blood banking technology; Antigen, antibody, complement system; ABO & Rh blood group system; Genetics of ABO blood group system; Red cell reagents and preparation of red cell suspension; Method of determination of ABO and Rh blood group; Other blood group system; Importance of blood grouping; Donor selection; Blood collection, anticoagulants and additive systems.

LEARNING OUTCOME:

Students will be able to collect, preserve and process blood samples. They will be able to perform efficiently routine investigations in clinical hematology laboratory.

Students will also be able to carry out different immune-haematological investigations and coagulation profile tests. They will be able to handle automated instruments.

RECOMMENDED BOOKS:

1. Godkar. B. Praful, (2016) Textbook of MLT, 3rd edition, Bhalani Publications.
2. Singh Tejinder, (2014), Atlas & Textbook of Haematology, 3rd edition, Avichal Publications.
3. Ochei J & Kolhatkar A (2000), Medical Laboratory Science: Theory & Practice, 3rd edition, Mcgraw Hill Education.
4. Mukherjee L.K. (2017), Medical Laboratory Technology, Vol.1-3, 3rd edition, Tata Mcgraw Hill.
5. Sood Ramnik, (2015), Text book of Medical Laboratory Technology, 2nd edition, Jaypee Publications.

SUBJECT: MEDICAL LAW & ETHICS
SUBJECT CODE: LT112
(w.e.f. Session-2020)

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LEARNING OBJECTIVE:

Legal and ethical considerations are firmly believed to be an integral part of medical practice in planning patient care. Advances in medical sciences, growing sophistication of the modern society's legal framework, increasing awareness of human rights and changing moral principles of the community at large, now result in frequent occurrences of healthcare professionals being caught in dilemmas over aspects arising from daily practice.

UNIT-I: (8 Hours)

1. Medical ethics, Definition, Goal, Scope.
2. Introduction to Code of conduct
3. Basic principles of medical ethics, Confidentiality
4. Malpractice and negligence, Rational and irrational drug therapy

UNIT-II: (8 Hours)

1. Autonomy and informed consent.
2. Right of patients Care of the terminally ill.
3. Euthanasia Organ transplantation, ethics and law.

UNIT-III: (8 Hours)

1. Medico legal aspects of medical records, Medico legal case and type.
2. Records and document related to MLC ownership of medical records.
3. Confidentiality Privilege communication, Release of medical information.
4. Unauthorized disclosure, retention of medical records, other various aspects.

UNIT-IV: (8 Hours)

1. Professional Indemnity insurance policy.
2. Development of standardized protocol to avoid near miss or sentinel events obtaining an informed consent.

UNIT-II: (8 Hours)

1. Basics of emergency care and life support skill
2. Vital signs and primary assessment, Basic emergency care, first aid and triage
3. Ventilations including use of bag-valve-masks (BVMs), Choking, rescue breathing methods
4. One and Two rescuer CPR, Using an AED (Automated external defibrillator), Managing an emergency including moving a patient

LEARNING OUTCOME:

Student will abide by the rule and regulation of the medicine and have abundant knowledge on professional attitude and communication among the colleague, patients and co-parties.

RECOMMENDED BOOKS:

1. Kennedy I, Grubb A. Medical law. London: Butterworths; 2000.
2. Jackson E. Medical law: text, cases, and materials. Oxford University Press.
3. Recent Trends in Medical Imaging (CT, MRI and USG)
4. Bontrager KL, Lampignano J. Bontrager's Handbook of Radiographic Positioning and Techniques-E-BOOK. Elsevier Health Sciences; 2017 Feb 10.
5. Frank ED, Long BW, Smith BJ. Merrill's Atlas of Radiographic Positioning and Procedures-E-Book. Elsevier Health Sciences; 2013 Aug 13.

SUBJECT: ADVANCE PROFESSIONAL COMMUNICATION
SUBJECT CODE: LN201
(w.e.f. Session-2020)

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LEARNING OBJECTIVE:

To comprehend and communicate in simple English.

UNIT I: READING & LISTENING COMPREHENSION: (7 hours)

Ways to improve the Speed & Efficiency of Reading, Importance of Skim Reading, Listening Skills & Features of Effective Listening, Benefits of Effective Listening

UNIT II: WRITING SKILLS: (7 hours)

C V & Resume writing, Job Application letter/Covering letter, Precis: Principles of Condensation Paragraph writing, Development of Paragraph

UNIT III: GROUP DISCUSSION AND INTERVIEW SKILLS: (7 hours)

Group Discussion: Meaning & Significance, How to prepare & practice for GD, Common Pitfalls in a GD Interview: Definition, Skills & Techniques, Preparation, Negative Interview Factors & Interview Tips

UNIT IV: PRESENTATION SKILLS: (7 hours)

Presentation Strategies: Purpose, Audience and Locale, Organizing Contents, Audio-Visual Aids, Nuances of Delivery, Body Language, Voice Dynamics.

UNIT V: PROJECT WORK: (4 hours)

At the commencement of the semester, the student would be assigned a topic by the Teacher/Instructor. They will research it & submit a duly documented report of about 20- 25 pages by the end of the semester.

LEARNING OUTCOME:

Students will realize the significance of English for their career progression. Benchmarking the students in the first semester to observe their progression in terms of LSRW. Students will be able to understand distinct sounds and improve pronunciation. Students will improve their English vocabulary of daily usage. Students will be able to form simple sentences to talk about themselves, friends and relatives. Students will be able to imbibe the pre-requisites of personality development.

RECOMMENDED BOOKS:

1. Raman, Meenakshi & Sharma, Sangeeta. Technical Communication: Principles and Practice, Oxford University Press-2013
2. Konar, Nira. Communication Skills For Professionals, PHI Learning Pvt. Ltd - 2011
3. Board of Editors. Written and Spoken Communication in English, University Press-2007
4. Lata , Pushp & Kumar, Sanjay .Communicate or Collapse :A Handbook of Effective Public Speaking , Group Discussions and Interviews, PHI Learning Pvt. Ltd -2011
5. Duck, Steve & McMahan, David T. The Basics of Communication : A Relational Perspective, Sage Publication-2012
6. Laws, Anne- Presentations, Orient Black Swan-2011
7. O'Connor, J. D. Better English Pronunciation, Universal Books Stall-1991
8. Anderson, Marilyn, Nayar, Pramod K. & Sen, Madhuchhanda .Critical Thinking, Academic Writing and Presentation Skills, Pearson-2009.

SUBJECT NAME: HUMAN ANATOMY- II LAB
SUBJECT CODE: LT113
(w.e.f. Session-2020)

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PRACTICAL:

Thorax:

1. Sternum
2. Ribs
3. Vertebrae
4. Demonstration of Lungs
5. Demonstration of Chest X-ray.

Abdomen:

1. Lumbar vertebrae
2. Stomach
3. Liver, Gall bladder and Pancreas
4. Intestine

Urinary system:

1. Sacrum
2. Articulated Pelvis
3. Kidney & Urinary bladder

Head:

1. Skull – Identification of bones.

RECOMMENDED BOOKS:

1. Ross & Wilson, (2014), Anatomy & Physiology in health & illness, 11th edition, Elsevier Publications
2. Chaurasia B D, (2016), Human Anatomy, 7th edition, CBS publishers
3. Gerard J. Tortora and Bryan H. Derrickson, (Principles of Anatomy and Physiology, 14th edition, Wiley publications.

SUBJECT NAME: HUMAN PHYSIOLOGY- II LAB
SUBJECT CODE: LT114
(w.e.f. Session-2020)

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PRACTICAL:

1. History taking and general examination.
2. Examination of Pulse.
3. Measurement of Blood Pressure.
4. Auscultation for heart sounds and normal respiratory sounds.
5. To study about intrauterine contraceptive devices.
6. To measure temperature
7. Calculation & evaluation of daily energy & nutrient intake.

RECOMMENDED BOOKS:

1. Guyton and Hall,(2011) Textbook of Medical Physiology,12th Edition, Saunder/Elsevier.
2. Sujit Chaudhury, (2011),Concise Medical Physiology, 6th edition, NCBA
3. Sembulingam k,(2012),Essentials of Medical Physiology,6th edition, Jaypee Publications
4. Gerard J. Tortora and Bryan H.Derrickson, (Principles of Anatomy and Physiology,14th edition,Wiley publications.

SUBJECT NAME: MEDICAL BIOCHEMISTRY - I LAB
SUBJECT CODE: LT115
(w.e.f. Session-2020)

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PRACTICALS:

1. To Study General Laboratory Safety Rules.
2. To Demonstrate Glass wares, Apparatus and Plastic wares used in Laboratory.
3. Demonstration of Working of Colorimeter.
4. Demonstration of Working of Spectrophotometer.
5. Demonstration of Working of pH meter.
6. Demonstration of Working of Incubator.
7. Demonstration of Working of Cyclo mixer.
8. Demonstration of Working of Centrifuge, Weight Balance.
9. Collection of Blood sample.
10. Deproteinization of Blood sample.
11. To separate Serum and Plasma.
12. Preparation of Saturated solutions, Percent solutions, Buffer solutions.
13. Preparation of Normal and Molar solutions (0.1N NaOH, 0.2 N HCl, 0.1 M H₂SO₄)
14. Analysis of Normal Constituents of Urine.
15. Analysis of Abnormal Constituents of Urine.

RECOMMENDED BOOKS:

1. Bishop, Fody and Schoeff, Clinical Chemistry, techniques, principles and correlations.
2. Dr Ramnik Sood, Medical Laboratory Technology: Methods and Interpretations
3. Singh & Sahni, Introductory Practical Biochemistry
4. Praful B. Godkar, Darshan P. Godkar, Textbook of Medical Laboratory Technology
5. Ranjna Chawla, Practical Clinical Biochemistry: Methods and Interpretations

**SUBJECT NAME: INTRODUCTION TO PATHOLOGY,
HEMATOLOGY & CLINICAL PATHOLOGY- I LAB
SUBJECT CODE: LT116
(w.e.f. Session-2020)**

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LEARNING OBJECTIVE:

The curriculum of practical haematology aims to prepare the students to understand composition of blood, waste management, instrumentation, techniques and methods of estimating different parameters.

The unique preposition of this paper is that the students should learn the basic haematological techniques including coagulation profile, blood banking and automation.

PRACTICALS:

To learn general laboratory safety rules; Demonstration of common glassware, apparatus and plastic wares used in laboratory; Maintenance and cleaning of glasswares used in hematology lab; To prepare EDTA, Sodium citrate and sodium fluoride anticoagulants vials; Demonstration of different types of vacutainers; Demonstration of blood collection technique from a patient; Separation of serum and plasma from collected blood; Demonstration of light microscope; Determination of hemoglobin by Sahli's Hemoglobin meter; Determination of hemoglobin by cyanmeth Hb method; Determination of total leukocyte count; Preparation of Leishman and Giemsa stain; Preparation of buffer, semen diluting fluid and Turk's solution; Preparation of thick and thin blood smear and Leishman staining technique; Demonstration of different types of leukocytes in PBS; Determination of differential leukocyte count; Determination of total red blood cell count; Determination of total platelet count; Determination of absolute leukocyte counts; To determine erythrocyte sedimentation rate by various methods; To determine packed cell volume of the given specimen; To determine red cell indices; Determination of reticulocyte count; To determine bleeding and clotting time; To determine blood group of the given sample by slide method; To determine blood group of the given sample by tube method; Basics of donor selection in blood bank; Demonstration of automated blood cell counter; Basics of semen analysis; Collection techniques, preparation and physical examination of different body fluids.

LEARNING OUTCOME:

1. Students will be able to collect process and preserve the blood samples and can efficiently perform routine investigations in clinical haematology laboratory.
2. Students will be able to perform various haematological, immune-haematological and coagulation profile tests. They will be able to handle different automated instruments used for above tests.

RECOMMENDED BOOKS:

1. Godkar B' Praful (2016): Textbook of Medical laboratory Technology (3rd edition) Bhalani Publications
2. Singh Tejinder (2014): Atlas & Textbook of Haematology (3rd edition), Avichal Publications.
3. Sood Ramnik (2015): Medical Laboratory Technology: Methods and Interpretations (vol - 1 & 2).
4. Lewis, Mitchell S: Dacie and Lewis Practical Haematology.
5. Kawthalkar, Shrish M: Essential of Clinical Pathology.