



# UNIVERSITY OF KASHMIR, SRINAGAR

NAAC Accredited Grade A'

## NOTIFICATION

It is notified for the information of all concerned that the Standing Committee of the Academic Council (SCAC) at its meeting held on 30-09-2020 has approved prescription of syllabi and course structure for newly introduced following paramedical courses/Programmes for the academic session 2020-21 onwards.

- ✓ a) B.Sc Medical laboratory Technology
- b) B.Sc Radiography
- c) B.Sc Cardiac Care Technology
- d) B.Sc Operation Theatre
- e) B.Sc Respiratory Care Technology
- f) B.Sc Anesthesia Technology
- g) B.Sc Neuro Sciences Technology
- h) B.Sc Renal Dialysis
- i) B.Sc Radiotherapy

*Cum amir*  
23-2-2021  
Deputy Registrar  
ACADEMIC

No: F (Prescription, Syllabi/ Paramedical Courses/Acad/KU/201  
Dated: 23-02-2021

### Copy to the:-

1. Dean, Academics Affairs, University of Kashmir, Srinagar;
2. Dean, College Development Council, University of Kashmir, Srinagar;
3. Principal, of Government Medical College Srinagar..
4. Controller of Examinations, University of Kashmir, Srinagar;
5. Director, IT&SS, University of Kashmir, Srinagar;
6. Special Secretary to Vice-Chancellor for the information of the Vice-Chancellor,
7. Principal, Dr. Qadri's College of Medical Laboratory Technology
8. Assistant Controller, Secrecy Tabulation Professional Unit,
9. Concerned System Engineer Examinations wing University of Kashmir.
10. File.

*Annexure to Notification No. F(Prescription-Syllabus/Paramedical Courses/Acad/KU/21  
dated 23-02-2021*

*B.Sc 1<sup>st</sup> year Medical Lab Technology*

*Applicable for Batch-2021*

*8  
onwards*

<b>BMLT101</b>	<b>Human Anatomy</b>
<b>BMLT102</b>	<b>Physiology</b>
<b>BMLT103</b>	<b>Biochemistry</b>
<b>BMLT104</b>	<b>Pathology (Clinical Pathology, Hematology &amp; Blood Banking)</b>
<b>BMLT105</b>	<b>Microbiology</b>
<b>BMLT106</b>	<b>Health Care (subsidiary subject)</b>

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*B.Sc 1<sup>st</sup> year Medical Lab Technology*

*Course Title: Human Anatomy*

*Course Code: BMLT101*

ANATOMY

Theory: 70hrs  
Practicals: 20hrs

**I. INTRODUCTION: HUMAN BODY AS A WHOLE**

**THEORY:**

Definition of anatomy and its divisions  
Terms of location, positions and planes  
Cell and its organelles  
Epithelium – definition, classification, describe with examples, functions  
Glands – classification, describe serous and mucous glands with examples  
Basic tissues – classification with examples

**PRACTICALS:**

Histology of types of epithelium  
Histology of serous, mucous and mixed salivary gland

**II. LOCOMOTION AND SUPPORT**

**THEORY:**

Cartilage – types with examples and histology  
Bone – classification, names of bone cells, parts of long bone, microscopy of  
Compact bone, names of all bones, vertebral column, intervertebral disc,  
Fontanelles of fetal skull  
Joints – classification of joints with examples, synovial joint (in detail for radiology)  
Muscular system – classification of muscular tissue and histology  
Names of muscles of the body

**PRACTICALS:**

Histology of 3 types of cartilages  
Demo of all bones showing parts, radiographs of normal bones and joints  
Histology of compact bone (TS and LS)  
Demonstration of all muscles of the body  
Histology of skeletal, smooth and cardiac muscle (TS and LS)

**III. CARDIOVASCULAR SYSTEM**

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**THEORY:**

Heart - size, location, chambers, exterior and interior  
Blood supply of heart  
Systemic and pulmonary circulation  
Branches of aorta, common carotid artery, subclavian artery,  
Axillary artery, brachial artery, superficial palmar arch, femoral artery,  
Internal iliac artery  
Peripheral pulse  
Inferior venacava, portal vein, portosystemic anastomosis  
Great saphenous vein  
Dural venous sinuses  
Lymphatic system - cisterna chyli and thoracic duct  
Histology of lymphatic tissues  
Names of regional lymphatics, axillary and inguinal lymph nodes in brief

**PRACTICALS:**

Demonstration of heart and vessels in the body  
Histology of large artery, medium sized artery and vein, large vein  
Microscopic appearance of large artery, medium sized artery and vein,  
Large vein pericardium  
Histology of lymph node, spleen, tonsil and thymus  
Normal chest radiograph showing heart shadows  
Normal angiograms

**IV. GASTRO-INTESTINAL SYSTEM**

**THEORY:**

Parts of GIT, oral cavity (lip, tongue - with histology, tonsil, dentition, pharynx,  
Salivary glands, Waldeyer's ring)  
Oesophagus, stomach, small and large intestine, liver, gall bladder, pancreas,  
Radiographs of abdomen

**V. RESPIRATORY SYSTEM**

Parts of RS - nose, nasal cavity, larynx, trachea, lungs, bronchopulmonary segments  
Histology of trachea, lungs and pleura  
Names of paranasal air sinuses

**PRACTICALS:**

Demonstration of parts of respiratory system  
Normal radiographs of chest  
Histology of lung and trachea

**VI. PERITONEUM**

**THEORY:**

Description in brief

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**PRACTICAL:**

Demonstrations of reflections

**VII. URINARY SYSTEM**

**THEORY:**

Kidney, ureter, urinary bladder, male and female urethra  
Histology of kidney, ureter and urinary bladder

**PRACTICAL:**

Demonstration of parts of urinary system  
Histology of kidney, ureter, urinary bladder  
Radiographs of abdomen – IVP, retrograde cystogram

**VIII. REPRODUCTIVE SYSTEM**

**THEORY:**

Parts of male reproductive system, testis, vas deferens, epididymis,  
Prostate (gross and histology)  
Parts of female reproductive system, uterus, fallopian tubes,  
Ovaries (gross and histology)  
Mammary gland – gross

**PRACTICAL:**

Demonstration of section of male and female pelvis with organs in situ  
Histology of testis, vas deferens, epididymis, prostate, uterus, fallopian tubes,  
Ovaries  
Radiographs of pelvis – Hysterosalpingogram

**IX. ENDOCRINE GLANDS**

**THEORY:**

Names of all endocrine glands, in detail on pituitary gland, thyroid gland,  
Parathyroid gland, suprarenal gland (gross and histology)

**PRACTICAL:**

Demonstration of the glands  
Histology of pituitary, thyroid, parathyroid, suprarenal glands

**X. NERVOUS SYSTEM**

**THEORY:**

Neuron  
Classification of NS  
Cerebrum, cerebellum, midbrain, pons, medulla oblongata, spinal cord



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With spinal nerve (gross and histology)  
Meninges, ventricles and cerebrospinal fluid  
Names of basal nuclei  
Blood supply of the brain  
Cranial nerves  
Sympathetic trunk and names of parasympathetic ganglia

**PRACTICAL:**

Histology of peripheral nerve and optic nerve  
Demonstration of all plexuses and nerves in the body  
Demonstration of all parts of brain  
Histology of cerebrum, cerebellum, spinal cord

**XI. SENSORY ORGANS**

**THEORY:**

Skin – histology, appendages of skin  
Eye – parts of eye and lacrimal apparatus  
Extra-ocular muscles and nerve supply  
Ear – parts of ear- external, middle and inner ear and contents

**PRACTICAL:**

Histology of thin and thick skin  
Demonstration and histology of eyeball  
Histology of cornea and retina

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**XII. EMBRYOLOGY**

**THEORY:**

Spermatogenesis and oogenesis  
Ovulation, fertilization  
Fetal circulation  
Placenta

**INTERNAL ASSESSMENT**

Theory-average of 2 exams conducted 20  
Practicals: record and lab work\* 10

\*There shall be no university practical examination and internal assessment marks secured in Practical  
need not be sent to the university.

**SCHEME OF EXAMINATION THEORY**

There shall be one theory paper of three hours duration carrying 80 marks. Distribution of type of  
questions and marks for Anatomy shall be as given under.

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TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
Short essay type	10 (attempt 8)	8 x 5	40
Short answer type	12 (attempt 10)	10 x 3	30
Short answer 5 Questions	07 (attempt 5)	5 x 2	10
Grand total			80

**Distribution of Marks for University Theory and Practical Exam**

Theory				Practicals			Grand total
Theory	Viva Voce	IA	Sub Total	Practicals	IA	Sub Total	
80	-	20	100				100

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*B.Sc 1<sup>st</sup> year Medical Lab Technology*

*Course Title: Physiology*

*Course Code: BMLT102*

**Introduction**

Composition and function of blood

Red blood cells - Erythropoiesis, stages of differentiation function, count physiological Variation.

Haemoglobin -structure, function, concentration physiological variation, Methods of Estimation of Hb

White blood cells - Production, function, life span, count, differential count

Platelets - Origin, normal count, morphology functions.

Plasma Proteins - Production, concentration, types, albumin, globulin, Fibrinogen, Prothrombin functions.

Haemostasis & Blood coagulation

Haemostasis - Definition, normal haemostasis, clotting factors, mechanism of clotting, disorders of clotting factors.

**Blood Bank**

Blood groups - ABO system, Rh system

Blood grouping & typing

Crossmatching

Rh system - Rh factor, Rh incompatibility.

Blood transfusion - Indication, universal donor and recipient concept.

Selection criteria of a blood donor. Transfusion reactions

Anticoagulants - Classification, examples and uses

Anaemias : Classification - morphological and etiological. Effects of anemia on body

Blood indices - Colour index, MCH, MCV, MCHC

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Erythrocyte sedimentation Rate (ESR) and Packed cell volume

Normal values, Definition. Determination

Blood Volume -Normal value, determination of blood volume and regulation of blood volume Body fluid

- pH, normal value, regulation and variation

Lymph - lymphoid tissue formation, circulation, composition and function of lymph

**Cardiovascular system**

Heart - Physiological Anatomy, Nerve supply

Properties of Cardiac muscle

Cardiac cycle-systole, diastole.

Intraventricular pressure curves.

Cardiac Output - only definition

Heart sounds- Normal heart sounds Areas of auscultation.

Blood Pressure - Definition, normal value. clinical measurement of blood pressure. Physiological variations, regulation of heart rate, cardiac shock, hypotension, hypertension. Pulse - Jugular, radial pulse,

Triple response

Heart sounds - Normal heart sounds, cause characteristics and signification. Heart rate

Electrocardiogram (ECG) -significance.



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Digestive System - Physiological anatomy of Gastro intestinal tract

Functions of digestive system.

Salivary glands - Structure and functions.

Deglutination -stages and regulation

Stomach - structure and functions.

Gastric secretion - Composition function regulation of gastric juice secretion.

Pancreas - structure, function, composition, regulation of pancreatic juice

Liver - functions of liver.

Bile secretion, composition, function, regulation of bile secretion. Bilirubin metabolism, types of bilirubin, Vandenbergh reaction, Jaundice- types, significance.

Gall bladder - functions.

Intestine - small intestine and large intestine.

Small intestine -Functions- Digestion, absorption, movements.

Large intestine - Functions, Digestion and absorption of Carbohydrates, Proteins, Fats, Lipids. Defecation

**Respiratory system**

Functions of Respiratory system, Physiological Anatomy of Respiratory system, Respiratory tract, Respiratory Muscles, Respiratory organ-lungs, Alveoli, Respiratory membrane, stages of respiration.

Mechanism of normal and rigorous respiration. Forces opposing and favouring expansion of the lungs. Intra pulmonary pleural pressure, surface tension, recoil tendency of the wall.

Transportation of Respiratory gases: Transportation of Oxygen: Direction, pressure gradient, Forms of transportation, Oxygenation of Hb. Quantity of Oxygen transported.

Lung volumes and capacities - Regulation of respiration what? Why? How? Mechanisms of Regulation, nervous and chemical regulation. Respiratory centre. Hearing Brier, Reflexes.

Applied Physiology and Respiration : Hypoxia, Cyanosis, Asphyxia, Dyspnea, Dysbarism, Artificial Respiration, Apnoea.

**Endocrine System -**

Definition, Classification of Endocrine glands & their Hormones Properties of Hormones.

Thyroid gland hormone - Physiological, Anatomy, Hormone secreted, Physiological function, regulation of secretion. Disorders - hypo and hyper secretion of hormone

Adrenal gland, Adrenal cortex physiologic anatomy of adrenal gland, Adrenal cortex, cortical hormones - functions and regulation Adrenal medulla - Hormones, regulation and secretion. Functions of Adrenaline and nor adrenaline

Pituitary hormones - Anterior and posterior pituitary hormones, secretion, function.

Pancreas - Hormones of pancreas. Insulin - secretion, regulation, function and action.

Diabetes mellitus - Regulation of blood glucose level.

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Parathyroid gland - function, action, regulation of secretion of parathyroid hormone.

Calcitonin - function and action

**Special senses**

Vision - structure of eye. Function of different parts.

Structure of retina.

Hearing structure and function of ear mechanism of hearing

Taste - Taste buds functions.

Smell physiology, Receptors.

**Nervous system**

Functions of Nervous system, Neuron structure, classification and properties. Neuroglia, nerve fiber, classification, conduction of impulses continuous and saltatory. Velocity of impulse transmission and factors affecting. Synapse - structure, types, properties.

Receptors - Definition, classification, properties. Reflex action - unconditioned properties of reflex action. Babinski's sign. Spinal cord nerve tracts. Ascending tracts, Descending tracts

Pyramidal tracts - Extrapyramidal tracts. Functions of Medulla, pons, Hypothalamic, disorders. Cerebral cortex lobes and functions, Sensory cortex, Motor cortex, Cerebellum, functions of Cerebellum. Basal ganglion-functions. EEG.

Cerebro Spinal Fluid(CSF) : formation, circulation, properties, composition and functions lumbar puncture.

Autonomic Nervous System: Sympathetic and parasympathetic distribution and functions and comparison of functions.

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**Excretory System**

Excretory organs

Kidneys: Functions of kidneys structural and functional unit nephron, vasarecta, cortical and juxtamedullary nephrons - Comparison, Juxta Glomerular Apparatus -Structure and function. Renal circulation peculiarities.

Mechanism of Urine formation: Ultrafiltration criteria for filtration GFR, Plasma, fraction, EFP, factors effecting EFR. Determination of GFR selective reabsorption - sites of reabsorption, substance reabsorbed, mechanisms of reabsorption Glucose, urea.

H + Cl aminoacids etc. TMG, Tubular load, Renal threshold % of reabsorption of different substances, selective e secretion.

Properties and composition of normal urine, urine output. Abnormal constituents in urine. Mechanism of urine concentration.

Counter - Current Mechanisms : Micturition, Innervation of Bladder, Cystourethrogrant. Diuretics : Water, Diuretics, osmotic diuretics, Artificial kidney Renal function tests - plasma clearance Actions of ADH, Aldosterone and PTH on kidneys. Renal function tests.

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**Reproductive system**

Function of Reproductive system, Puberty

Male reproductive system- Functions of testes, spermatogenesis site, stages, factors, influencing semen.

Endocrine functions of testes

Androgens – Testosterone structure and functions.

Female reproductive system. Ovulation, menstrual cycle. Physiological changes during pregnancy, pregnancy test.

Lactation : Composition of milk factors controlling lactation.

**Muscle nerve physiology**

Classification of muscle, structure of skeletal muscle, Sarcomere contractile proteins, Neuromuscular junction. Transmission across, Neuromuscular junction. Excitation contraction coupling. Mechanism of muscle contraction muscle tone, fatigue Rigour mortis.

**Skin -structure and function**

Body temperature measurement, Physiological variation, Regulation of body Temperature by physical chemical and nervous mechanisms .Role of Hypothalamus, Hypothermia and fever.

**Practicals**

Haemoglobinometry

White Blood Cell count

Red Blood Cell count

Determination of Blood Groups

Leishman's staining and Differential WBC count

Determination of packed cell Volume

Erythrocyte sedimentation rate [ESR]

Calculation of Blood indices

Determination of Clotting Time, Bleeding Time

Blood pressure Recording

Auscultation for Heart Sounds

Artificial Respiration

Determination of vital capacity

**INTERNAL ASSESSMENT**

Theory-average of 2 exams conducted 20

Practicals: record and lab work\* 10

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TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
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Grand total			80

**Distribution of Marks for University Theory and Practical Exam**

Theory				Practicals			Grand total
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*Course Title: Biochemistry*

*Course Code: BMLT103*

**BIOCHEMISTRY I**

No. Theory classes: 70 hours

No. Practical classes: 20 hours

**I. Clinical Laboratory**

- Responsibilities of health care personnel
- Laboratory hazards- Physical, Chemical and Biological. Laboratory safety measures- Safety regulations and first aid in laboratory

**II. Laboratory apparatus : Different types, use, care and maintenance (Where appropriate, diagrams to be drawn in practical record )**

- Glass ware in laboratory – Significance of boro silicate glass. Plastic ware in laboratory
- Cleaning of glass ware and plastic ware
- Pipettes - Glass and Automated
- Burettes, Beakers, Petri dishes, Porcelain dish
- Flasks - different types (volumetric, round bottomed, Erlenmeyer, conical etc..)
- Funnels – different types (Conical, Buchner etc..)
- Bottles – Reagent, Wash bottles
- Measuring cylinders, reagent dispensers
- Tubes – Test tube, Centrifuge tube, Folin-Wu tube
- Cuvettes and its use in measurements , cuvettes for visible and UV range
- Racks – Bottle, Test tube, Pipette and draining racks
- Tripod stand, Wire gauze, Bunsen burner, Dessicator, Stop watch, timers

**III. Instruments: Use, care and maintenance (Where appropriate, pictures/diagrams and schematic diagrams to be drawn in practical record )**

- Water bath, Oven & Incubators, Distillation apparatus - water distillation plant and water deionisers, Reflux condenser, Cyclomixers , Magnetic stirrer, Shakers
- Refrigerators, Deep freezers, Cold box
- Centrifuges\*: Principle, Svedberg unit, centrifugal force, centrifugal field, rpm, Conversion of G to rpm and vice versa) Components, working.

**Different types of centrifuges**

- Laboratory balances\*: Physical and analytical. Mono & double pan, Electronic balances. Weighing different types of chemicals, liquids, hygroscopic compounds etc. Precautionary measures while handling (Diagram)
- Photometry - Colorimeter\*- Principle, limitations of Beer-lambert's law, components, working.
- pH meter\*- Principle, components-pH measuring electrodes, Working, Precautions taken while handling. (Diagram of pH meter)

(\*Diagrams mandatory)

**IV. Units of measurement**

- Metric system. Common laboratory measurements, Prefixes in metric system
- International system of units- SI units- definition, classification, Conversion of conventional and SI Units



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**V. Introduction to general Bio-molecules:**

- Chemistry of carbohydrates: Classification (structures for monosaccharides\*), Functions of carbohydrates
- Chemistry of amino acids\*: Classification-based on structure and nutritional requirement, Occurrence. Functions of amino acids.
- Chemistry of lipids: Classification of lipids and fatty acids. Functions of lipids
- Chemistry of nucleotides\*: Purine and Pyrimidine bases. Composition of nucleosides and nucleotides. Occurrence of bases.

\* Structures mandatory

**VI. Fundamental Chemistry**

- Valency, Molecular weight & Equivalent weight of elements and compounds. Normality, Molarity, Molality.

**VII. Solutions: Definition, use, classification where appropriate, preparation and storage**

- Stock and working solutions.
- Molar and Normal solutions of compounds and acids. (NaCl, NaOH, HCl, H<sub>2</sub>SO<sub>4</sub>, H<sub>3</sub>PO<sub>4</sub>, CH<sub>3</sub>COOH etc.,)
- Preparation of percent solutions – w/w, v/v w/v (solids, liquids and acids), Conversion of a percent solution into a molar solution
- Saturated and supersaturated solutions
- Standard solutions. Technique for preparation of standard solutions and Storage. E.g: glucose, albumin etc.
- Dilutions- Diluting Normal, Molar and percent solutions. Preparing working standard from stock standard.  
Part dilutions: Specimen dilutions. Serial dilutions. Reagent dilution. Dilution factors

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**VIII. Acids, Bases, Salts and Indicators :** Basic concepts. Determination of pH- Henderson Hasselbalch's equation. Buffer solutions. pH determination of buffers. Blood pH. Fluid buffers.

**IX. Biomedical waste management**

**ASSIGNMENT TOPICS:**

- Radio active isotopes
- Arterial Blood gases

**PRACTICAL DEMONSTRATION (Record book to be maintained )**

- Laboratory apparatus - All glass ware and plastic ware (all appropriate diagrams in practical record)
- Water bath, Oven & Incubators, Water Distillation plant\*, refrigerators, cold box, cool barns, reflux condensers.
- Preparation of solutions: 1N HCl, 1M NaOH. Standard solutions of glucose and albumin
- Centrifuges\*- Technique of Centrifugation

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- Analytical balance\* - Weighing of chemicals to prepare standard and different types of solutions. Care while weighing acids, deliquescent and hygroscopic compounds.
  - Colorimeter\* - Absorbance readings of a colored solution and graphing
  - pH meter\* - Checking pH of urine and buffer
- Diagrams to be drawn

**INTERNAL ASSESSMENT**

Theory-average of 2 exams conducted	20
Practicals: record and lab work*	10

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**SCHEME OF EXAMINATION THEORY**

There shall be one theory paper of three hours duration carrying 80 marks. Distribution of type of questions and marks for Biochemistry I shall be as given under

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
Short essay type	10 (attempt 8)	8 x 5	40
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<b>Grand total</b>			<b>80</b>

**Distribution of Marks for University Theory and Practical Exam**

Theory				Practicals			Grand total
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*Course Title: Pathology (Clinical Pathology, Hematology & Blood Banking)*

*Course Code: BMLT104*

*70 Hours*

1). Laboratory Organization (10 hrs)

- a) Introduction to medical laboratory technology.
- b) Components and functions of a laboratory.
- c) Duties and responsibilities of Lab. Personnel.
- d) Safety guidelines in the laboratory.
- e) General guidelines for storing and handling of chemicals and equipments.
- f) S.I units and other conventional units in laboratory.
- g) Preparation of reagents and buffers in the laboratory.
- h) Quality control in the laboratory.
- i) Management of hospital generated waste.

2). Role of the laboratory in health care delivery system (05 hrs)

- a) General concept.
- b) Human health and diseases
- c) Types of diseases.
- d) Approach to diagnosis.

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3). Introduction to laboratory instruments (08 hrs)

- a) Principle, types and care of Microscopes.
- b) Principle, uses and care of Centrifuge, Colorimeter, waterbath, Incubator and Hot air oven.
- c) Equipments used in histopathology:
  - i. Microtome, Microtome Knives and Knife sharpeners.
  - ii. Freezing microtome and cryostat.
  - iii. Automatic Slide stainer
  - iv. Tissue Flootation bath.

4). Clinical Pathology (14 hrs)

- a) Introduction to clinical pathology.
- b) Collection, transport and preservation of various clinical specimens.
- c) Urine examination (Physical, Chemical and microscopic).
- d) Stool examination.
- e) Semen analysis.
- f) CSF and other body fluids.
- g) Stool for occult-blood.
- h) Pregnancy test.

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5). Haematology (20 hrs)

- a) Introduction to haematology.
- b) Origin and development of blood and blood forming tissues:
  - i. Erythropoiesis, Biosynthesis of Hb, Nutritional factors in erythropoiesis, destruction of red blood cells.
  - ii. Granulopoiesis, different types of granulocytes and their functions.
  - iii. Lymphopoiesis, differentiation of lymphoid cells.
  - iv. Thrombopoiesis.
  - v. Structure of red cell membrane.
  - vi. Red cell morphology in health and disease.
  - vii. Various leucocyte reactions –leucocytosis, neutrophilia, lymphocytosis, eosinophilia, basophilia .

6). Immunohematology and Blood transfusion (13 hrs)

- a) Introduction to immunohematology and blood transfusion.
- b) Human blood group antigens, their inheritance and antibodies.
- c) Antigen antibody reaction, factors modifying these reactions.
- d) ABO blood group system with sub groups .
- e) Bombay phenotype.
- f) Rh blood group system.
- g) Haemolytic diseases of infant and newborn (brief idea).

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20 Hours**

**Practical**

- 1) Introduction to laboratory glassware, washing and storage of glassware.
- 2) Introduction to laboratory instruments:
  - a) Microscope
  - b) Centrifuge
  - c) Colorimeter
  - d) Incubator
  - e) Waterbath
- 3). Preparation and storage of reagents and buffers.
- 4).Urine analysis (Physical, chemical and microscopic.
- 5).Examination of CSF and other body fluids.
- 6).Collection of blood for various laboratory investigations.
- 7). Introduction to various types of anticoagulants.
- 8).Estimation of Haemoglobin by different methods.
- 8).Hematocrit and ESR.
- 9).Enumeration of different blood cells (Red cell count, TLC, Platelet count, Absolute eosinophil count).
- 10).Reticulocyte count.
- 11).Romanowsky stains, principle ,types, preparation and storage.
- 12). Preparation and staining of peripheral blood film.
- 13). Differential leucocyte count.
- 14). PBF in different leucocyte reactions-neutrophilia, eosinophilia, monocytosis,basophilia.
- 15). Preparation and staining of bone marrow smears.
- 16).ABO blood grouping (Cell and serum grouping)
- 17). Rh blood grouping.

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
Short essay type	10 (attempt 8)	8 x 5	40
Short answer type	12 (attempt 10)	10 x 3	30
Short answer 5 Questions	07 (attempt 5)	5 x 2	10
Grand total			80

Distribution of Marks for University Theory and Practical Exam

Theory				Practicals			Grand total
Theory	Viva Voce	IA	Sub Total	Practicals	IA	Sub Total	
80	-	20	100	*			100



*Annexure to Notification No.F(Prescription-Syllabus/Paramedical Courses/Acad/KU/21  
dated 23-02-2021*

*B.Sc 1<sup>st</sup> year Medical Lab Technology*

*Course Title: Microbiology*

*Course Code: BMLT105*

**1. Introduction (6 hrs)**

History of Microbiology, classification of microorganisms, use of microscope in the study of bacteria,  
Morphology of bacterial cell

**2. Growth and nutrition (6 hrs)**

Nutrition, growth and multiplication of bacteria, culture media and culture methods

**3. Sterilization and disinfection (8 hrs)**

Principles and use of equipments of sterilization, chemicals used in disinfection

**4. Biomedical waste management principle and practice**

**5. Immunology (5 hrs)**

Immunity, vaccines  
Immunization schedule  
Definition of Antigen, antibody, list of antigen antibody reactions.

**5. Infection (5hrs)**

Definition, types and mode of transmission  
Hospital infections – causative agents, mode of transmission and prophylaxis  
Antimicrobial susceptibility testing

**6. Systematic bacteriology (15 hrs)**

Disease caused and lab diagnosis of medically important bacteria (Staphylococcus, Streptococcus,  
Gonococcus, Echerichia coli, Salmonella, Shigella, Vibrio, Mycobacteria, Treponema, Leptospira)  
(No need of classification, antigenic structure, virulence mechanism)

**7. Parasitology (10hrs)**

Introduction to Parasitology  
List of medically important parasites and diseases (E.histolytica, Plasmodium, W.bancrofti, Ascaris,  
Ancylostoma)  
Lab diagnosis of parasitic infections

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**B.Sc 1<sup>st</sup> year Medical Lab Technology**

**8. Virology (10hrs)**

Introduction to virology  
List of medically important viruses and diseases ( AIDS, Hepatitis, Rabies, Polio, Arboviruses)  
Lab diagnosis of viral infections

**9. Mycology (5hrs)**

Introduction to Mycology  
List of medically important fungi and diseases (Candidiasis, Cryptococcosis, Dermatophytes, Aspergillosis and Mucor mycosis)  
Lab diagnosis of fungal infections

**PRACTICALS (20hrs)**

Compound Microscope  
Demonstration and sterilization of equipments  
Demonstration of commonly used culture media and media with growth  
Antibiotic susceptibility test  
Demonstration of common serological tests –widal, VDRL,  
Grams stain, Acid fast staining  
Stool exam for Helminthic ova

**INTERNAL ASSESSMENT**

Theory-average of 2 exams conducted           20  
Practicals: record and lab work\*               10

\*There shall be no university practical examination and internal assessment marks secured in Practicals need not be sent to the university.

**SCHEME OF EXAMINATION THEORY**

There shall be one theory paper of three hours duration carrying 80 marks. Distribution of type of questions and marks for Microbiology I shall be as given under.

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
Short essay type	10 (attempt 8)	8 x 5	40
Short answer type	12 (attempt 10)	10 x 3	30
Short answer 5 Questions	07 (attempt 5)	5 x 2	10
Grand total			80

**Distribution of Marks for University Theory and Practical Exam**

Theory				Practicals			Grand total
Theory	Viva Voce	IA	Sub Total	Practicals	IA	Sub Total	
80		20	100	*			100

*Annexure to Notification No.F(Prescription-Syllabus/Paramedical Courses/Acad/KU/21  
dated 23-02-2021*

*B.Sc 1<sup>st</sup> year Medical Lab Technology*

*Course Title: Health Care (Subsidiary)*

*Course Code: BMLT106*

**Introduction to Health**

Definition of Health, Determinants of Health, Health Indicators of India, Health Team Concept National Health Policy  
National Health Programmes ( Briefly Objectives and scope) Population of India and Family  
welfare programme in India

**Introduction to Nursing**

What is Nursing ? Nursing principles, inter-Personnel relationships. Bandaging : Basic turns; Bandaging extremities, Triangular  
Bandages and their application.

Nursing Position, Bed making, prone, lateral, dorsal, dorsal re-cumbent, Fowler's positions, comfort measures, Aids and rest  
and sleep.

Lifting And Transporting Patients: Lifting patients up in the bed. Transferring from bed to wheel chair. Transferring from bed to  
stretcher.

Bed Side Management: Giving and taking Bed pan, Urinal : Observation of stools, urine. Observation of sputum,  
Understand use and care of catheters, enema giving

Methods of Giving Nourishment: Feeding, Tube feeding, drips, transfusion Care of Rubber Goods

Recording of body temperature, respiration and pulse, Simple aseptic technique,

sterilization and disinfection. Surgical Dressing: Observation of dressing procedures

**First Aid :**

Syllabus as for Certificate Course of Red Cross Society of St. John's Ambulance Brigade.

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