

Bachelor of Vocation (Medical laboratory technology)

B.Voc. (MLT) Syllabus (1st Year)

II Semester				
S.No.	Course Code	Subject	Type of Course	Credits
1	BVMLT-201	Human Anatomy & Physiology -II	Gen	4
2	BVMLT-202	Clinical pathology	Skill	3
3	BVMLT-203	Introduction to Haematology	Skill	3
4	BVMLT-204	Introduction to Bio chemistry	Gen	4
5	BVMLT-205	Advance Phlebotomy & Lab Ethics	Skill	3
6	BVMLT-206	Communication Skills - I	Gen	3
7	BVMLT-207	Computing Skill - I	Gen	3
8	BVMLTP-201	Vocational Practical	Skill	2

BVMLT -201 Fundamental of Human Anatomy & Physiology-II

UNIT-1

Glands of human body – mucous glands, thyroid gland, parathyroid gland, hypothalamus, pituitary, adrenal, pineal, the ovaries, the testes glands, general consideration of lymphatic system, gross anatomy of thoracic duct, histology of lymph node, spleen, tonsils and thymus, gross anatomy of respiratory system, parts of respiratory system, histology of trachea and lungs, parts of reproductive system- Male and female.

UNIT-2

Brief introduction and definition of integumentary system and Gastro- intestinal system, layers of skin, appendages of skin-hair, sebaceous gland, sweat gland, nails, receptors, function of skin, parts of GIT, oral cavity, salivary glands, structure and function of esophagus, stomach, small and large intestine, liver, gall bladder and pancreas, Histology of tongue, esophagus, stomach, small and large intestine, liver, gall bladder and pancreas.

UNIT-3

Lymphatic system and immunity- Lymphoid tissue formation, composition and functions of lymph, phagocytosis, cytokine therapy, AIDS, autoimmune disease, medical uses of hemopoietic growth factors, organs of lymphatic system, functions of respiratory system, mechanism of respiration, lungs volume and capacities- definition, normal value, their measurement and clinical importance, pulmonary ventilation, diffusion of gasses,

pulmonary circulation- oxygen and carbon dioxide transport in blood, disease related to respiratory system.

UNIT-4

Gastrointestinal system- characteristics of G.I, functions of G.I, hormones, saliva, composition, function, control of secretion, gastric juice- composition, mechanism of secretion, functions, regulation of secretion, mucosal barrier, pancreatic juice- composition, function, regulation, liver and gall bladder- composition, function of bile, control of secretion, functions of gall bladder and gallstone, functions of reproductive system – male and female, functions of urinary system-ureters, urinary bladder, urethra.

BVMLT -202 Clinical Pathology

UNIT-1

Urine Examination: urine analysis, routine examination of urine, chemical examination of urine, microscopic examination of urine, clinical significance, specimen collection, laboratory investigation.

UNIT-2

Stool examination: gross examination, physical examination, determination of pH, chemical examination of feces, microscopic examination of stool specimen, clinical significance, specimen collection, laboratory investigation.

UNIT-3

Sputum examination: Indication collection, container, transport, preservation for different types of sputum analysis, physical, chemical and microscopic examination and its significance.

UNIT-4

Semen examination: semen analysis, routine examination of semen, quantitative determination of semen fructose, interpretative semen analysis, examination for the presence of sperms.

Reference book: [essential of clinical pathology, clinical pathology board review, Henry's clinical pathology, Quick compendium of clinical pathology, Harsh mohan].

BVMLT –203 Introduction to Hematology

UNIT-1

Blood: Composition and functions of blood, blood cells-RBC's, WBC's Platelet, serum, plasma, hemoglobin, haematopoietic systems of human body, human blood group system, body fluids, blood volume, homeostasis, stages of RBC's, WBC's and platelets.

UNIT-2

Haematological disorders and disorders: classification of anemia- morphology and etiological, iron deficiency anemia- distribution of iron in body, iron absorption, causes of iron deficiency, lab findings, megaloblastic anemia- causes and lab findings, hemolytic anemia- causes and lab findings, thalassemia, HDN, multiple myeloma, polycythemia, parasitic infection of blood.

UNIT-3

Bone Marrow: cell composition of normal adult bone marrow, aspiration, indication, preparation and staining, special stain for bone marrow- periodic Acid Schiff, Sudan black, myeloperoxidase, leukemia- classification, blood picture, differentiation of blast cells.

UNIT-4

Coagulopathies and bleeding disorder: bleeding disorders, haemostasis, mechanism of coagulation, clotting or coagulation factors, routine coagulation tests- prothrombin time, activated partial thromboplastin time, bleeding time, clotting time, Clot retraction time, laboratory diagnosis of bleeding disorder.

Reference book: [hematology board review, blue prints hematology, diagnostic cytology and hematology, P.B Godkar]

BVMLT -204 Introduction to Bio-Chemistry

UNIT-1

Lab examination of body fluids: lab investigation of different body fluids- cerebrospinal fluid, synovial fluid, peritoneal fluid etc. Routine biochemical tests: creatinine kinase, blood gases, determination of serum or plasma bicarbonate. Electrolytes, phosphate etc.

UNIT-2

Bio chemical test profile: basic physiology and biochemistry of the human body, interrelated metabolic processes of the body, biochemical tests- liver tests, kidney function tests, endocrine function tests, lipid profile, LDH, CPK, CPK-MB, Amylase, GTT, GCT, blood sugar fasting, pp and random.

UNIT-3

Analytical techniques: basic steps in analytical chemistry, electrochemistry, photometry, immune-chemistry, separation and analysis of organic compounds, principles of analytical chemistry, photometry, electrochemistry, immunochemistry.

UNIT-4

Biochemical processes: normal and abnormal biochemical process of the body, biochemical changes in the body under pathological conditions, functions of various organs and their clinical assessment.

Reference book: [Kaplan MCAT biochemistry audio review, BRS biochemistry, Schaum's outline of biochemistry, pankaja naik]

BVMLT –205 Advance Phlebotomy & Lab Ethics

UNIT-1

Specimen Collection (blood(vacutainer method) , urine ,sputum, stool etc.) : characteristics if good phlebotomist, preparation of specimen collection, basics steps for drawing of blood specimen by vein puncture, complications of vein puncture, specimen rejection criteria for blood specimen, hemolysis of blood, blood collection by skin puncture (capillary puncture) arterial puncture.

UNIT-2

Phlebotomy: order of draw for specimen collection, types of anticoagulant, types of vacutainers, separation of serum and plasma, difference between serum and plasma, maintenance of specimen identification, transport of specimen, effect of storage on blood cell morphology, universal precautions.

UNIT-3

Lab ethics: maintaining equipments, awareness of requisition form, specimen rejection record, data management, ethical consideration, train the technician, standard operating procedures, calibration, quality control.

Reference book: [success in phlebotomy, phlebotomy simplified, complete text book of phlebotomy]

BVMLT-206-BASIC OF HEALTH MARKET AND ECONOMY

Unit I

Health Care Market An Introduction : Main Problems in the Market for Health Care, Health Care and Economic Basics, Analyzing Health Care Markets. Demand-Side Considerations: Demand for Health and Health Care, Market for Health Insurance.

Unit II

Supply-Side Considerations: Managed Care, Health Care Professionals, Hospital Services, Confounding Factors Public Policy in Medical Care: Policies to Enhance Access, Policies to Contain Costs, Medical Care Systems Worldwide.

UNIT-III

Health Sector in India: An Overview Health Outcomes; Health Systems; Health Financing Evaluation of Health Programs Costing, Cost Effectiveness and Cost-Benefit Analysis; Burden Of Diseases ,Role of WHO , Health Care Budget: purpose, types & practices in Indian context.

UNIT-IV

Health Economics: Fundamentals of Economics: Scope & coverage of Health Economics, demand for Health Sciences; Health as an investment, population, Health & Economic Development. Tools of Economics-Concepts of need, demand, supply & price in Health Services. Methods & Techniques of Economic Evaluation of Health Programmes: Cost benefit & cost effective methods-output & input analysis.

Market, monopoly, perfect & imperfect competition. Health Financing from various sources – Public, Private, TPA. Economics of Health Programmes for Nutrition, diet & population control, economics of abuse of tobacco & alcohol, environmental influences on health and feeding.

Economics of Communicable (STDs & Malaria) & non-communicable (IHD & Cancers) diseases.

PRACTICALS:

BVMLTP-201-PRACTICAL-General Human Anatomy & Physiology-II

Human Anatomy-II (Practical)

Demonstration of:

- Nervous system from models.
- Structure of eye and ear
- Structural differences between skeletal, smooth and cardiac muscles.
- Various bones
- Various joints
- Various parts of male & female reproductive system from models

Human Physiology- II (Practical)

- To perform total platelet count.
- To perform bleeding time.
- To perform clotting time.
- To study about CSF examination.
- To study about intrauterine contraceptive devices.
- To demonstrate microscopic structure of bones with permanent slides.
- To demonstrate microscopic structure of muscles with permanent slides.

BVMLTP-202-Clinical pathology

- Estimation of blood sugar level of plasma (or serum)
- (a) orthotoluidine method (b)glucose-oxidase method
- To perform pregnancy test by dipstick method
- Estimation of the serum urea nitrogen
- Estimation of serum creatinine. (a)alkaline-picrate method.
- Determination of protein in blood
- Albumin, globulin
- Determination of serum bilirubin. (a)malloy and evelyn.
- (b)DMSO method.
- Determination of serum bilirubin. (a)malloy and evelyn.
- (b)DMSO method.
- Determination of serum glutamate pyruvate transaminase(SGPT) and serum glutamate oxaloacette transaminase(SGOT) (a)end point reaction
- Determination of serum alkaline phosphatase
- To perform glucose tolerance test

BVMLTP-203-Introduction to Hematology

- study sickling test using 2% sodium metabisulphite
- Determination of reticulocyte count.
- Determination of prothrombin time
- Determination of glucose-6-phosphate dehydrogenase(G-6-PD)

BVMLTP-204-Introduction to Bio chemistry

- 1. Analysis of Normal Urine
- 2. Liver Function tests
- 3. Lipid Profile
- 4. Renal Function test
- 5. Blood gas and Electrolytes
- 6. Demonstration of Glucometer with strips

BVMLTP-205-Advance Phlebotomy & Lab Ethics

- To learn general laboratory safety rules.
- To demonstrate glasswares, apparatus and plasticwares used in laboratory.
- To demonstrate method of blood collection.
- To separate serum and plasma.
- To demonstrate quality control in lab
- To learn sampling