BMLT II YEAR COURSE OUTCOME

SUBJECT – BIOCHEMISTRY

S. NO.	TOPIC	COURSE OUTCOME
1.	**COLORIMETRY**	In this topic students able to understand a colorimeter device, which is used for measuring its absorbance of a specific wavelength of light. Understand that this instrument is used in various Biochemical test.
2.	**SPECTRO-PHOTOMETRY**	At the end of this study students should be able to - Understand to measure the transmission or Reflection of light. Understand that this instrument is used in Biochemistry.
3.	**FLAME-PHOTOMETRY**	Students must should be able to – Understand the device used in organic chemical analysis. Understand the concentration of certain metal ion among them sodium,potassium,lithium and calcium.
4.	**ATOMI ABSORPTION SPECTROSCOPY**	After studying this topic students should be able to- Understand the application to the determination of Serum calcium.
5.	**ELECTROMETRIC DETERMINATION OF SODIUM & POTASSIUM**	Students should be able to – Understands the determination of sodium and potassium in blood serum.
6.	**CHROMATOGRAPHY**	Students should be able To-

		Understand the Laboratory technique for the separation of a mixture. Understand the working and types of chromatography in Biochemistry.
7.	**ELECTROPHORESIS**	Students should be able to – Understand the principle of Electrophoresis. Understand the use in Laboratories to separate macromolecule based on size. Understand the use for DNA and RNA Analysis by Electrophoresis.
8.	**INTRODUCTION , PROPERTIES AND SIMPLE METABOLISM OF CARBOHYDRATE**	Students must able to – Understand the introduction of carbohydrates. Understand the types of carbohydrate and their function. Understand the metabolism of carbohydrate.
9.	**PROTEIN AND FATS**	after the studying Of this topic students should able to- Understand the introduction of protein and fats.
10.	**NUCLEIC ACID**	Student must able to- Understand the introduction of nucleic acid. Understand the types of nucleic acid. Understand the classification and function of nucleic acid.
11.	**ENZYMES**	In this topic students able to- Understand the introduction of enzymes. Understand the general properties of enzyme.

		Understand the function of enzymes. Understand the types of enzymes. Understand the classification of enzyme.
12.	**DIGESTION & ABSORPTION**	Understand the introduction of digestion and absorption.
13.	**NUTRITION (VITAMIN & CALORIES)**	Understand the introduction of nutrition. Understand the introduction of vitamin. Understand the introduction of Calories. Understand the types and functions of vitamins. Understand the classification of vitamins.
14.	**RIA (RADIOIMMUNOASSAY)**	In this topic students able to – Understand the introduction of RIA. Understand the method of RIA. Understand the Principle of RIA.
15.	**ELISA (ENZYME LINKED IMMUNE SORBENT ASSAY)**	In this topic students able to- Understand the introduction of ELISA. Understand the Principle and types of ELISA. Understand the method of ELISA.

BMLT II YEAR COURSE OUTCOME

SUBJECT – CELLULAR PATHOLOGY

S. NO.	TOPIC	COURSE OUTCOME
1	**BASIC CELLULAR PATHOLOGY AND ALLIED TECHNIQUES**	The students will learn histological study of various systems of the body , instrumentation and Cytological techniques.
2	**HUMAN HISTOLOGY :** **STUDY OF VARIOUS BODY TISSUES**	**:-**Student is able to understand various kinds of tissue in Human Body.
2.1	**EPITHELIAL TISSUE**	At the end of this topic student should be able to – • Understand the basics of Epithelial tissue. • Understand the various types of Epithelial tissue and their various function in human body. • Understand the Diagram of all types of Epithelial tissue.
2.2	**CONNECTIVE TISSUE INCLUDING BONE AND CARTILAGE**	At the end of this topic student should be able to – • Understand the basics of Connective tissue. • Understand the various types of Connective tissue and their various function in human body. • Understand the Diagram of all types of Connective tissue

2.3	**MUSCULAR TISSUE -**	At the end of this topic student should be able to – • Understand the basics of Muscular tissue. • Understand the various types of Muscular tissue and their various function in humanbody. • Understand the Diagram of all types of Muscular tissue. • Understand the role of muscular tissue in Human body.
2.4	**NERVOUS TISSUE**	At the end of this topic student should be able to – • Understand the basics of Nervous tissue . • Understand the various types of Nervous tissue and their various function in humanbody . • Understand the Diagram of all types of Nervous tissue.
2.5	**GLANDS ,EPITHETICAL AND ENDOCRINE**	At the end of this topic student should be able to – • Understand the types of Glands and their function. • Understand the function of Endocrine glands and their Secretion in human body. • Understand the Diagram of all types of Glands.
3	**HISTOLOGICAL STUDY OF VARIOUS SYSTEM OF THE BODY**	

3.1	**THE CIRCULATORY SYSTEM –**	At the end of this topic student should be able to – • Understand the Histological cells and structure of Circulatory system. • Understand the Histologial Diagram of various Parts of Circulatory System. • Understand the function of circulatory system in human body.
3.2	**THE ALIMENTARY SYSTEM –**	At the end of this topic student should be able to – • Classify the various parts of Alimentary system. • Understand the Histological cells and structure of Alimentary system. • Understand the Histological Diagram of various Parts of Alimentary System. • Understand the function of Alimentary system in human body.
3.3	**THE DIGESTIVE SYSTEM INCLUDING LIVER,PANCREAS AND GALL BLADDER**	At the end of this topic student should be able to – • Classify the various parts of Digestive system. • Understand the Histological cells and structure of Digestive system. • Understand the Histological Diagram of various Parts of Digestive System. • Understand the function of Digestive system in human body. • Understand the histological diagram of liver,pancreas and gall bladder with their Function.

3.4	**THE RESPIRATORY SYSTEM**	At the end of this topic student should be able to – • Classify the various parts of Respiratory system. • Understand the Histological cells and structure of Respiratory system. • Understand the Histological Diagram of various Parts of Respiratory System. • Understand the function of Respiratory system in human body.
3.5	**THE URINARY SYSTEM**	At the end of this topic student should be able to – • Classify the various parts of Urinary system. • Understand the Histological cells and structure of Urinary system. • Understand the Histological Diagram of various Parts of Urinary System. • Understand the function of Urinary system in human body
3.6	**THE SYSTEM OF ENDOCRINE GLANDS**	At the end of this topic student should be able to – • Understand the various types of Endocrine glands.. • Understand the function of Endocrine glands and their Secretion in human body. • Understand the Diagram of all types of Glands.
3.7	**THE REPRODUCTIVE SYSTEM**	At the end of this topic student should be able to – • Classify the various parts of Reproductive system.

		• Understand the Histological cells and structure of Reproductive system. • Understand the Histological Diagram of various Parts of Reproductive System. • Understand the function of Reproductive system in human body.
3.8	**NERVE ENDINGS AND ORGANS OF SPECIAL SENSES –**	At the end of this topic student should be able to – Understand the various types of Special and their functions
4	**FUNDAMENTAL OF APPLIED HISTOLOGY**	
4.1	**MICROSCOPY , WORKING PRINCIPLE ,MAINTENANCE AND APPLICATION OF VARIOUS** **TYPES OF MICROSCOPE –**	At the end of this topic student should be able to – • Understand the Basic knowledge about Microscope. • Understand the various types of microscopes. • Understand the Function and Importance of different types of Microscopes. • Understand the use of all types of microscope in Laboratory. • Understand the Handling of Microscope. • Understand the Working and Principle of all types of Microscopes. • Understand to how to maintain the Microscope before and after use. • Understand the Application of various types of microscopes.

4.2	**DARK GROUND MICROSCOPE –**	At the end of this topic student should be able to – • Understand the principle and working of DGI. • Understand the Application and maintenance of DGI.
4.3	**POLARIZING MICROSCOPE**	At the end of this topic student should be able to – • Understand the principle and working of Polarizing microscope. • Understand the Application and maintenance of Polarizing microscope.
4.4	**PHASE CONTRAST MIROSCOPE**	At the end of this topic student should be able to – • Understand the principle and working of Phase Contrast microscope. • Understand the Application and maintenance of Phase Contrast microscope
4.5	**INTERFERENCE MICROSCOPE**	At the end of this topic student should be able to – • Understand the principle and working of Interference microscope. • Understand the Application and maintenance of Interference microscope.
5	**METACHROMASIA AND METACHROMATIC DYES**	At the end of this topic student should be able to – • Understand the Metachromasia and Metachromatic dyes.

		• Understand the Various functions and uses of dyes.
6	**HAEMATOXYLIN STAIN, ITS IMPORTANCE IN HISTOLOGY –**	At the end of this topic student should be able to – • Understand the Introduction and history of Haematoxylin stain. • Understand the use of Haematoxylin in Staining methods. • Understand the importance of Haematoxylin in histology.
7	**CARBOHYDRATES AND AMYLOID – SPECIAL STAIN AND PROCEDURE**	At the end of this topic student should be able to – • Understand the Introduction of Carbohydrate • Understand the Special stain of Carbohydrate with their procedure. • Understand the Introduction of Amyloid. • Understand the Special stain of Amyloid with their procedure
8	**CONNECTIVE TISSUE, TRI-CHROME STAINING AND OTHER SPECIAL STAIN FOR** **MUSCLE-FIBERS,ELASTIC RETICULAR FIBERS AND COLLAGEN FIBERS.**	At the end of this topic student should be able to – • Understand the Various types of staining in connective tissue. • Understand the Trichrome staining method. • Understand the special stain for Muscle fibers. • Understand the special stain for Elastic fibers. • Understand the special stain for Reticular fiber.

		• Understand the special stain for Collagen fiber.
9	**PRINCIPLE OF METAL IMPREGNATION TECHNIQUES**	At the end of this topic student should be able to – • Understand the Introduction of Metal impregnation and their Techniques. • Understand the Principle of metal impregnation techniques.
10	**DEMONSTRATION AND IDENTIFICATION OF MINERALS AND PIGMENTS**	At the end of this topic student should be able to – • Understand the Demonstration of Minerals and Pigments. • Identify the Minerals and Pigments
CYTOLOGY		
11	**STAINS CYTOLOGICAL PREPARATION WITH SPECIAL EMPHASIS ON MGG, PAPANICOLOU STAINS**	At the end of this topic student should be able to – • Understand the preparation of cytological stains. • Understand the MGG stain with their Procedure. • Understand the PAP stain and their method of staining the cytological slides.
12	**SPECIAL STAINS LIKE PAS,MUCICARMINE, ALCIAN BLUE,SCHMORL AND ACID PHOSPHATASE**	At the end of this topic student should be able to – • Understand the Importance of special stain in histology. • Understand the various types of special stain with their use in histology. • Understand the method of PAS staining for Carbohydrate.

		• Understand the method of Mucicarmine for use in the histological visualization of acid mucopolysaccharide in tissue sections. • Understand the method of Alcian blue to stain acidic polysaccharides in cartilage and other body structure. • Understand the method of acid phosphatase useful for examine skeletal muscle.
13	**CYTOLOGICAL SCREENING AND QUALITY CONTROL IN CYTOLOGY LABORATORY**	At the end of this topic student should be able to – • Understand to how to control the quality in cytological laboratory. • Understand the screening test in cytology.

BMLT II YEAR COURSE OUTCOME

SUBJECT – APPILED HAEMATOLOGY & BLOOD BANKING

S.NO	TOPIC	COURSE OUTCOME
1	**HISTORY & DISCOVERY OF BLOOD GROUP SYSTEM**	• At the End of this topic student must should be able to… i. Understand its introduction ii. To understand discovery of blood group system iii. Understand types of blood group iv. Understand to identify types of blood group.
2	**ABO AND RHESUS BLOOD GROUP SYSTEM**	• At the End of this topic student must should be able to… i. Understand its introduction ii. Understand ABO blood group system & Rh system importance in blood bank and transfusion procedure iii. Understand principal procedure & applicant of blood group system iv. Understand about antisera and different blood group methods.
3	**COMPATIBILITY TEST IN BLOOD TRANSFUSION, COMPLICATION AND HAZARDS OF BLOOD TRANSFUSION**	At the end of this topic student must should be able to… i. Understand its introduction ii. Understand the cross matching test procedure, type, precaution and importance during blood transfusion investigation. iii. to understand blood transfusion procedure requirement condition and complication and hazards during blood transfusion.

		iv. To understand blood donation importance.
4	**LABORATORY INVESTIGATION OF TRANSFUSION REACTION AND MISMATCHED TRANSFUSION.**	• At the end of this topic student must should be able to… i. Understand its introduction. ii. To understand various type blood transfusion investigate like blood grouping ABO and Rh system, cross matching coombs test iii. To understand proper identification.
5	**PREPARATION OF PACKED CELL & VARIOUS FUNCTION OF BLOOD & TRANSFUSION PURPOSE.**	• At the end of this topic student must should be able to… i. Understand its introduction ii. To understand packed cell principal. iii. To understand staining of bone marrow smears.
6	**STAINING OF BONE MARROW SMEARS**	• At the and of this topic student must should be able to… i. Understand its introduction. ii. To understand aspiration and biopsy. iii. To understand smear and blood film. iv. To understand types needle.
7	**HEMOGLOBIN ITS SYNTHESIS FUNCTION AND DEGRADATION**	At the and of this topic student must should be able to… i. Understand its introduction. ii. To understand function of Hb. iii. To understand and clinical significance.
8	**HB PIGMENTS & THEIR MEASUREMENT**	At the end of this topic student must should be able to… i. Understand its introduction.

		ii. To understands measurement Hb pigment . iii. Normal value Hb and pigment.
9	**ABNORMAL HB AND THEIR MEANS OF IDENTIFICATION AND ESTIMATION**	• At the End of this topic student must should be able to… i. Understand its introduction. ii. Identification of abnormal hb & its identification α & two β protein chain. iii. Understand its various types.
10	**LE CELL PHENOMENON & VARIOUS METHOD OF ITS DEMONSTRATION**	• At the End of this topic student must should be able to… i. Understand its introduction. ii. To understand discovery and fullform of Le cell. iii. To understand identification Le cell.
11	**PHYSIOCHEMICAL PROPERTIES OF COAGULATION FACTOR -**	• At the end of this topic student must should be able to… i. Understand its introduction . ii. To understand identified different types of coagulation factor. iii. Understand its function
12	**QUANTITATIVE ASSAY OF COAGULATION FACTOR**	• At the end of this topic student must should be able to… i. Undersatand its introduction. ii. To understand identify various types of method like BT , CT , PT. iii. To understand clinical significance.

BMLT II YEAR COURSE OUTCOME

SUBJECT – IDENTIFICATION PF BACTERIA

S. NO.	TOPIC	COURSE OUTCOME
1.	**IDENTIFICATION OF BACTERIA (STAPHYLOCOCCUS AUREUS, STREPTOCOCCI, PNEUMOCOCCUS, CORYNEBACTERIUM, ESCHERICHIA, KLEBSIELLA, ENTEROBACTER, SALMONELLA, MYCOBACTERIUM, CLOSTRIDIUM, VIBRIO, NEISSERIA, BACILLUS, PSEUDOMONAS, MYCOPLASMA, BORDETELLA, TREPONEMA, MYCOPLASMA, LEPTOSPIRA, CHLAMYDIA)**	In this topic students able to understand to identification of various bacteria, isolate them culture recognize them for the detection of disease. Also know the morphology, culture characteristics and their source, types of diseases to infect human being.
2.	**PATHOGENIC AND NON-PATHOGENIC FUNGI (CANDIDA, CRYPTOCOCCUS, DERMATOPHYTES, HISTOPLASMA, DERMATOPHYTES, BLASTOMYCOSES, COCCIDIODES)**	At the end of this study students should be able to know differentiation between pathogenic and non- pathogenic fungi. And their related infection, morphology, culture characteristics and laboratory diagnosis.

3.	**BIOCHEMICAL TESTS USED FOR IDENTIFICATION OF BACTERIA AND FUNGI**	Students must should be able to identify the bacterial and fungal species to perform biochemical test. And also know that which biochemical will be use in bacterial or fungal identification.
4.	**ANTIMICROBIAL SENSITIVITY TESTING AND ASSAY METHODS FOR BODY FLUIDS**	After studying this topic students should be able to know developments of resistance towards antibiotics. And also know that which types of method use in test.
5.	**PREPARATION AND STANDARDIZATION OF ANTIGENS AND ANTISERA**	Students should be able to understands & explain different types of method to prepare vaccine and also know that the quality control of vaccine preparation.
VIROLOGY		
6.	**DIFFERENT STAINING TECHNIQUES USED IN VIROLOGY**	Students should be able to know that types of staining and their staining methods. Also understand that which staining used in which types of viruses. After staining students know about morphology of viruses i.e. DNA/RNA virus.
7.	**USE OF EMBRYONATED EGGS IN CLINICAL VIROLOGY**	Students should be able to determine the use of embryonated egg in virology and also know that methods of virus inoculation.
8.	**PRINCIPLES OF ANIMAL CELL CULTURE AND THEIR USE**	Students must able to know the growth of the organism in cell culture. Also know that the principle of cell culture to identification of virus.
9.	**USE OF COMMON LABORATORY ANIMALS IN VIRAL DIAGNOSIS**	after the studying this topic students know about the cellular structure of virus. And also know that the purpose of use animal in virology.

PARASITOLOGY		
10.	**MORPHOLOGY, LIFE CYCLE AND LABORATORY DIAGNOSIS OF HEMOFLAGELLATES (LEISHMANIA, TRYPANOSOMES)**	After studying this topic students would be able to know about the morphology i.e. the shape, size and the lab diagnosis i.e. collection, preparation and culture. Also what kind of infection it will cause.
11.	**MORPHOLOGY, LIFE CYCLE AND LABORATORY DIAGNOSIS OF TISSUE AND BLOOD NEMATODES (FILARIA, TRICHMELLA, DRACUNUCULUS, TANIEA, ECHINOCOCCUS)**	This will give the information about the morphology, life cycle and the infection which will be caused is the tissue and blood.
12.	**MORPHOLOGY, LIFE CYCLE AND LABORATORY DIAGNOSIS OF INTESTINAL CESTODES (H. NANA, D. LATUM, HYDATID CYST, CYSTICERCOSIS**	After studying this topic students would be able to know about the morphology i.e. the shape, size and the lab diagnosis i.e. collection, preparation and culture. And also know that which parasite cause the intestinal parasitic infection.
13.	**CULTURE TECHNIQUES FOR PROTOZOA-AMOEBA AND GIARDIA**	Here students will be know about the different types of culture method used in Parasitology
14.	**EGG COUNTING TECHNIQUES**	Students know about different egg counting methods. And also know that purpose of egg counting in parasitology.
15.	**CASONI'S TEST AND INTERPRETATION**	Students will be know about casoni's test for what it is applied. And also know test result interpretation.
16.	**LABORATORY PROCESSING, STAINING AND EXAMINATION OF SAMPLE**	Students will be studying the staining procedure, their purpose and also know examination of smear.