

**Maulana Abul Kalam Azad University of Technology, West Bengal**  
*(Formerly West Bengal University of Technology)*  
**Syllabus for B. Sc. In Medical Lab Technology**  
**(Effective for Academic Session 2018-2019)**

**B.Sc. MLT- II Semester**

**Course/Paper: Human Anatomy-II**

**Course Code: BML-201**

**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**

Cardiovascular system: Basic anatomy of heart and important blood vessels  
Brief introduction about Lymphatic System

**Unit –II**

The Nervous System: Basic anatomy of brain and spinal cord, meninges and cerebrospinal fluid, Cranial Nerves

**Unit-III**

Endocrine System: Brief anatomy of Pituitary, Thyroid, Parathyroid, Pancreas, Adrenal

**Unit-IV**

Special Senses: Basic anatomy of eye, ear and nose

**Unit-V**

Genitourinary system: Basic anatomy of kidney and associated organs, male reproductive organs, female reproductive organs

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

**Suggested Readings:**

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

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**Course/Paper: Human Physiology-II**

**Course Code: BML-202**

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

**Unit- I**

Organs of Excretory System: Kidneys, Nephron, Mechanism of Excretion, Urine formation (Glomerular filtration and Tubular reabsorption), Electrolytes: their balances and imbalances Introduction of acidosis and alkalosis

**Unit-II**

Muscle nerve physiology, types of muscles, their gross structural and functional difference with reference to properties

**Unit-III**

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  
Special senses-general organization & functions

**Unit- IV**

Endocrine System: Brief introduction about endocrine glands and their secretion, common endocrinological disorder such as diabetes mellitus, hyper & hypothyroidism, dwarfism, gigantism, tetany.

**Unit-V**

Reproductive System: male & female reproductive organs, sex hormones, secondary sexual characteristics, puberty, spermatogenesis, oogenesis, menstrual cycle, pregnancy, menopause, contraceptive measures.

**Learning Outcome:** Students will able to understand functioning of various systems included in syllabus as well as diseases mentioned.

***Suggested Readings:***

1. Ross & Wilson,(2014),Anatomy & Physiology in health & illness,11<sup>th</sup> edition,Elsevier Publications
2. Sujit Chaudhury,(2011),Concise Medical Physiology,6<sup>th</sup> edition, NCBA
3. Sembulingam k,(2012),Essentials of Medical Physiology,6<sup>th</sup> edition, Jaypee Publications
4. Guyton and Hall,(2011) Textbook of Medical Physiology,12<sup>th</sup> Edition,Saunders/Elsevier
5. Gerard J. Tortora and Bryan H.Derrickson,(Principles of Anatomy and Physiology,14<sup>th</sup> edition,Wiley publications

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**Course/Paper: Biochemistry–II**

**Course Code: BML-203**

**Learning Objective:** This paper is extension of BML-S-104 and which aims at understanding the chemical properties of the bio molecules, their functions and biomedical importance.

**Unit-I**

Carbohydrates: Classification, function, importance, structure, digestion & absorption. Proteins: Classification, function, importance, structure, digestion & absorption.

**Unit-II**

Amino acids: Classification, Structure, Properties and Biological functions.  
Lipids: Classification of lipids, Classification of fatty acids, Saturated & Unsaturated fatty acids, their biological functions, digestion and absorption, introduction of lipoproteins

**Unit-III**

Enzymes : Definition, Classification of enzyme, Cofactor & Coenzymes, Concept of active sites and general mode of action of enzymes, units for measuring enzyme activity, factor affecting enzyme activity, factor responsible for abnormal enzyme secretion

**Unit-IV**

Nucleic acids: Structure, Function and types of DNA and RNA, Nucleotides, Nucleosides, Nitrogen bases, purines and pyrimidines and role of Nucleic acid.

**Unit-V**

Vitamins: classification, function and disease associated with vitamins.  
Minerals and ions: Requirement, function and biological importance of Calcium, Iron, Iodine, Zinc, Phosphorus, Copper, Sodium and Potassium

**Learning Outcome:** Students will understand the chemistry, function, and biological importance of carbohydrates, proteins, lipids, nucleic acids, enzymes, vitamins and minerals.

**Suggested Readings:**

1. D M Vasudevan, (2011),Text book of Medical Biochemistry,6<sup>th</sup> edition Jaypee Publishers
2. M N Chatterjea & Rana Shinde,(2012),Text book of Medical Biochemistry,8<sup>th</sup> edition,Jaypee Publications
3. Singh & Sahni,(2008),Introductory Practical Biochemistry,2<sup>nd</sup> edition, Alpha science
4. Lehninger,(2013),Principles of Biochemistry,6<sup>th</sup> edition, W H Freeman
5. U Satyanarayan,(2008), Essentials of Biochemistry,2<sup>nd</sup> edition, Standard Publishers

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**Course/Paper: Bio-Medical Waste Management**  
**Course Code: BML-204**

Unit 1: Present Scenario

Bio-medical waste – Concepts and Perceptions, Waste Generation, Segregation , Disposal

Unit 2:

Planning and Objectives of BMW Management, Survey, Policies and Perspectives of BMW Management

Unit 3:

Record Keeping, Management of Bio-medical Waste, Technologies for Treatment for BMW, Criteria for selecting appropriate Medical Waste Technologies

Unit 4:

Training, Occupational Safety and Health Issues

Unit 5:

Legal Aspects and Environment Concern, Implementation of Action Plan, Approaches to Common Regional facility

**Reference Books:**

1. The Book of Hospital Waste Management: Dr. D.B. Acharya & Dr. Meeta Singh (Minerva Press, New Delhi)
2. Hospital Waste Management & its Monitoring: Madhuri Sharma (Jaypee Brothers, Medical Publishers (P) Ltd. New Delhi)

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**Practical syllabus**

**BML -291 (Practical Anatomy II)**

[ As per Theory BML – 201 ]

**BML-292 (Practical Human Physiology-II)**

1. To perform total platelet count.
2. To perform bleeding time.
3. To perform clotting time.
4. To study about CSF examination.
5. To study about intrauterine contraceptive devices.
6. To demonstrate microscopic structure of bones with permanent slides.
7. To demonstrate microscopic structure of muscles with permanent slides.

**BML-293 (Practical Biochemistry-II)**

1. To identify carbohydrates in given solution by various methods.
2. To determine protein by Biuret method.
3. To perform protein test by various methods.
4. Physical examination of urine
5. Urine sugar determination by Benedict's method.
6. Protein by heat and acetic method
7. Bile salt, Bile pigments and Urobilinogen determination
8. Determination of Ketone bodies
9. Determination of various parameters of urine by uristick method.
10. Preparation of hemolysate

**BML-294 (Communication Lab)**

1. Introduction: Meaning of Communication; Role of Communication in Business; Basic elements of the Communication process, level of Communication, forms, models and media of Communications, Verbal and non-verbal Communication-functions and types. Barriers to effective Communication.
2. Grammar: Subject verb agreement, tense, voice, improvement of sentences, rearrangement of sentences. Vocabulary: usage, synonyms, antonyms.
3. Comprehension
4. Forms of Writing: The Essay, The Précis, The Report, The Proposal, The C.V. and Job
5. Application letter. The Presentation.
6. Role Playing
7. Group Discussion