

**UNIVERSITY POLYTECHNIC
BIRLA INSTITUTE OF TECHNOLOGY
MESRA : RANCHI**

B. Science Medical Laboratory Technology

1st Semester

Course No.	Theory	Unit	Course No.	Laboratory	Unit
BMT 1001	Human Anatomy & Physiology –I	1.0	BMT 1002	Human Anatomy & Physiology Lab.-I	0.5
BMT 1003	Chemistry for Medical Lab. Technologist	1.0	BMT 1004	Chemistry Lab.	0.5
BMT 1005	Basics of Electrical & Electronics Engg.	1.0	BMT 1006	Basic Electrical Lab	0.5
BMT 1007	Laboratory Mathematics (Pharmaceutical Calculation).	1.0	BMT 1008	Basic Electronics Lab.	0.5
BMT 1009	Communication Skill	1.0	GA 1001	PT & Games/CA	0.5
		5.00			2.5

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BMT 1001 Human Anatomy & Physiology – I

- (i) The anatomic and physiological organization of human body and integrated physiology.
- (ii) Cell organization and function.
- (iii) Skeletal system, bones, joint and muscle.
- (iv) Body fluid and their significance.
- (v) Blood morphology, chemistry & function.
- (vi) Respiratory system.
- (vii) Cardiovascular system.
- (viii) Alimentary system, mechanism and physiology of digestion and absorption.
- (ix) Liver structure and function.

Books Recommended:

1. Best & Taylor: "Best and Taylor's Physiological Basis of Medical Practice," William & Wilkins: Baltimore.
2. Chaurasia: "Human Anatomy – Regional & Applied." Part I, II, III, CBS Publishers & Distributors, New Delhi.
3. C.C. Chatterjee: "Human Physiology," Vols. I & II, Medical Allied Agency, Calcutta.
4. Shalya: "Human Physiology," CBS Publishers & Distributors.
5. Edwards: "Davidson's Principles Practice of Medicine," ELBS/Churchill Livingstone.
6. Ganong: "Review of Medical Physiology," Prentice Hall International.
7. Guyton & Hall: "Textbook of Medical Physiology," WB Saunders Company.
8. Keele et al.: "Samson Wright's Applied Physiology," Oxford University Press.
9. McNaught & Callander: "Illustrated Physiology," Churchill Livingstone.
10. Parmer: "Health Education and Community Pharmacy," CBS Publishers.
11. Tortora & Anaganodokos: "Principles of Anatomy and Physiology," Harper and Row Publishers N.Y.
12. Vander et al.: "Human Physiology," Tata McGraw Hill Publisher Co.,

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BMT – 1003 : CHEMISTRY FOR MEDICAL LAB. TECHNOLOGY

1. Chemistry of matter & measurement, molecules & ions, formula equations and mole concept stoichiometry, atomic & molecular weight, qualitative informations from balance equations. (5)
2. Aqueous solutions reactions, pH, acids & bases (5)
3. Atomic structure, periodic table & periodic properties (5)
4. Basic concepts of Chemical bonding (5)
5. Thermo Chemistry – Nature of energy, heat & enthalpy change, calorimetry, Hess's law fuels. (5)
6. Introduction to colloids & surface phenomena electrophoresis (5)
6. Chemistry of inorganic constituents in body fluids, Radioisotopes & their use in life system. (5)

Books Recommended :

1. University Chemistry by Bruce Mahan
2. Engineering Chemistry by Shashi Chowla.

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BMT – 1005 BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING

Electrical

Electrical elements their classification and characteristics : Resistance, Inductance, Capacitance, voltage source, current source. (5)

DC circuits : KCL & KVL equations, Loop current & node voltage method series & parallel resistance (5)

Theorems : Superposition, Thevenin's & Nortons, Maximum Power transfer (4)

AC single phase circuit : Common signals & their wave form, RMS & Average value, form factor, phasor quantities, impedance, power, power factor, apparent power. (6)

Transformer Introduction (2)

Electronics

Introduction to semiconductor : Intrinsic & Extrinsic, PN junction, Diode characteristic (3)

Rectifier-Half wave, Full wave, Bridge rectifier, Rectifier filter, SMPS (5)

Fundamentals of Transistor, Characteristic, C.B. & C.E. Common Emitter Transistor Amplifier, Introduction to lod line & Q-point, Frequency response of amplifier. (6)

Introduction to feed back in amplifier, Introduction to oscillator. Barkhausen criterion (4)

Introduction to FET, & op-amp, CMRR. (4)

Text Books :

1. Basic Electrical Science & Technology by K. Murugesh Kumar (Vikas Publishing)
2. Electronics Fundamentals & Applications, D. Chattodhay and P.C. Rakshit (New Age International).

Reference Books :

1. Basic Electrical Engineering by V.N. Mittle, Tata McGraw Hill Publishing Company
2. Electronics Devices and Circuits Theory by R.L.Boylestade and L.Nashelsky (PHI)
3. An introduction to Electronic Devices and Circuits by Allen Mottershed

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BMT 1007 : LABORATORY MATHEMATICS

1. Arithmetic
Number and numerals, kinds of numbers, Arabic numerals, Roman numerals, Common and decimal fractions, Ratio, proportion, and variation, Dimension analysis, significant figures, Estimation, Percentage of errors, Measurement of volume, Measurement of weight, Aliquot method of weighing and measuring, Least weighable quantity method of weighing, logarithms. (10)
2. Metric system
Measurement of length, volume, weight, fundamental computations, Relation of metric to other systems of Measurements. (5)
3. Percentage and ratio strength calculation.
Percentage, Percentages of preparations. Weight-in-volume, volume-in-volume, weight-in-weight. Use of percent in compendial standards. Ratio and strength, simple conversions of concentrations to mg/ml. Expressing clinical laboratory test values, Parts per million (PPM). (10)
4. Graphical methods
Linear relationships on Rectangular Graph paper, Linear relationships on semi-logarithmic graph paper, Other methods of data representation. (5)
5. Basic statistical methods
Array, Frequency distribution, Averages, Measures of variation, some aspects of probability. (5)

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BMT – 1009 : COMMUNICATION SKILLS

1. Report Writing
Introductory, Objectives, Characteristics, Types, Importance, Structure of Report, Writing report (First draft Visual Aids) (5)
2. Common Errors
Errors in use of Noun, Pronoun, Adjective, Adverb, Verb, Preparation & Article. (5)
3. Vocabulary
One Word Substitution, Antonyms, Synonyms, Use of Idioms and Phrases (6)
4. Letter of Application
Letter of Complaints, Letter of Refusal, Acceptance, Application for leave etc. (4)
5. Paragraph Development : Technique for Paragraph development (4)
6. Reading Comprehension : Techniques for Good Comprehension (8)
7. Medical Terminology (2)
8. Oral Communication (6)

Interviews : Introduction, objectives, types of interviews, etc.

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BMT - 1002 : HUMAN ANATOMY & PHYSIOLOGY LAB.-I

Laboratory based on BMT1001 Human Anatomy & Physiology-I