

B.Sc. (Clinical Microbiology) BSCCMB

SEMESTER I

BSCCMB-101: Human Anatomy

13. Introduction to Anatomy & Histology, Structure of cell, epithelial tissue, muscular tissue, nervous tissue.
 14. Skeletal System, Structure of bones, types of bones, Bones of cranium, face vertebral column
upper and lower limbs, fracture of bones, various movements of joints.
 15. Muscular System, Structure and types of muscles in human body, important muscles and their group action.
 16. Circulation System, Structure of heart, names and position of main blood vessels.
 17. Lymphatic System, Lymph vessels, lymph nodes and lymphoid organs, their structure & functions.
 18. Digestive systems. Parts of gastrointestinal tract and associated glands.
 19. Respiratory System. Parts of Respiratory System.
 20. Urinary System. Parts of Urinary System.
 21. Endocrine System. Various endocrine glands. Thyroid. Parathyroid. Adrenal glands pituitary pancreas. Thymus and sex glands.
 22. Reproductive System. Male & female Reproductive organs.
 23. Skin and sense organs. Eye, Ear, Nose. Taste Buds
 24. Nervous System. Parts of brain, spinal cord, peripheral nerves.
- PRACTICAL: Identification of bones & other organs of the body and viva voce as per theory syllabus.

SEMESTER I

BSCCMB-102: Human Physiology

- 1 Blood. Composition and function of blood, haemopesis, blood coagulation. Blood groups, body fluid.
- 2 Cardiovascular Systems. Circulation of blood. function of heart and blood vessels. Control of heart rate, pulse, regulation of blood pressure, blood volume.
- 3 Respiratory system. Function of lungs, mechanism of breathing and exchange of gases in the lungs, regulation of respiration, Respiration disorder like anoxia.dyspnea cyanosis etc.artificial respiration lung function tests.
- 4 Digestive Systems. Digestion of food in mouth, stomach & small intestines. Absorption of food, function of liver function tests.
- 5 Excretory Systems. Structure & function of kidney and urinary bladder. Mechanism of urine formation. disorders of kidney.
- 6 Endocrine Glands Functions of various endocrine glands and hormones secreted by them.
- 7 Reproductive Systems. Physiology & female reproductive organs.
- 8 Nervous System. Neuron & its function, function of central nervous system, Autonomies nervous system , physiology of vision, hearing & olfaction.

BSCCMB-103: Clinical Biochemistry

- Ch1: Carbohydrates : Carbohydrates metabolism, Glycogenesis, Glycolysis, Regulation of Blood Glucose Concentration,
Diabetes Mellitus, Glycosuria, Glucose Tolerance Test

Ch2: Lipids; Introduction, Simple Lipids, Compound Lipids, Derived Lipids, Essential Fatty Acids, Ketone bodies formation

Ch3: Proteins

Definition, Classification, Structure of Proteins, Denaturation of Proteins, Important tests of Proteins, Estimation of Proteins,

Albumin, Globulin, Glycoproteins, Protein Estimation, Estimation of Total Proteins, Albumin & Globulin, Estimation of Blood

Urea, Serum Creatinine Estimation

Serum Uric Acid Estimation

Ch4: Liver Function Tests, Serum Bilirubin Estimation, Serum protein Estimation

Ch5: Enzymology, Introduction, Definition & Classification, Properties, Factors influencing Action of Enzymes, Diagnostic

Value of Serum Enzymes, Mechanism of Enzyme Action

Ch:6 Minerals, Vitamins & Automation

Minerals – Physiological Functions, Sources, Daily Requirements of Calcium, Phosphorus, Magnesium,

Sodium, Potassium, Chlorine, Sulphur, Iron, Copper, Zinc

Vitamins, Definition, Classification, Fat soluble Vitamins, Vitamin A,D,E,K Water soluble vitamins, Vitamin C, Vitamins of B Complex, Diseases

Biochemical aspects of hormones – Role of Insulin

PRACTICALS:

Estimation of glucose and glucose tolerance test

Estimation of Total groupins – albumin, globulins

Renal Function Tests

Liver Function Tests

Lipid Profiles

Estimation of Na, R, Column by Flame Photometry

Estimation of Enzymes: Acid & Alkaline Phosphatase, Amylase, Serumamino – transferase

Uric acid estimation.

BSCCMB-104: Bacterial Morphology & Classification

Unit I

(i) Introduction and history of Microbiology.

(ii) Difference between prokaryotic and eukaryotic cells.

(iii) Bacterial shapes.

Unit II

(i) Chemical structure of Bacterial cell wall.

(ii) Gram positive and Gram negative bacteria.

(iii) Structure and function of flagella, capsule, cilia and pilli

Unit III

(i) Structures of internal to the cell wall like.

(ii) Cytoplasmic inclusion.

(iii) Cytoplasmic membrane and cytoplasm.

Unit IV

(i) Bacterial nutrition : Nutritional requirement and growth factor.

(ii) Bacterial Growth curve.

(iii) Growth of Bacteria under extreme condition (Psychrophiles, thermophiles and acidophiles)

Unit V

- (i) Classification of Bacteria.
- (ii) Economic importance of eukaryotes and Viruses.

SEMESTER I

BSCCMB-105: Introductory Biology

Unit I

Living World

Biology & Its Branches; relationships with other sciences; scientific methods in Biology; historical breakthroughs; scope of biology and career options; role of Biology in dispelling myths and misbeliefs; characters of living organisms, (elementary idea of metabolism, transfer of energy at molecular level, open and closed systems, homeostasis, growth and reproduction, adaptation, survival, death).

Origin and evolution of life - theories of evolution; evidence of evolution; sources of variations

(mutation, recombination, genetic drift, migration, natural selection); concept of species; speciation and isolation (geographical and reproductive); origin of species.

Unit II

Diversity of Life

Variety of living organisms, Systematics; need, history and types of classification (artificial, natural, polygenetic); biosystematics; binomial nomenclature; Two kingdom system, Five kingdom System, their merits and demerits, status of bacteria and virus; botanical gardens and herbaria; zoological parks and museums.

Unit III

Cell and Cell Division

Cell as a basic unit of life - discovery of cell, cell theory, cell as a self - contained unit; prokaryotic and eukaryotic cell; unicellular and multicellular organisms; tools and techniques (compound microscope, electron microscope and cell fractionation); Ultrastructure of prokaryotic and eukaryotic cell - cell wall, cell membrane - unit membrane concept (fluid mosaic model); membrane transport; cellular movement (exocytosis, endocytosis); cell organelles and their functions

- nucleus, mitochondria, plastids, endoplasmic reticulum, Golgi complex, lysosomes, lysosomes, microtubules, centriole, vacuole, cytoskeleton, cilia and flagella, ribosomes.

Molecules of cell; inorganic and organic materials - water, salt, mineral ions, carbohydrates, lipids, amino acids, proteins, nucleotides, nucleic acids (DNA and RNA);

Enzymes (Properties, chemical nature and mechanism of action); vitamins, hormones and steroids.

Unit IV

Genetics

Continuity of life - heredity, variation; Mendel's laws of inheritance, chromosomal basis of inheritance; other patterns of inheritance - incomplete dominance, multiple allelism, quantitative inheritance.

Chromosomes - bacterial cell and eukaryotic cell; parallelism between genes and chromosomes; genome, linkage and crossing over; gene mapping; recombination; sex chromosomes; sex determination; sex linked inheritance; mutation and chromosomal aberrations; Human genetics - methods of study, genetic disorders.

DNA as a genetic material - its structure and replication; structure of RNA and its role in protein synthesis; Gene expression - transcription and translation in prokaryotes and eukaryotes; regulation of gene expression, induction and repression - housekeeping genes;

nuclear basis of differentiation and development; oncoenes.

Basics of Recombinant DNA technology; cloning; gene bank; DNA fingerprinting; genomics - principles and applications, transgenic plants, animals and microbes.

Unit V

Morphology of Plants and Animals

Morphology - root, stem and leaf, their structure and modification; Inflorescence, flower, fruit, seed and their types; Description of Poaceae, Liliaceae, Fabaceae, Solanaceae, Brassicaceae and Asteraceae.

Morphology of animals - salient features of earthworm, cockroach and rat; tissue systems, structure and function of tissues - epithelial, connective, muscular and nervous.

Practical

1. Study of parts of Compound Microscope
2. Study of mitosis in onion root tip and animal cell (grasshopper)
3. Study of meiosis in onion flower buds, and testis of grasshopper.
4. Study of cyclosis in leaf cell of Hydrilla, or Tradescantia and in Paramecium.
5. Study of cell wall components (cellulose, lignin, suberin and mucilage).
6. Study of mitochondria by staining with a Janus Green.
7. Study of specimens and their identification with reason - Bacteria, Oscillator, Spirogyra, Rhizopus, mushroom/bracket fungi, yeast, liverwort, moss, fern, Pinus, one monocotyledon, one dicotyledon and lichens.
8. Study of characters of specimens and identification with reason - Amoeba, Hydra, Liver - Fluke, Ascaris, Leech, Earthworm, Prawn, Silk moth honey bee, snail, Starfish, Dogfish, Rohu, Frog, Lizards, Pigeon/ any other bird and rabbit/ any other mammal.
9. Study of squamous epithelium, muscle fibres, nerve cells and mammalian blood film through temporary/permanent slides.
10. Study of external morphology of earthworm, cockroach, frog and rat through models.

BSCCMB-106: Communication & Soft Skills

UNIT I

Essentials of Grammar:

- Parts of Speech
- Punctuation
- **Vocabulary Building**
- Phonetics

UNIT II

Office Management:

- Types of Correspondence
- Receipt and Dispatch of Mail
- Filing Systems
- Classification of Mail.
- Role & Function of Correspondence
- MIS
- Managing Computer

UNIT III

Letter & Resume Writing:

- Types of Letters-Formal / Informal
- Importance and Function
- Drafting the Applications

- Elements of Structure
- Preparing the Resume
- Do's & Don'ts of Resume
- Helpful Hints

UNIT IV

Presentation Skills:

- Importance of Presentation Skills
- Capturing Data
- Voice & Picture Integration
- Guidelines to make Presentation Interesting
- Body Language
- Voice Modulation
- Audience Awareness
- Presentation Plan
- Visual Aids
- Forms of Layout
- Styles of Presentation.

UNIT V

Interview Preparation:

- Types of Interview
- Preparing for the Interviews
- Attending the Interview
- Interview Process
- Employers Expectations
- General Etiquette
- Dressing Sense

- Postures & Gestures

UNIT VI

Group Discussion & Presentation:

- Definition
- Process
- Guidelines
- Helpful Expressions
- Evaluation

(Note: Every student shall be given 15 minutes. of presentation time & 45 minutes of discussion on his/ her presentation.)

The student will be evaluated on the basis of :

- his / her presentation style
- Feedback of Faculty & Students
- General Etiquette
- Proficiency in Letter Drafting / Interview Preparation

The paper is internal and at least 3 tests will be taken. Best 2 of 3 shall account for final grades (70% Test & 30% Presentation)

SEMESTER I

BSCCMB-107: Practical

Human Anatomy : 10 Marks

Human Physiology : 10 Marks

Clinical Biochemistry : 20 Marks

Bacterial Morphology & Classification : 20 Marks
Introductory Biology : 15 Marks
Internal Assessment: 25 Marks

SEMESTER II

BSCCMB-201: General Bacteriology

Overview of Bacteriology
Structure and Function of Prokaryotes
Nutrition and Growth of Bacteria
Growth of Bacterial Populations
Control of Microbial Growth
The Diversity of Prokaryotic Metabolism
Regulation and Control of Metabolic Activities
Prokaryotes in the Environment
Important Groups of Prokaryotes
Maintenance of bacterial cultures.
Classification of bacteria.

SEMESTER II

BSCCMB-202: General Microbiology

Theory

History of Microbiology, Microbial World Defined, Tools Used in Microbiology, Microbial Life, Viruses, Microbial Growth, Microbial Genetics, Control of Microbes, Antibiotics, Microbe Versus Host, The Immune System, Bacterial & Fungal Diseases, Viral Diseases

Practical

1. Microorganisms and their size
2. Use and care of the microscope
3. Smear preparation and simple staining
4. Gram stain
5. Special stains
6. Pure culture technique
7. Culture media and culturing microorganisms from the environment
8. The effects of incubation temperatures
9. The effects of ultraviolet light
10. The effects of gaseous environments
11. The use of antiseptics and disinfectants
12. The transformation experiment
13. Diagnostic bacteriology
14. Antibiotics
15. Serology

BSCCMB-203: Biochemistry

Unit I

- (i) Introduction to Biochemistry and role of medical microbiologist.
- (ii) Ethics.
- (iii) Safety measure and hazards in clinical biochemistry lab and first aid.

Unit II

- (i) Basic aspects of Bioenergetics.
- (ii) Entropy, enthalpy and concept of free energy.
- (iii) Thermodynamic law first and second.

Unit III

- (i) Carbohydrate : Structure, properties, chemical reactions and functions.
- (ii) Amino acid : Essential and nonessential amino acids with structure and function.
- (iii) Proteins : Primary, Secondary Tertiary and Quaternary (overview)

Unit IV

- (i) Lipids : classification and properties.
- (ii) Enzyme : Classification, mechanism of enzyme action, catalyzed reaction.
- (iii) Enzyme inhibition.

Unit V

- (i) Nucleic Acid : Structure of purine and pyrimidine bases, Nucleotide and Nucleosides.
- (ii) DNA and RNA structure and properties.
- (iii) Vitamins (Fat and water soluble).

Practical

- (i) Blood glucose and its determination by different methods.
- (ii) Glucose tolerance test. (GTT)
- (iii) Estimation of blood urea.
- (iv) Estimation of blood creatinine.
- (v) Estimation of blood cholesterol.
- (vi) Estimation of serum calcium and phosphorus.
- (vii) Estimation of plasma protein.
- (viii) Determination of Protein in Urine.

BSCCMB-204: Basic Cellular Pathology

Introduction. General concepts of disease?

Scope of Pathology and the role of Pathologist in clinical medicine.

Disease classification.

The normal cell

Cell response of injury

Causes of cell damage

Changes associated with water accumulation in the cell

Changes associated with fat accumulation

Nature of the degenerative changes

Hyaline degeneration

Accumulations of normal substances in the cell

Cell death and necrosis

Connective tissue: normal tissue and effects of disease

SEMESTER II

BSCCMB-205: Practical

General Bacteriology : 15 Marks

General Microbiology : 15 Marks

Biochemistry : 25 Marks
Basic Cellular Pathology : 20 Marks
Internal Assessment : 25 Marks

SEMESTER III

BSCCMB-301: Nutrition & Microbial Metabolism

Unit I

- (i) Microbial Nutrition : Nutritional requirement of microorganism C, N Sources and Vitamins.
- (ii) Effect of temperature, pH, O₂, CO₂ and osmotic pressure on growth.

Unit II

- (i) Bacterial growth, generation time. Growth kinetics - Synchronous Batch and continuous cultures.
- (ii) Measurement of growth and factor affecting growth.

Unit III

- (i) Nutritional types of microorganism.
- (ii) Collection, Transportation and processing of clinical sample for microbiological investigation.

Unit IV

- (i) Carbohydrate metabolism : glycolysis, krebs cycle, HMP cycle and its regulation.
- (ii) Lipid metabolism : Biosynthesis of Lipid and degradation of fatty acid.

Unit V

- (i) Photosynthesis : Oxygenic and anoxygenic photosynthetic prokaryotes.
- (ii) Nitrogen assimilation : Nitrogen fixation, Nitrification and Denitrification.

Practical

- (i) Neutrilization and cleaning of glasswares, sterilization.
- (ii) Preparation of culture media like Nutrient agar, Mc Conkey and uses.

BSCCMB-302: Methodology of Staining

Unit I

- (i) Microbial Media : Preparation of media for bacteriological culture (Nutrient agar, Mc Conkey)
- (ii) Specimen collection from patients, clinics and hospitals.
- (iii) Specimen collection for epimiological investigation.

Unit II

- (i) Types of media with their general or special use and example.
- (ii) Microbial culture : Mixed and pure cultures.
- (iii) Isolation of pure culture.

Unit III

- (i) Cultural characteristics, Spread plate, Streak plate and Pour plate.
- (ii) Aerobic and Anaerobic culture.
- (iii) Storage of stock culture.

Unit IV

- (i) Microbiological stains and staining techniques.

- (ii) The wet mount, hanging drop and fixation.
- (iii) Staining of smear, simple, negative, differential and structural staining.

Unit V

- (i) Staining properties of bacteria.
- (ii) Gram positive and gram negative stain.
- (iii) AFB Staining.

Practical

- 1 Preparation of stains, Gram positive, gram negative and Acid fast Base staining.
- 2 Isolation of culture by streak plate and pour plate.
- 3 Growth on agar slant, agar slab and broth culture.
- 4 Drug sensitivity test.

BSCCMB-303: Microbial Molecular Genetics

Unit I

The study of Microbial genetics :

- (i) Inheritance of characteristics and variability.
- (ii) Phenotype & genotypic.

Unit II

Genotypic changes :

- (i) Mutation (Types)
- (ii) Its Occurs.
- (iii) Repairing.

Unit III

Bacterial Recombination :

- Conjugation (Luria Delbruck)

Unit IV

- (i) Transduction (Zinder and Lederberg) : generalized and specialized transduction.
- (ii) Transformation (Griffith experiment)

Unit V

- (i) The Regulation and expression of gene Activity :
- Lac operon.

BSCCMB-304: Applied Immunology

Unit I

- (i) Basic concepts : Introduction of Immunology and its application.
- (ii) Antigen, Antibody.
- (iii) Immune complex.

Unit II

- (i) Autoimmunity.
- (ii) Laboratory test for detection of Antigen and Antibodies.
- (iii) Autoimmune disorders.

Unit III

- (i) ELISA technique and its application.
- (ii) RIA - Principle and its application.

Unit IV

- (i) Basic and advanced Serological techniques and its application.
- (ii) Serological tests : Widal, VDRL Resewaller, Brucella agglutination and Cold agglutination.

Unit V

- (i) Electrophoresis and Chromatography Principle, Technique and application.
- Thin layer chromatography (TLC)

- Polyacrylamide Gel Electrophoresis (PAGE), SDS - PAGE
- Agrose Gel Electrophoresis

SEMESTER III

BSCCMB-305: Practical

Nutrition & Microbial Metabolism : 15 Marks

Methodology of Staining : 20 Marks

Microbial Molecular Genetics : 20 Marks

Applied Immunology : 20 Marks

Internal Assessment : 25 Marks

SEMESTER-IV

BSCCMB-401: Bacterial Pathogenes and Associated Diseses

Unit I

- Normal Microflora of human, Bodyskin, Gastrointestinal tract, Respiratory system.
- Infection : Source and mode of infection for man.
- Portals entry.

Unit II

(i) Mode of infection, description, pathogenecity, incubation period and toxic effect of:

- Staphylococcus.
- Streptococcus.
- Pneumococcus.

Unit III

- Pathogenic properties of bacteria.
- Host Parasite interation in bacterial infection.
- Antibacterial Defence of the Host.

Unit IV

(i) Mode of infection, pathogenecity, incubation time and toxicgenecity of:

- Mycobacteria.
- Anthraxbacillus.
- Brucella.

Unit V

(i) Pathogenecity and toxicgenecity of:

- Salmonella.
- Escherichia coli.
- Vibrio.

SEMESTER IV

BSCCMB-402: Lab Diagnosis of Microbial Diseases

Unit I

The Role of the Laboratory in the dignosis and control of infection.

- Respiratory tract disease : Diphtheria, tuberculosis and common cold.
- Alimentary tract disease : Typhoid, food poisoning, cholera and dysentry.

Unit II

- Circulatory system disease : Plague and Malaria.
- Central nervous system disease : Meningitis, Tetanus and Poliomyelitis.

Unit III

(i) Sexually transmitted diseases : Syphilis, Gonorrhoea and other STD's.

(ii) AIDS and Typhus fever.

Unit IV

Lab Diagnosis of fungal infection

(i) Skin, Nails and Hair Leprosy, staphylococcal and streptococcal infection, superficial and systemic dermatomycosis.

(ii) Eye and Ear fungi infection.

Unit V

(i) Rapid diagnostic methods.

(ii) Automation in Microbiology.

BSCCMB-403: Virology

Unit – I

General morphology and ultra structure of Viruses: Capsids- Helical Symmetry, icosahedral symmetry and complex symmetry.

Envelope: Glycoprotein and matrix protein

Viral genome: their types and structure

Unit – II

Cultivation of Viruses in embryonated eggs, experimental animals and cell culture: primary and secondary cell culture,

suspension cell culture and monolayer cell cultures.

Assays of viruses: physical and chemical methods of assays (protein nuclei acid, radioactivity traces, electrons microscopy,

plaque method, pock counting method, end point method and infectivity of plant viruses).

Serological methods: haemagglutination haemagglutinationinhibition, complement fixation, immunofluorescence assays

(IFA) ELISA, RIA.

Unit – III

Plant viruses: Recent advances in classification of plant viruses

Life sciences and other details of TMV and mosaic virus, potato virus X

General idea about cyanophages, actinophages and mycoviruses.

Unit – IV

Bacteriophages: Classification, Morphology and ultrastructure

One step growth curve (Latent period, eclipse period and burst size)

Life cycle: Lytic and Lysogenic cycles of bacteriophages

Unit – V

Animal viruses; classification and nomenclature

Life cycles and other details of DNA viruses: herpes, adeno and SV40

Life cycle and other details of RNA viruses: Retroviruses, oncogenic viruses and lentiviruses (HIV), picorna, ortho myxo and

paramyxo.

SEMESTER IV

BSCCMB-404: Mycology

MICOLOGY

1. Classification of Fungi
2. Growth and isolation
3. Mycoses (all types)
4. Laboratory diagnosis of mycotic diseases.
5. Immunity in fungal diseases and value of immuno diagnosis.
6. Role of mycotoxin
7. Antifungal agents
8. Epidemiology of fungal diseases.

Practical

- KOH & LPCB Preparation
- Staining Techniques
- Culture of Fungi
- Slide Culture
- Basic identification techniques.

SEMESTER IV

BSCCMB-405: Practical

Bacterial Pathogenes and Associated Dieses - 10 Marks

Lab Diagnosis of Microbial Dieses - 25 Marks

Virology - 20 Marks

Mycology - 20 Marks

Internal Assessment : 25 Marks

SEMESTER-V

BSCCMB-501: Haematology

Formation of blood cells, Sites of Blood formation, Erythropoiesis, Leucopoiesis
The Red Blood Cell, Structure of RBC, Functions of RBC and Values, Definition of Anaemia and Polycythaemia, Normal Hb and Abnormal Hb

Classification of Anaemia, Iron Deficient Anaemia, Megaloblastic Anaemia, Haemolytic Anaemia
White Cells, Structure and Functions of WBC, Normal WBC values and types, Leukemias-
Definition, Platelets: Structure and function.

Blood Groups, Clinical Significance of blood groups, Blood Transfusion

PRACTICAL:-

Blood film preparation and various stainings

To study Morphology of various types of Lecuocytic series of Normal and Leukemic Cells.

To study Morphology of Normal and Abnormal Red blood cells and Platelets

Blood grouping and Rh typing.

SEMESTER V

BSCCMB-502: Parasitology

Introduction to medical parasitology and safety measures
Laboratory Techniques for Intestinal Parasites.
Laboratory Techniques for Blood Parasites
Examination of Urine, Aspirates, Body Fluids and Tissue Biopsies
Intestinal Protozoan Parasites
Serology and Culture of Parasites
Blood and Tissue Protozoa
Common Intestinal Helminths of Humans
Common Blood and Tissue Helminths
Quality Control Procedures in Parasitology

SEMESTER V

BSCCMB-503: Serology Diagnosis

Introduction to Serology and Serodiagnostic Procedures. Principles of Immunological Reactions.
Serodiagnosis. Collection and Preparation of Specimen. Serological test for syphilis (STS).
Agglutination
Tests, C-reactive protein test (CRP), Rheumatoid arthritis test (RA), Serodiagnosis of streptococcal infection, Serodiagnostic tests for miscellaneous disorders. Immunological tests for Pregnancy.

SEMESTER V

BSCCMB-504: Blood Banking

Chapter 1:
Basic Principles of Blood Banking , Introduction, Organization & Planning, Documentation
Chapter 2:
Blood Groups
Introduction, ABO Blood Groups, Principle of ABO Group Determination, Techniques of Blood Grouping, Rh, Blood Groups,
Techniques of Rh grouping
Chapter 3: Selection of Donors & Collection of Blood. Screening of Blood for VDRL, Hepatitis B and C, AIDS
Chapter 4: The Compatibility Test, Major & Minor Cross Match, Coomb's Test
Anticoagulants
Chapter 5: Blood Components, Packed Cell Volume & Plasma, Froze Red Blood Cell
PRACTICAL:
Collection of Blood and Screening of Blood
Blood grouping and Rh typing
Coomb's test
Complete haemogram

BSCCMB-505 Practical

Haematology - 25
Parasitology - 15
Serology Diagnosis - 10

SEMESTER-VI

BSCCMB-601: Applied Microbiology

- Normal flora of the human body
- Collection of clinical specimens for diagnosis and method of processing
- antibiotic susceptibility testing and its interpretation and reporting.
- Nosocomial infection -surveillance and control.
- Diseases transmitted through air, water, milk and food.
- Quality control in diagnostic microbiology.
- National programmes for control of infectious diseases.
- Etiology, laboratory diagnosis of infectious diseases of each system.

SEMESTER VI

BSCCMB-602: Automation & Computerization in Medical Microbiology

Unit I

- (i) Computer Fundamentals : Introduction to CPU, input drives, storage and output devices.
- (ii) Binary, decimal, octal and hexadecimal systems.
- (iii) DOS/Windows.

Unit II

- (i) Computer simulation.
- (ii) Computer linked to microbiological equipments.
- (iii) Fortran and application.

Unit III

- (i) Computer Application and their use in Medical Microbiology.
- (ii) Advantages of using computers in collecting data.
- (iii) Types of data processing, Authorization and report validation.

Unit IV

- (i) Introduction to Internet.
- (ii) Internet basics of Microbiologist.
- (iii) Electronic Mail, electronic mail servers, Down loading file with anonymous FTP.

Unit V

- (i) Medical Transcription : Introduction, Types of Medical documents, contents of medical case sheet.
- (ii) Goal of Medical Transcription training.
- (iii) Automation of Medical Microbiology Laboratory.

BSCCMB-603: Preventive Medicine & Health Care

Unit I

- (i) Water - source, uses, requirements, and pollution.
- (ii) Methods of Purification.
- (iii) Types of water and standards of water quality.

Unit II

- (i) Air : Composition, pollution, ventilation and lighting.
- (ii) Floor space, Noise, Radiation air supply, Humidity and Housing.
- (iii) Sanitation : Excretion, Sanitation barrier, treatment and Disposed of Hospital waste.

Unit III

- (i) Infection and control : Source of infection to men, mode of spread and their control by physical and chemical agents.
- (ii) Epidemiology : Control of community infection.
- (iii) Family planning and Child Health care programme.

Unit IV

Bacteriology of water, milk, food and air.

- (ii) Collection of specimen.
- (iii) Counting and interpretation of results.

Unit V

- (i) Bacterial examination of ice cream, shellfish and canned foods, milk bottles, crockery and cutlery.
- (ii) Bacteriological examination of air and environment dust.

BSCCMB-604: Research Methodology

Introduction to Research: Definition, Scope, Limitations, and Types.

Objectives of Research

Research Process

Research Designs

Data Collection: Secondary Data, Primary Data, and Methods of Collection.

Scaling Techniques: Concept, Types, Rating scales & Ranking Scales

Scale Construction Techniques, Multi Dimensional Scaling.

Sampling Designs: Concepts, Types and Techniques

Sample Size Decision

Theory of Estimation and Testing of Hypothesis

Small & Large Sample Tests, Tests of Significance based on t, F, Z test and Chi-Square Test.

Designing Questionnaire.

Interviewing.

Tabulation, Coding, Editing.

Interpretation and Report Writing.

SEMESTER VI

BSCCMB-605: Practical

Applied Microbiology - 20 Marks

Automation & Computerization in Medical Microbiology - 20 Marks

Preventive Medicine & Health Care - 20 Marks

Research Methodology - 15 Marks

Internal Assessment : 25 Marks