

Maharashtra University of Health Sciences, Nashik



SYLLABUS FOR FIRST YEAR BACHELOR IN PARAMEDICAL TECHNOLOGY (BPMT)

Common Syllabus for 1st Year BPMT courses

Sr. No.	Paper	Subject	Periods in hours		
			Theory	Practical	Total
1	I	Anatomy			60
2	II	Physiology			60
3	III	Biochemistry			60
4	IV	Micro-Biology			60
5	V	Pharmacology			60
6	VI	Pathology			60
7	VII	Forensic Medicine			30
8	VIII	Medical Nursing Including First Aid			90
9	IX	Surgical Nursing Including First Aid			90
10	X	PSM i.e. Health & Sanitation Community Organisation			180
11	XI	Elementary Psychology & Communication			150
12	XII	Hospital Management			180
13	---	* Information Technology & Educational Visits			180
Total =					1260

*** Educational Visits as :-**

- 1) Water Treatment Plan - **12P**
- 2) Sewerage treatment Plant - **07P**
- 3) Bio-medical waste management

Total working days : **240**
 Actual Examination days - **30**

 Actual working days = **210**

Per day working **6 hrs.**
 Total working **1260 hrs.**
 (210 X 6 = 1260)

Syllabus for ANATOMY (1st Year- BPMT)

Paper - I

Sr. No.	Syllabus	Theory	Demo.
1	Bones of Supex		2 hrs.
2	Bones of Infex		2 hrs.
3	Bones of Skull		2 hrs.
4	Bones of Neck, Thorax, Abdomen		3 hrs.
5	Joints Classification with Eg.	1 hr.	
6	Respiratory System	1 hr.	
7	Heart	1 hr.	
8	Organs of Thorax		2 hrs.
9	Abdomen Lectures	3 hrs.	
10	Organs in Abdomen		3 hrs.
11	Pelvic Organs	3 hrs.	
12	Pelvic Organs		2 hrs.
13	Nervous System	3 hrs.	2 hrs.
14	Sense Organs Eye, Ear & Skin	2 hrs.	
15	Endocrine glands	1 hr.	1 hrs.
16	Muscles of Body		4 hrs.
17	Histological slides Basic Tissue & General slides	4 hrs.	4 hrs.
18	Histology system slides	3 hrs.	3 hrs.
19	Embryology	3 hrs.	
20	Tongue, oral cavity, larynx, pharynx nasal cavity	3 hrs.	
Total		28 hrs.	30 hrs.
Exam		2 hrs.	
Total Hrs.		60 hrs.	

Syllabus for PHYSIOLOGY
Paper - II
(60 Hrs.)

		No. of lectures.
1.	General Physiology : Organization of Human body, Homeostasis, cell, Transport Mechanisms	1
2.	Nerve Muscle : i) Nerve Fiber – Classification, Properties, Action potential ii) Muscle – Classification, Mechanism of contraction, Neuromuscular transmission.	2
3.	Blood : i) Composition and functions of blood Lymph ii) RBC Blood groups iii) WBCS, Immunity iv) Platelets, Blood coagulation	4
4.	Respiratory System. : i) Organization & functions of Respiratory System, Mechanism of Respiration ii) Transport of O ₂ , CO ₂ , Regulation of respiration iii) Hypoxia, Asphyxia, Pulmonary function tests	3
5.	Digestive system i) Organization of digestive system, Functions of various components. Salivary, Gastric, Pancreatic Secretion. ii) Function of liver, small intestine and large intestine	2
6.	Cardio Vascular System i) Organization and functions of C.V.S, Heart cardiac impulse, Cardiac Cycle, Heart sounds, ii) Blood pressure iii) Haemorrhage, shock iv) Cardiac output, Arterial pulse	4
7.	i) Endocrine glands, Hormones, Hypothalamus, Anterior & Posterior Pituitary ii) Thyroid, Parathyroid iii) Pancreas, Adrenal Cortex	3
8.	Excretory system : i) Formation of Urine ii) Micturition, Renal function tests	2
9.	Reproduction i) Male reproductive system ii) Female reproductive system	2
10	Special Senses i) Vision, Smell ii) Hearing, Taste	2
11	Nervous System i) Organization of nervous system ii) Sensory system iii) Motor system iv) Brain v) Autonomic nervous system	5
	Theory Total	30 hrs.

Physiology Practicals:	
i) Hemoglobin	2
ii) RBC	2
iii) WBC	2
iv) DLC	2
v) Blood Groups	2
vi) B.T.,C.T.	2
vii) Platelet Count, Reticulocyte Count	2
viii) ESR, PCV	2
ix) BP, Arterial Pulse	2
x) Spirometry, Pulmonary Function Tests	2
xi) Semen Analysis, Pregnancy Tests	2
xii) ECG	2
xiii) EEG	2
	Practical Total
	26 hrs.
	Examination Theory & Practical
	4 hrs.
	Total
	30 hrs.
	Theory + Practical total
	60 hrs.

Syllabus for BIOCHEMISTRY

Paper - III

		No. of lectures.
1.	Introduction and scope of biochemistry	1
2.	Chemistry of carbohydrates, proteins, lipids and nucleic acid (i) Carbohydrate : Structure, properties, chemical reactions and functions. (ii) Amino acid : Essential and nonessential amino acids with structure and function. (iii) Proteins: Definition, Classification, Structure of Proteins, Denaturation of Proteins, Primary, Secondary Tertiary and Quaternary (overview) (iv) Lipids: classification and properties. Introduction, Simple Lipids, Compound Lipids, Derived Lipids, Essential Fatty Acids. (v) Nucleic acid : Structure of purine and pyrimidine bases, nucleotides and nucleosides. DNA and RNA : structure and properties.	2 2 2 2 2
3.	Elementary knowledge of enzymes: Classification, mechanism of enzyme action, Enzyme inhibition, enzyme specificity. Role of coenzymes	3
4.	Brief concept of biological oxidation: Electron transport chain. inhibitors and uncouplers briefly.	2
5.	Outline of digestion, absorption and metabolism of carbohydrate, proteins and fats. (i) Carbohydrate metabolism :- Glycolysis, TCA cycle, Glycogen metabolism Regulation of Blood Glucose Concentration, Diabetes Mellitus, Glycosuria, Glucose Tolerance Tests, glycated haemoglobin. Biochemical aspects of hormones – Role of Insulin (ii) Proteins : General amino acid reactions. Transamination, decarboxylation, deamination. Urea cycle. Amino acid metabolism--- glycine, aromatic amino acids, sulphur containing amino acids, Maple syrup urine disease and histidinaemia. (iii) Lipid metabolism: Cholesterol metabolism, Ketone bodies formation and breakdown (iv) Nucleic acid metabolism : Salvage pathways. Purine catabolism and gout.	3 4 2 2
6.	Importance of some minerals- sodium, potassium, calcium, phosphorous, iron, copper, chloride, fluoride.	2
7.	Nutritional aspects of carbohydrates, fats, proteins, balanced diet.	2

8.	Introduction to medical lab technology: General introduction Role of medical lab technologists, and responsibility, safety measures and first aid. Cleaning and care of general laboratory glassware and equipment. Elementary knowledge of analytical biochemistry. Principles, functions and uses of balances, centrifuge machines, colorimeters.	4
9.	Collection and recording of biological specimens, separation of serum plasma preservation and disposal of biological samples/materials.	2
10.	Standard solutions: Various std. solutions used , their preparation ; storage of chemicals .	2
11.	Units of measurements: S.I units: Definitions, conversions; Measurement of volume : Strength , Normality ,Molarity, Molality Definitions:Mole, molar and normal solutions (preparation, Standardization), pH (Definition ,Pka value, Example ,importance of Henderson-Hasselbalch equation) ; Buffer solutions(Definition , preparation of important solutions), pH indicators (pH papers , universal & other indicators); pH measurement :different methods (pH paper, pH meter ,principle of pH meter, structure, working and maintenance.	4
12.	Quality Management in laboratories.	2
	Practical and demonstration: Maintenance of laboratory, quality control, and first aid Cleaning of glassware Preparation of various solutions Single pan balance, Operation and maintenance pH- meter components Handling of colorimeters. Distillation of water. Serum electrolytes Na.K.Cl. Demonstration of automated blood analyzers. Blood gas analyzer, Elisa reader. Demonstration of disposal of laboratory waste product and infected material.	15
Total =		60 lect.

Syllabus for MICRO-BIOLOGY

Paper – IV

Pattern of Theory Paper :

The questions should be technique oriented. It is more important for the candidate to know how to reach final identification of an organism, rather than be able to discuss clinical aspects of the disease.

Portion for Theory :

1. Laboratory Management and Planning. The reception and recording of specimen, cataloguing and indexing maintenance of laboratory records.
2. A knowledge of working and maintenance of the following Incubators, Refrigerators, Water baths, Ovens, Steamers, Autoclaves, Inspissator, Centrifuges, Vacuum Pumps, Water Steel. Cleaning and sterilization of syringes and needles. Simple glass wares.
3. Sterilization : Methods of sterilization and their uses. Chemical, dry heat, steam sterilization, Tyndaliation, filtration, sterilization by ultra-violet light.
4. Care and use of microscope. Dark ground illumination, fluorescence and microscopy.
5. Common bacteriological staining techniques.
6. Cultural Methods: Preparation and sterilization of media. Inoculation and examination of inoculated plates. Antibiotic sensitivity testing, basic techniques of plating and preparation of antibiotic discs.
7. Systemic Bacteriology : The general principles of the methods employed in identifying an unknown organism. Elementary knowledge of common pathogens. Technique oriented examination of specimens such as pus, urine, stool, sputum, throat swab.
8. Parasitological techniques and elementary knowledge of life cycle and lab. diagnosis of common parasites.
9. Introduction to virology techniques.
10. Miscellaneous : Methods of preservation of cultures, maintenance of stock cultures, disposal of infected material and culture media.
11. Serological Methods : Methods of performing agglutination, complement fixation, precipitation tests. General knowledge of antigen antibody reactions.
12. Mycology as related to Candida and Dermatophytes.
13. Animal House Keeping care feeding and breeding of common laboratory animals as mice, rats, rabbits, guineapigs.
14. Bacteriological examination of food and water.

PRACTICAL COURSE

The candidates should—

1. be able to identify common Gram positive and Gram negative organism by the routine methods from clinical samples.
2. be able to prepare commonly used media and identify them.
3. be able to do a routine stool examination and identify common parasites.
4. be able to do common serological tests in the laboratory e.g. Agglutination tests, e.g. Widal, and latex (Passive) Agglutination based serological test and precipitation tests like VDRL.
5. They should be able to identify and know the working of commonly used equipment in the Microbiology laboratory.

Syllabus for PHARMACOLOGY
Paper –V

		No. of lectures.
1	Introduction to Pharmacology	
2	Ethics in Biomedical Research	
3	Drugs in Emergencies	
4	Drugs and Cosmetics Act & Rules	
5	Sources of Drugs	
6	Dosage forms of Drugs	
7	Prescription & terms used in prescription	
8	Doses of drugs according to age, sex & body weight	
9	Adverse drug reactions	
10	Non Steroidal anti inflammatory drugs	
11	National food fortification programme	
12	National Anti malaria programme (NAMP)	
13	National Leprosy Eradication programme (NLEP)	
14	Revised National Tuberculosis Control Programme (RNTCP)	
15	Hospital Anti Microbial Policies	
16	National Immunization programme	
17	National family Welfare programme	
18	Pharmacotherapy of Poisoning Snakbite.	

Syllabus for PATHOLOGY Paper – VI

		No. of lectures.
1	Introduction to Pathology	
2	Cell Injury i) Cause and mechanism : Ischemic, Toxic and Apoptosis ii) Reversible cell injury : Types, morphology, hyaline, fatty change iii) Irreversible cell injury : types of necrosis, gangrene	
3	Inflammation and repair i) Acute inflammation : features, causes, vascular and cellular and cellular events. ii) Morphological variant of acute inflammation iii) Wound healing by primary and secondary union, factors promoting and delaying the process and complications.	
4	Infections diseases i) Mycobacterial diseases : tuberculosis and leprosy ii) Bacterial diseases : pyogenic, typhoid, diphtheria, gram-ve infections, bacillary dysentery, syphilis iii) Viral : polio, herpes, rabies, measles, rickettsial, chlamydial infections iv) Fungal disease and opportunistic infections v) Parasitic diseases: malaria, filaria, amoebiasis, kala azar, cystecercosis, hydatid vi) AIDS: etiology, modes of transmission, pathogenesis, pathology, complications, diagnostic procedures and handling of infected materials and health education.	
5	Circulatory disturbances i) Oedema : pathogenesis and types ii) Chronic venous congestion: lung, liver spleen iii) Thrombosis and embolism: formation, fate and effects iv) Infarction : types, common sites, gangrene v) Shock: pathogenesis, types, morphological changes	
6	Growth disturbances i) Atrophy, hypertrophy, hyperplasia, hypoplasia, metaplasia, malformation, agenesis, dysplasia ii) Neoplasia : causes, classification, histogenesis, biological behaviour, benign and malignant, carcinoma and sarcoma iii) Laboratory diagnosis : cytology, biopsy, tumour markers	
7	Haematopathology i) Anaemia : classification and clinical features ii) Nutritional anaemia : Iron deficiency, folic acid / vit B 12 deficiency anaemia iii) Coagulopathies : coagulation factor deficiency, hemophilia, DIC and anticoagulant control iv) Leucocytic disorders: Leucocytosis, leucopenia, leukemoid reaction v) Acute and chronic leukemia: classification and diagnosis vi) Multiple myeloma and dysprotenemias vii) Blood transfusion: grouping and cross matching untoward reactions, transmissible infections including HIV and hepatitis	
8	Cardiovascular Pathology i) Atherosclerosis and ischemic heart disease: myocardial infarction	
9	Respiratory Pathology i) Structure of bronchial tree and alveolar walls, normal and altered Inflammatory diseases of bronchi: chronic bronchitis, bronchiectasis ii) Pneumonias: lobar, broncho, interstitial	
10	Renal & Urinary tract pathology i) Clinical presentation of renal disorders including nephritic, nephrotic, syndrome, acute renal failure, recurrent hematuria, CRF ii) Pyelonephritis, reflux nephropathy, interstitial nephritis	
11	Pathology of Gastrointestinal tract i) Oral pathology : leukoplakia, carcinoma oral cavity and esophagus ii) Inflammatory disease of small intestine : typhoid, tuberculosis, Crohn's disease, appendicitis iii) Inflammatory disease of large intestine : amoebic colitis, bacillary dysentery, ulcerative colitis	
12	Liver and Biliary tract pathology i) Jaundice : types, etiopathogenesis and differentiation ii) Cirrheses : etiology, classification, pathology, complications	
13	Reproductive system i) Diseases of cervix: cervicitis, cervical carcinoma, etiology, cytological diagnosis ii) Diseases of breast : mastitis, abscess, fibrocystic disease, neoplastic lesions, fibroadenoma, carcinoma, phyllodes tumors	
14	Osteopathology i) Osteomyelitis : acute, chronic, tuberculosis ii) Metabolic diseases : rickets / osteomalacia, osteoporosis, hyper parathyroidism	
15	Endocrine Pathology i) Diabetes mellitus; types, pathogenesis, pathology ii) Non neoplastic lesion of thyroid : deficiency goiter, autoimmune thyroiditis, thyrotoxicosis, myxoedema	
16	Neuropathology : Inflammatory disorders: pyogenic and tuberculous meningitis, brain abscess, tuberculoma	

Syllabus for FORENSIC MEDICINE

Paper – VII

Sr. No.	Particular	Time
1	Introduction to Forensic Medicine & Medico legal work (Definition, Scope, Application, Importance), Death Declaration & Certification.	3 hrs
2	Medico legal Autopsy (Definition prerequisite procedures, Related laws, protocol, Documentation)	2 hrs
3	Observation, Preservation, Dispatch of the evidence material in c/o M.L. Autopsy	2 hrs
4	Clinical Medico legal cases (Types, Definition, Brief introduction to procedures & Documentation, Related laws) Cases :- sexual Assault, Injuries, alcoholics, Age determination, Potency, Psychiatry, Burus, poisoning cases	6 hrs
5	Medico legal Record keeping & Medico legal formats.	2 hrs
6	Laws Relatd to Medico legal practice Mental Health Act, Organ Transplantation Act, Corneal Grafting Act, Human Rights Act, Narcotic Drugs & Psychotropic Substances Act, MTP Act, PCPNDT Act, Relevant sections of I.P.C, Cr.P.C & I.E.A.	3 hrs
7	Disaster Management (Medico legal Aspects) Definition, Scope, Formats & co-ordination.	2 hrs
8	Visit to the Autopsy Section, Casulty, Pathology, Microbiology, Radiology, O.T. Medico legal Record Section & Forensic Science Laboratory (Only Brief Introductory Visits)	10 hrs
		30 hrs

Important Note :-

The syllabus designed for BPMT (FMT) 1st year course is aimed at Introducing the candidate to the Nature, Scope, Procedures, Relevant laws & working pattern of Medico legal work so as to ensure that the candidate can effectively Assist the Medico legal experts working in Medical education, Health, & Home Departments & so also in Hospitals of private sector.

Hence, it is expressly expected that the lecture & Demonstration classes are precisely brief & meaningful.

Syllabus for MEDICAL NURSING INCLUDING FIRST AID

Paper – VIII

ARTIFICIAL RESPIRATION		
1	Types and method of artificial respiration	
2	Mouth to mouth respiration	
3	Closed chest cardiac massage	
ASPHYXIA		
1	Definition and classification	
2	Clinical features	
3	First aid	
POISONING		
1	Definition, types and causes	
2	Clinical features	
3	First aid	
4	First aid of snake bite	
UNCONSCIOUSNESS		
1	Definition, types and causes	
2	Clinical features and first aid	
MEDICAL AND SURGICAL NURSING		
1	Introduction to sick nursing	
2	Medical & nursing ethics	
3	Domestic ward work	
4	Cleanliness of ward and appliances	
5	Bed making	
6	Reception of patients	
7	Sponging of patients	
8	Care of skin	
9	Causes of bed sores and their prevention	
10	Attendance to patients various needs	
11	Care of pressure points	
12	Care of mouth	
13	Care of nails	
14	Use of hot water bottle & ice caps	
15	Serving meals to bed patients	
16	Feeding of helpless patients	
17	Mouth & nasal feeding	
18	Rectal feeding	
19	Care of bladder and bowel	
20	Making ward report	
21	Care of patient with pain	
22	Rigor and its nursing care	
23	Various types of fevers & their nursing care	
24	Taking and recording of TPR & BP	
25	Observation of stools	
26	Observation of urine	
27	Examination of urine	
28	Causes of vomiting	

29	Observation of vomitus & nursing care	
30	Administration of medicine	
31	Administration of medicine by mouth	
32	Administration of medicine by rectal route	
33	Administration of medicine by injection	
34	Preparation of patient for operation	
35	Post operative nursing care	
36	Surgical dressing	
37	Care & sterilisation of sharp instruments	
38	Care & sterilisation of blunt instruments	
39	Care & sterilisation of rubber goods	
40	Care & sterilisation of glass wares	
41	Surgical dressing	
42	Dressing trolley	
43	General surgical procedures	
44	Abdominal surgical procedures	
45	Miscellaneous surgical procedures	
46	Enemata	
47	Evacuation enema	
48	Retention enema	
49	Gastric lavage	
50	Catheterization	
51	Administration of oxygen	
52	Aspiration of fluid	
53	Infusion	
54	Transfusion	
55	Care of ear, nose and throat	
56	Care of eyes	
57	Fractional test meal	
58	Glucose tolerance test	
59	Orthopedic nursing	
60	Preparation of patient for x-ray	
61	Preparation of patient for pyelography	
62	Barium meal x-ray	
63	Barium enema	
64	Nursing care of infectious cases	
65	Self protection & discharge of infectious cases	
66	Discharge of patient from ward	
67	Nursing procedure practical/Demonstration	

**Syllabus for SURGICAL NURSING INCLUDING FIRST AID
Paper – IX**

FIRST AID & SURGICAL NURSING		
1	First aid, its aim and scope	
2	Qualities of first-aider and golden rules of First aid	
DRESSINGS AND BANDAGES		
1	Definition and classification of dressings	
2	Application of roller bandages	
3	Application of triangular bandages	
4	Slings	
SPLINTS		
1	Various types of splints and their uses	
2	Thomas splint	
3	Other splints	
SHOCK		
1	Definition and classification	
2	Clinical features	
3	First aid treatment	
BLEEDING		
1	Causes and classification	
2	Types of bleeding	
3	First aid of bleeding	
WOUNDS		
1	Types of wounds and their clinical features	
2	Gunshot and abdominal wounds	
3	First aid treatment	
INJURIES TO BONES, JOINTS, DISLOCATION & SPRAINS		
1	Definition of fracture, dislocation& sprains	
2	Causes and clinical features	
3	First aid treatment	
BURNS		
1	Definition types, causes and degree of burns	
2	Clinical features	
3	First aid treatment	

Syllabus for PSM i.e. HEALTH & SANITATION COMMUNITY

ORGANISATION

Paper –X

HEALTH AND SANITATION		
1	Introduction to Hygiene and Sanitation	
2	Introduction to positive health	
3	Personal hygiene	
4	Effects of heat and cold on human body	
5	Ventilation, lighting and housing	
6	General principles of control and prevention of communicable diseases	
7	Control and prevention of air borne diseases	
8	Control and prevention of water borne diseases	
9	Control and prevention of important surface infections	
10	Immunity and immunization schedule	
11	Sexually transmitted diseases	
12	Balanced diet, principle items of food and their functions	
13	Vitamin, mineral salts and their deficiency diseases	
14	Food poisoning	
15	Adulteration of food	
16	Food preservation	
17	Sources of water supply	
18	Purification of water	
19	Horrock's test	
20	Sampling of water and its purpose	
21	Various types of refuse and its	
22	Disposal in different camps	
23	Disposal of sewage	
24	Introduction to Entomology	
25	(Insects of medical importance)	
26	Disinfections and disinfestations	
27	Use of Hygiene chemicals in Navy	
28	Drug addiction, alcoholism, tobacco-chewing and smoking	
29	Accidents and their prevention	
30	Introduction to International health organizations	
31	Family planning	
COMMUNITY ORGANISATION		
1	Characteristics of child hood, adult hood and old age	
2	The rights and responsibilities of an individual in society	
3	The family and its basic needs	
4	Standard of living, per capita income and budgeting of family	
5	Growth of population, its effect on economy and population control	

Syllabus for ELEMENTARY PSYCHOLOGY & COMMUNICATION

Paper –XI

ELEMENTARY PSYCHOLOGY		
1	Definition, importance & scope of psychology	
2	Personality, its traits and development of personality	
3	Health and emotions	
4	Awareness and response to environment with Body and relationship between psychosocial factors and environmental	

Syllabus for HOSPITAL MANAGEMENT

Paper –XII

GENERAL ADMINISTRATION ***		
1	Medical documentation	
	(a) Admission to hospital	
	(b) Discharge from hospital	
2	Entitlement of personnel for Treatment in hospital	
3	Entitlement of personnel for use of ambulance	
4	Routine ward work	
5	Medical stores	
	(a) Classification of medical stores	
	(b) Maintenance of medical stores	
	(c) Internal demanding and accounting procedures	
6	Internal demanding and accounting procedures	
7	Hospital diets	
	(a) Hospital diets, extras and diet sheets	
	(b) International code of disease	
8	Detached duties in small ships	
9	Watch and quarter bill and various emergency stations	
10	Medical organization during action	
11	Landing parties	
12	Naval medical categories	
13	Medical boards	

Syllabus for INFORMATION TECHNOLOGY & EDUCATIONAL VISITS

INFORMATION TECHNOLOGY		
INTRODUCTION TO COMPUTER		
1	Function and components of a computer	
2	Types & characteristics of computers	
3	Input and Output devices	
4	Auxiliary storage devices	
INTRODUCTION TO WINDOWS		
1	Starting Windows	
2	Handling the mouse & windows controls	
3	Using menus and dialog boxes	
INTRODUCTION TO MS OFFICE		
1	Microsoft Word	
2	Basic	
3	Working with text	
4	Mail Merging	
5	Previewing and Printing a Documents	
6	Microsoft Excel	
7	Introduction to Electronic Spreadsheets	
8	Excel Basics	
9	Formatting the worksheet	
10	Formula, Function and Graph	
11	Microsoft PowerPoint	
12	Introduction to Presentations	
13	Presentation Basics	
14	Presentation Packages	
15	Menus and Toolbars	
16	Editing, Formatting and Displaying	
INTRODUCTION TO TYPING		
1	Teaching Typing	
2	Practical	