

# Maharashtra University of Health Sciences, Nashik



## COMMON SYLLABUS FOR FIRST YEAR OF ALL BACHELOR OF PARAMEDICAL TECHNOLOGY (BPMT) COURSES

## Common Syllabus for 1<sup>st</sup> Year BPMT courses

Paper	Section	Subject	Periods in hours		
			Theory	Practical	Total
<b>Paper - I</b>	A	<b>Anatomy</b>	22	38	<b>60</b>
	B	<b>Physiology</b>	30	30	<b>60</b>
	C	<b>Biochemistry</b>	60		<b>60</b>
<b>Paper - II</b>	A	<b>Micro-Biology</b>	22	38	<b>60</b>
	B	<b>Pathology</b>	42	18	<b>60</b>
	C	<b>Forensic Medicine</b>	16	14	<b>30</b>
		<b>Pharmacology</b>	06	--	<b>06</b>
<b>Paper - III</b>	A	<b>Medical Nursing Including First Aid</b>	60		<b>60</b>
	B	<b>Surgical Nursing Including First Aid</b>	42	28	<b>70</b>
	C	<b>PSM i.e. Health &amp; Sanitation Community Organisation Elementary Psychology, Communication &amp; Hospital Management</b>	40		<b>40</b>
			30		<b>30</b>
<b>Passing Basic computer course from MHCIT/CDAC/govt recognised institute</b>		<b>Information Technology</b>	60		<b>60</b>
<b>Total</b>					<b>626</b>

**\* Educational Visits as :-**

- 1) Water Treatment Plan - **21P**
- 2) Sewerage treatment Plant - **21P**
- 3) Bio-medical waste management - **22P**

**Teaching hrs - 64**

**Total Teaching hrs = 626 + 64 = 690**

Total working days :	<b>240</b>	Per day working	<b>03 hrs.</b>
Actual Examination days	<b>- 10</b>	Total teaching hrs	<b>690</b>
Actual working days	<b>= 230</b>		

# Syllabus for ANATOMY (1<sup>st</sup> Year- BPMT)

## Paper – I

### Sec (A)

Sr. No.	Syllabus	Theory	Demo.
1	Bones of Superior extremity		2 hrs.
2	Bones of Inferior extremity		2 hrs.
3	Bones of Skull		2 hrs.
4	Bones of Neck, Thorax, Abdomen		3 hrs.
5	Joints Classification with Example	1 hr.	
6	Respiratory System	1 hr.	
7	Heart	1 hr.	
8	Organs of Thorax		2 hrs.
9	Abdomen Lectures / Organs in Abdomen	3 hrs.	3 hrs.
10	Pelvic Organs	1 hrs.	2 hrs.
11	Nervous System	3 hrs.	2 hrs.
12	Sense Organs Eye, Ear & Skin	2 hrs.	
13	Endocrine glands	1 hr.	1 hrs.
14	Muscles of Body		4 hrs.
15	Museum Technology	3 hrs.	12 hrs.
16	Embryology & Genetics	3 hrs.	3 hrs.
17	Tongue, oral cavity, larynx, pharynx nasal cavity	3 hrs.	
<b>Total</b>		<b>22 hrs.</b>	<b>38 hrs.</b>
<b>Exam</b>			
<b>Total Hrs.</b>		<b>60 hrs.</b>	

**Syllabus for PHYSIOLOGY  
Paper – I**

**Sec (B) (60 Hrs.)**

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

**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
<b>Practical Total</b>	<b>26 hrs.</b>
<b>Examination Theory &amp; Practical</b>	<b>4 hrs.</b>
<b>Total</b>	<b>30 hrs.</b>
<b>Theory + Practical total</b>	<b>60 hrs.</b>



# Syllabus for BIOCHEMISTRY

## Paper – I

### Sec(C)

No. of  
lectures

		No. of lectures
1.	<b>Introduction and scope of biochemistry</b>	1
2.	<b>Chemistry of carbohydrates, proteins, lipids and nucleic acid</b> 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. ii) Proteins : General amino acid reactions. Transamination, decarboxylation, deamination. Urea cycle. iii) Lipid metabolism: Cholesterol metabolism, Ketone bodies formation and breakdown iv) Nucleic acid metabolism : Purine catabolism	3 2 2 1
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
	<p>Practical and demonstration:</p> <p>Maintenance of laboratory, quality control, and first aid</p> <p>Cleaning of glassware</p> <p>Preparation of various solutions</p> <p>Single pan balance, Operation and maintenance</p> <p>pH- meter components</p> <p>Handling of colorimeters.</p> <p>Distillation of water.</p> <p>Serum electrolytes Na.K.Cl.</p> <p>Demonstration of semi automated / fully automated blood analyzers. Blood gas analyzer, Elisa reader.</p> <p>Demonstration of disposal of laboratory waste product and infected material.</p>	20
<b>Total</b>		<b>60 lect.</b>

# Syllabus for MICRO-BIOLOGY

## Paper – II (A)

### 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 :

Sr. No.	Syllabus	Theory	Demo.	Total
1.	Laboratory Management and Planning. The reception and recording of specimen, cataloguing and indexing maintenance of laboratory records.	1	2	3
2.	A knowledge of working and maintenance of the following Incubators, Refrigerators, Water baths, Ovens, Steamers, Autoclaves, Inspissator, Centrifuges, Vaccum Pumps, Water Steel. Cleaning and sterilization of syringes and needles. Simple glass wares.	1	4	5
3.	Sterilization : Methods of sterilization and their uses. Chemical, dry heat, steam sterilization, Tyndalisation, filtration, sterilization by ultra-violet light.	2	2	4
4.	Care and use of microscope. Dark ground illumination, fluorescence and microscopy.	1	1	2
5.	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.	3	3	6
6.	Systemic Bacteriology : The general principles of the methods employed in identifying an unknown organism. Elementary knowledge of common pathogenes. Technique oriented examination of specimens such as pus, urine, stool, sputum, throat swab.	7	11	18
7.	Parasitological techniques and elementary knowledge of life cycle and lab. diagnosis of common parasites.	2	4	6
8.	Introduction to virology techniques.		1	1
9.	Miscellaneous: Methods of preservation of cultures, maintenance of stock cultures, disposal of infected material and culture media.	1		1
10.	Serological Methods: Methods of performing agglutination, precipitation tests. General knowledge of antigen antibody reactions.	2	2	4
11.	Mycology as related to Candida and Dermatophytes.	1	1	2
12.	Bacteriological examination of food and water.	1	1	2
	<b>Total</b>	<b>22</b>	<b>32</b>	<b>54</b>

## **PRACTICAL COURSE**

The candidates should—

<b>Sr. No.</b>	<b>Particular</b>	<b>Number of Practical</b>
1	be able to identify common Gram positive and Gram negative organism by the routine methods from clinical samples.	1
2	be able to prepare commonly used media and identify them.	1
3	be able to do a routine stool examination and identify common parasites.	1
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.	2
5	They should be able to identify and know the working of commonly used equipment in the Microbiology laboratory.	1
<b>Total Practical</b>		6 hrs.
<b>Total Theory</b>		54 hrs.
<b>Practical + Theory</b>		<b>60 hrs</b>

## **Syllabus for PHARMACOLOGY**

**(Not included for examination)**

<b>Sr. No</b>	<b>Topic</b>	<b>No. of lectures.</b>
1	Introduction, routes of drug administration,	1
2	Routes of Administration	1
3	Pharmacokinetics	1
4	Pharmacodynamics	1
5	Adverse Drug effect	1
6	Legal aspects of drugs	1
	<b>Total</b>	<b>6</b>

# Syllabus for PATHOLOGY

## Paper – II

### Section - (B)

Sr. No.	Topic	No. of lectures	Number of Practical	Total
1	Introduction to Pathology	01	--	01
2	Working and maintenance of instruments	02	03	05
3	General principles of Histopathology techniques collection, fixation, processing & routine staining	05	03	08
4	General principles of Cytopathology techniques collection, fixation, processing & routine staining	05	02	07
5	General principles of Haematology techniques collection, fixation, processing, routine staining, Haemoglobin, TLC, DLC, Peripheral smear, automatic cell counter	05	03	08
6	General principles of Clinical Pathology techniques sample collection, processing for routine test, normal urine & urine examination	05	03	08
7	General principles of Blood Bank techniques antigen, antibody, ABO & Rh system	05	03	08
8	General principles of Autopsy & Museum	02	01	03
9	General Pathology including introduction to inflammation, circulatory disturbances & neoplasia	05	--	05
10	Systemic pathology basis and morphology of common disorders like anemia, leukemia, AIDS, TB, Hepatitis & malaria	05	--	05
11	Maintenance and medico legal importance of records and specimens	02	--	02
	<b>Total</b>	<b>42 + 18</b>		<b>60</b>

# Syllabus for FORENSIC MEDICINE

## Paper – II

### Section - (C)

Sr. No.	Particular	lectures	Demo	Total
1	Introduction to Forensic Medicine & Medico legal work (Definition, Scope, Application, Importance), Death Declaration & Certification.	3	--	3
2	Medico legal Autopsy(Definition, prerequisite procedures, Related laws, protocol, Documentation )	2	--	2
3	Observation, Preservation, Dispatch of the evidence material in c/o M.L. Autopsy	--	2	2
4	Clinical Medico legal cases(Types, Definition, Brief introduction to procedures & Documentation, Related laws)Cases :- sexual Assault, Injuries, alcoholics, Age determination, Potency, Psychiatry, Burns, poisoning cases	6	--	6
5	Medico legal Record keeping & Medico legal formats.		2	2
6	Laws Related 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	--	3
7	Disaster Management (Medico legal Aspects) Definition, Scope, Formats & co-ordination.	2	--	2
8	Visit to the Autopsy Section, Casulty, Pathology, Microbiology, Radiology, O.T. Medico legal Record Section & Forensic Science Laboratory (Only Brief Introductory Visits)	--	10	10
<b>Total</b>		<b>16 + 14</b>		<b>30</b>

## Annexure I

### SYLLABUS FOR MEDICAL & SURGICAL NURSING PAPER -III

Sr. No.	Particulars	Lectures cum Demonstration
1.	First aid and its scope	I
2.	Artificial respiration & cardiac massage	I
3.	First aid for Asphyxia poisoning unconsciousness	I
4.	Observation of Stool, Urine & examination of Urine	I
5.	Evacuation enema, retention enema, gastric lavage, cathrization	I
6.	Administration of oxygen, aspiration of fluid, infusion, transfusion	I
7.	Preparation of patient for pyelography	I
8.	Preparation of patient for pyelography	I
9.	Barium meal X-rey	I
10.	Barium enema	I
11.	Self protection & discharge of patient from ward	I
12.	Definition & classification of dressing, application of roller bandage, triangular bandage and sling	I
13.	Splint and their usage, Thomas splint, other splint	I
14.	Causes of bleeding, types of bleeding and its first aid	I
15.	Types of wounds	I
16.	Gun shot wound, abdominal wound and first aid treatment	I
17.	Causes & clinical features of fractures and dislocations	I
18.	First aid treatment for fractures, dislocation & sprain	I
19.	Visit to accident and emergency department	I
20.	Visit to ICU	I
21.	Visit to Surgical ward	I
22.	Visit to Medical ward	I
23.	Visit to operation theatre	I
24.	Visit to orthopaedic ward & theatre	I
25.	General surgical procedures	I
26.	Abdominal surgical procedures	I
27.	Miscellaneous surgical procedures	I
28.	Orthopaedic nursing	I
29.	Preparation of patient fro operation	I
30.	Post- operative nursing care	I

# Syllabus for PSM i.e. HEALTH & SANITATION ,COMMUNITY

## ORGANISAITION

### Paper –III Sec (C)

<b>HEALTH AND SANITATION</b>		<b>Lectures &amp; Demonstration as per needs</b>
1	Introduction to Hygiene and Sanitation	1
2	Introduction to positive health	1
3	Personal hygiene	1
4	Effects of heat and cold on human body	1
5	Ventilation, lighting and housing	1
6	General principles of control and prevention of communicable diseases	1
7	Control and prevention of air borne diseases	1
8	Control and prevention of water borne diseases	1
9	Control and prevention of important surface infections	1
10	Immunity and immunization schedule	1
11	Sexually transmitted diseases	1
12	Balanced diet, principle items of food and their functions	1
13	Vitamin, mineral salts and their deficiency diseases	1
14	Food poisoning	1
15	Adulteration of food	1
16	Food preservation	1
17	Sources of water supply Purification of water Horrock's test Sampling of water and its purpose	1
18	Various types of refuse and its Disposal	1
19	Disposal of sewage	1
20	Introduction to Entomology (Insects of medical importance)	1
21	Disinfections and disinfestations & antiseptics	1
22	Drug addiction, alcoholism, tobacco-chewing and smoking	1
23	Accidents and their prevention	1
24	Family planning & Family welfare programme	1
25	National Health Programme	2
<b>ROLE OF PARAMEDICS IN COMMON MEDICAL &amp; SURGICAL EMERGENCIES</b>		
26	General Nursing Care	9
	Management of Shock	
	Management of Haemorrhage	
	Management of Asphyxia	
	Management of Injuries	
	Management of Fractures	
	Management of APH & PPH	
	Management of Effects of Heat	
	Management of Poisoning	
	Management of Snakebite	
	Management of Syncope	
	Management of Myocardial Infarction	
	Management of Dehydration	
	Management of Paediatric Emergencies	
	Management of Anaphylaxis	
Management of Head, Spine & Chest Injuries		

## COMMUNITY ORGANISATION

1	Characteristics of child hood, adult hood and old age	1
2	The rights and responsibilities of an individual in society	1
3	The family and its basic needs	1
4	Standard of living, per capita income and budgeting of family	1
5	Growth of population, its effect on economy and population control	1
	<b>Total</b>	<b>40</b>



# Syllabus for ELEMENTARY PSYCHOLOGY & COMMUNICATION

## Paper –III

### Section - (C)

<b>ELEMENTARY PSYCHOLOGY</b>			
<b>Sr. No.</b>	<b>Topic</b>	<b>Method</b>	<b>Hours</b>
1.	Definition, importance & scope	Lecture	1
2.	Cognitive Process	Lecture	1
3.	Intelligence	Lecture	1
4.	Aptitude	Lecture	2
5.	Listening Skill	Lecture Demo	2
6.	Motivation	Lecture	1
7.	Emotions	Lecture	2
8.	Personality	Lecture	1
9.	Positive Mental Health	Lecture	2
10.	Interpersonal Relationship	Lecture Demo	3
11.	Staff Patient Relationship	Lecture Demo	3
12.	Staff Caregiver Relationship	Lecture Demo	2
13.	Empathy	Lecture	1
14.	Communication Skills	Lecture Demo	2
15.	Conflict Resolution	Lecture	1
16.	Group Behaviour	Lecture	1
17.	Team building	Lecture	1
18.	Patient satisfaction	Lecture	3
	<b>Total</b>		<b>30</b>



# Syllabus for HOSPITAL MANAGEMENT

## Paper –III

### Section - (C)

<b>GENERAL ADMINISTRATION ***</b>		
1.	<b>Medical documentation</b>	
	(a) Admission to hospital	1
	(b) Discharge from hospital	1
2.	Entitlement of personnel for Treatment in hospital	1
3.	Entitlement of personnel for use of ambulance	1
4.	Routine ward work	1
5.	<b>Medical stores</b>	
	(a) Classification of medical stores	1
	(b) Maintenance of medical stores	2
	(c) Internal demanding and accounting procedures	2
6.	Internal demanding and accounting procedures of Medical equipments and other stores	2
7.	<b>Hospital diets</b>	
	(a) Hospital diets, extras and diet sheets	2
	(b) International code of disease	1
8.	Medical boards	2
9.	Patient safety	2
10.	Bio Medical waste management	2
11.	Disaster Management	2
12.	Medical Records	7
	<b>Total</b>	<b>30 hrs</b>

# Syllabus for INFORMATION TECHNOLOGY

(Not included for examination)

<b>INFORMATION TECHNOLOGY</b>		
<b>INTRODUCTION TO COMPUTER</b>		
1	Function and components of a computer	2
2	Types & characteristics of computers	1
3	Input and Output devices	1
4	Auxiliary storage devices	1
<b>INTRODUCTION TO WINDOWS</b>		
1	Starting Windows	1
2	Handling the mouse & windows controls	1
3	Using menus and dialog boxes	3
<b>INTRODUCTION TO MS OFFICE</b>		
1	Microsoft Word	3
2	Basic	1
3	Working with text	3
4	Mail Merging	3
5	Previewing and Printing a Documents	1
6	Microsoft Excel	3
7	Introduction to Electronic Spreadsheets	1
8	Excel Basics	2
9	Formatting the worksheet	3
10	Formula, Function and Graph	2
11	Microsoft PowerPoint	3
12	Introduction to Presentations	2
13	Presentation Basics	3
14	Presentation Packages	5
15	Menus and Toolbars	2
16	Editing, Formatting and Displaying	5
<b>INTRODUCTION TO TYPING</b>		
1	Teaching Typing	2
2	Practical	6
	<b>Total</b>	<b>60</b>

## Examination Pattern Bachelor in Paramedical Sciences

At the end of year there will be a University examination

Sr. No.	Subject	Internal Assessment Theory	University Examination Theory	Theory + I.A.	Internal Assessment Practical	Practical Examination	Practical + I.A.	Subjects Total
				Max. = 150 Min. = 75			Max. = 150 Min. = 75	Max. = 300 Min. = 150
Pa pe r I	Section A - Anatomy	10	40	<b>150</b>	10	40	<b>150</b>	<b>300</b>
	Section B - Physiology	10	40		10	40		
	Section C - Biochemistry	10	40		10	40		
				Max. = 125 Min. = 62.5			Max. = 125 Min. = 62.5	Max. = 250 Min. = 125
Pa pe r II	Section A - Micro-Biology	10	40	<b>125</b>	10	40	<b>125</b>	<b>250</b>
	Section B - Pathology	10	40		10	40		
	Section C - Forensic Medicine	05	20		05	20		
				Max. = 150 Min. = 75			Max. = 150 Min. = 75	Max. = 300 Min. = 150
Pa pe r III	Section A – Medical Nursing	10	40	<b>150</b>	10	40	<b>150</b>	<b>300</b>
	Section B - Surgical Nursing Including First Aid	10	40		10	40		
	Section C – PSM including Elementary Psychology & Communication & Hospital Management	10	40		10	40		
							<b>Total =</b>	<b>850</b>

**Note : - For passing the candidate should obtain minimum 40% marks in individual paper. However, candidate should obtain minimum 50% marks in aggregate for all papers. Computer training from MHCIT/ CDAC/Recognised govt institute is compulsory**

- 1) **Duration of each theory paper will be Three hours & each practical examination will be Six hours.**
- 2) **Candidate obtaining 50% marks in an individual paper will be eligible for exemption for that particular paper.**
- 3) **The candidate will be Allowed To Keep Terms (A.T.K.T.) if, he is fails in only one paper.**
- 4) **The candidate will not be eligible for admission in third year unless he has passed first year examination.**