TWO YEARS POST MATRIC TEACHING PROGRAM OF PARAMEDICS

F. Sc. (Operation Theatre Technology)

CURRICULUM WING
MINISTRY OF EDUCATION, ISLAMABAD

Contents

PREFACE

Live nations continue to develop. New fields emerge with the laps of time and pace of development. Medical Technology has gained importance with technological development in diagnostic, therapeutic, and preventive aspects of health care delivery system. This has produced a need for trained and skilled manpower in this field. Present curriculum is one of the outcomes of that necessity.

These curricula will not only help in providing a base for better healthcare but also decrease unemployment in our country. It will open up new avenues for our youngsters.

Curriculum development is a hectic task and is not possible in a day. Present curriculum also passed through many phases of development. Initially it was developed by consultants of Pakistan Institute of Medical Sciences on request of the then Project Director, College of Medical Technology, PIMS 1987.

In 1990, it was later on suggested by the faculty of the College of Medical Technology to bring it at par with F. Sc. The Committee of two members i.e. Dr. M.A. Aziz Shahzada and Engr. Sher Afzal Awan expanded it over a period of two years. The same curricula was revised and updated by Engr. Sher Afzal Awan in 1995.

In 1995, equivalence was granted by IBCC on continuous struggle for three years of Lt.Col.(r) Dr. Azra Javed. Qureshi, Principal, CMT.

The college approached Curriculum Wing, Ministry of Education in 2001 for approval and standardization. The process continued till to date. National Review Committee, constituted by the Curriculum Wing has discussed it in its meeting held from 18th May 2004 to 20th May 2004. The Committee has approved this draft.

Curriculum development is a continuous process. It may have many mistakes or it may be better than this. We have tried our best to update it so that trained people under this program may fulfill the needs and requirements of the hospitals in Pakistan.

This curriculum is first trail of its kind in Pakistan in the field of medical education. All our colleagues have made the history by taking part its preparation, review and approval. We do hope that both educationists and Paramedical Institutes will accept it. At last, we thank to Lt.Col.(r) Dr. Azra J. Qureshi, Mr. Sher Afzal Awan (PIMS) and Mr. Saeed Ahmad Meher (Curriculum Wing) for their valuable co-operation and contribution in completing this difficult task.

The Ministry of Education appreciates the contributions of all the Provincial Governments and Health Departments.

(Prof. Dr. Haroona Jatoi)
Joint Educational Advisor
Curriculum wing.
Ministry of Education Islamabad.

ACKNOWLEDGEMENT

Grateful acknowledgement is hereby made to all the contributors from all provinces of Pakistan, from Ministry of Education and different hospitals at Federal area Islamabad who reviewed drafts of curricula of five disciplines and gave fruitful suggestions for its improvement.

Above all, I am indebted to Prof. Dr. Haroona Jatoi, Mr. Aurang Zeb Rehman and Mr. Saeed Ahmad Meher (Curriculum Wing) for their valuable co-operation and contribution in completing this difficult task.

My gratitude goes to Engr. Sher Afzal Awan, Registrar, CMT for his contribution in developing, updating, incorporating changes proposed by NRC and giving it a present shape.

I am also indebted to all the secretarial staff of Curriculum Wing and CMT for helping in clerical work. And above formal way of acknowledgement to past concerns, gratitude goes to all those who will use it in shaping the future of coming generations in the field of medical education.

I am also indebted to W.H.O.EMRO for its contribution in standardization of curricula for Paramedics Resource development in Pakistan.

(Col. Dr. Azra J. Qureshi)T.I[M] Date:- 12th June,2004.
Principal,
College Of Medical Technology,
Pakistan Institute of Medical Sciences,
Islamabad.

OBJECTIVES:

A) To prepare the students to become an efficient Medical Technician in Operation Theatre well versed with techniques and background analyses, in all of the operation theatre procedure.

For this purpose the teaching in the special technical subjects involves lectures; practical that include demonstration and bench work; and job training of both "Observing Type" and "Involvement Type" in the latter the students participate in duty performance in the working Operation Theatre Laboratory.

B) To make the course and qualification comparable with similar programs in the country so that the candidates have a competitive standing in job seeking as well as in eligibility for entry into a graduation course in the technology in any such Institute.

SURGICAL TECHNOLOGY (O.T.)

Name of Subject	Theory / Practical	Topics Included	Marks
PART – I & II			
Basic Medical Sciences	Theory	Anatomy, Physiology, Public Health and First Aid	150
	Practical	As per above subjects through charts and models etc. only for anatomy and physiology	50
Surgical Techniques	Theory	Applied anatomy & physiology, Microbiology (sterilization, outline of bacteria, Viruses & fungi), Surgical Techniques (Trolleys related to specific operations, Anaesthesia Equipment, Outline of surgical diseases)	75+75 150
	Practical	Practical will include observation on Job and practice in O.T.	50+50 100
Applied Sciences	Theory	Physics, Chemistry, Computer & Hospital Safety	100
	Practical	Physics, Chemistry related.	50

SURGICAL TECHNOLOGY (O.T.)

Name of Subject	Theory / Practical	Topics Included	Marks
PART – I			
Basic Medical Sciences	Theory	Anatomy, Physiology.	75
	Practical	As per above subjects through charts and models etc. only for anatomy and physiology	25
Surgical Techniques	Theory	Applied anatomy & physiology, Microbiology (sterilization, outline of bacteria, Viruses & fungi).	7 5
	Practical	Practical will include observation on Job and practice in O.T.	50
Applied Sciences	Theory	Physics, Chemistry.	50
	Practical	Physics, Chemistry	25

SURGICAL TECHNOLOGY (O.T.)

Name of Subject	Theory / Practical	Topics Included	Marks
PART – II			
Basic Medical Sciences	Theory	Public Health and First Aid	75
	Practical	First Aid and about field visits of public health.	25
Surgical Techniques	Theory	Surgical Techniques (Trolleys related to specific operations, Anaesthesia Equipment, Outline of surgical diseases)	75
	Practical	Practical will include observation on Job and practice in O.T.	50
Applied Sciences	Theory	Computer & Hospital Safety	75

OPERATION THEATRE
PART – I

HOURS DISTRIBUTION PER WEEK

S.No.	Subject	Theory	Practical	Total
1	OPERATION THEATRE TECHNIQUE	06	06	12
2	Basic Medical Sciences – I	03	03	06
3	Applied Sciences – I	02	01	03
4	English – I	06	-	06
5	Urdu – I	06	-	06
6	Islamic Studies	01	-	01

HOURS DISTRIBUTION PER YEAR

S.No.	Subject	Theory	Practical	Total
1	OPERATION THEATRE Technique-I	240	240	480
2	Basic Medical Sciences - I	120	120	240
3	Applied Sciences - I	80	40	120
4	English - I	240	-	240
5	Urdu - I	240	-	240
6	Islamic Studies	40	-	40
		960	400	1360

PART– II

HOURS DISTRIBUTION PER WEEK

S.No.	Subject	Theory	Practical	Total
1	OPERATION THEATRE Technique-II	06	09	15
2	Basic Medical Sciences – II	02	01	03
3	Applied Sciences – II	02	01	03
4	English – II	06	-	06
5	Urdu – II	06	-	06
6	Pak Studies	01	-	01
		23	11	34

HOURS DISTRIBUTION PER YEAR

S.No.	Subject	Theory	Practical	Total
1	OPERATION THEATRE Technique-II	240	360	600
2	Basic Medical Sciences – II	80	40	120
3	Applied Sciences – II	80	40	120
4	English – II	240	-	240
5	Urdu – II	240	-	240
6	Pak Studies	40	-	40
		920	440	1360

APPLIED SCIENCES

PART - I

PHYSICS AND CHEMISTRY

1. The nature of Science, Divisions of Science, and Scientific method.
2. The Measurement – Metric System, scientific notation, units of mass, length and volume.
3. Mechanics – Force, equation of motion, laws of motion.
4. Gravity – speed, velocity and acceleration, center of gravity, weight and mass.
5. Work, Power, Energy.
6. Simple machines – principles of machines, friction, levers.
7. Density, Specific gravity, Archimedes's Principle.
8. Pressure – Definition, pressure in hydrostatic fluids, pressure in flowing liquids.
9. Gas Laws – Boyle's and Charles laws, gas laws applicable to respiratory process, effects of changes in atmospheric pressure on physiology of the human body.
10. Heat – nature and measurement, effects of heat, methods of transfer.
11. Light – Transmission, reflection and refraction of light, lenses.
12. Sound – How it is produced, characteristic, transmission, reflection of sound, echoes, ultrasound.
13. Electricity – Atomic structure, free electrons, conductor and insulators, Definition of current, P.D., Resistance, Resistance laws, Ohm's law, circuit, series circuit, parallel circuit, Power and energy.
14. Magnets and Magnetism – Properties, magnetic field, magnetic lines of force, electromagnet, magnetic effect of electric current, Motor and generator effect of current, magnetic and electric induction, Transformer.
15. Charge – Coulomb's law, capacitor and capacitance, capacitor in series and in parallel.
16. A.C. Definition, RMS value, Peak value Sine wave.
17. Electromagnetic Radiation – Spectrum, ionization, excitation, Inverse Square law, frequency, wave length, terms and their definitions.
18. Composition of Substance – Atoms and molecules, symbols, formulae, Elements and compounds, chemical formula.
19. Chemical Reactions and Equations.
20. Water – physical and chemical properties, Deliquescent, efflorescent, hygroscopic substances, solvent properties, Hydrolysis, Water cycle, impurities, hard and soft water.
21. Solutions – Terms, Solubility, Concentrations, dilutions, properties of solution.
22. Acid, Bases, and salts.
23. pH Scale and buffer system.
24. Electrolytes and electrolysis.
25. Amines and amides
26. Proteins – compositions, properties of amino acids, classifications.
27. Carbohydrates
28. Lipids

Practical Chemistry

1. How fitting up a wash bottle is prepared?
2. To pacify the given sample of impose naphthalene crystallization.
3. To pacify the given sample of naphthalene by sublimation.
4. To determine the melting & boiling point of organic compound.
5. To prepare the standard solution of acid or Base.
6. To prepare a standard solution of exotic acid and with its help standardize a solution of NaoH.
7. To prepare approximates N/10 solution of H_2SO_4 determine its exact normality by titrating it against standard N/10 NaoH?
8. To standardize a given solution by direct method.
9. To standardize a given solution by indirect method.

Practical Physics

a. To find the unknown force.
b. To find the center of gravity of an irregular shape.
c. To verify the law of reflection.
d. To find the path of light passing through a prism.
e. To find the focal point of a lens.
f. Determine the critical angle of glass using a glass prism.
g. Determine the focal length of convex lens.
h. To find the reflective index of a liquid using a concave mirror.
i. Determine the speed of sound at a room temperature.

APPLIED SCIENCES

PART – II

APPLIED COMPUTER SCIENCES

Note: This is an introduction to computer science. A brief description and definitions of terms will be taught to the students.

1. An over view of Computer system.
2. The shapes of computer today–Super Computer, Main frame, mini computer, Works stations and PC.
3. Input methods–Key board , Mouse,
4. Alter native methods of input – hand devices, optical devices, Audio-visual input devices.
5. Monitors and sound system – Monitors – PC. Projectors, sound system.
6. Printer and brief introduction to its types.
7. Transforming data in to information representation, process, speed etc.
8. CPU – types with definition
9. Types of storage devices – Magnetic and optical.
10. Measuring drive information- access time, file compression, transfer rate, interface standard.
11. Basic of operating system–interface, programme, files, hardware and software management
12. Definitions of Unix, DOS, Macintosh operating system, Windows, OS / 2, Windows NT, 95, 98, 2000, Linux.
13. Words processing and Desk tope Publishing software.
14. Spread sheet software.
15. Presentation programme
16. Data base management System.
17. Networking basics – brief of use, structure, LANs, Media, Hardware and Software.
18. Networking – Standard telephone lines, digital lines, Network in the home.
19. Internet basics
20. Accessing, connecting, working on internet, introduction to DICOM, PACS.
21. Working with images.
22. Graphics software.
23. Understanding multi-media.
24. Creating and distributing media contents.
25. Basics of information system- Use, Parts.
26. Building information system – five phases – need, Design, development, implementation, maintenance.
27. Creating programmes – definitions of programme and approaches.
28. Programming languages and system development life cycle.
29. Ergonomics, health and privacy issues.
30. Brief of computer crimes, Viruses, Theft and computer environment

PATIENT SAFETY

1-10 **Electrical Hazards**

- Electrical current and body muscles
- Electric shock
- Defibrillators
- Pace makers
- High and low frequency electricity in medicine
- Classification of medical equipment
- Degree of protection in equipment
- Earth leakage current
- Maximum current limits and safety tests

11-15 **Fire and explosion in hospitals**

- Inflammable gases and liquids
- Static electricity
- Precaution against fire and explosion

16-26 **Surgical diathermy and other possible hazards in hospitals**

- Surgical diathermy and precautions
- Mechanical hazards
- Heat and light hazards
- Chemical burns

27-35 **Radiation**

- Non-ionizing radiation
- Ionizing radiation
- Microwave ovens
- Ultrasound therapy equipment
- Lasers

36-40 **Infection in hospitals**

- The hospital environment
- Pathogenic, non-pathogenic microgenisms
- Modes of spread of infection
- Kinds of infection
- Cross-infection
- Precautions and prevention.

BASIC MEDICAL SCIENCES

PART - I

ANATOMY

The depth of the subject will only be diagram and labeling of the diagram.

Week **Contents**

1. Introduction

2-3. The study of human cell and functions of organelles, Nucleus, DNA helix, RNA, genetic code, Chromosomes.
Cell Division
Mitosis and Meiosis of cell

4-9. BASIC TISSUES
- Different Types of tissues.
- Connective tissues.
- Epithelial tissues.
- Muscle tissues.
- Nervous tissues.
- Blood tissues.

10-11. The **circulatory system**- Structure of heart. Different chambers of heart, main arteries arising from the heart and main veins of the heart, branches of arch of aorta, Thoracic aorta, abdominal aorta, main vessels of upper and lower limbs.

12-13. Lymphatic System

14-17.The Gastro Intestinal Systems
- Mouth
- Pharynx
- Esophagus
- Stomach
- Small Intestine
- Large Intestine
- Accessory organs (Liver, Spleen, Pancreas & Gall Bladder)

18-20. Respiratory System
1. Organs of respiration
2. Upper respiratory tract
3. Lower respiratory tract

21-22. The Skin
- Epidermis
- Dermis
- Sebaceous glands
- Nails

23-25. The Nervous System

1. CNS central nervous system
2. Peripheral Nervous System
   - Different parts of nervous system
   - Structure of cerebrum, mid brain, cerebellum, pons and medulla oblongata, spinal cord and
   - Autonomic nervous system

26-28. The Endo Crine Glands

Short description and position of:-

- Pituitary gland
- Thyroid gland
- Parathyroid gland
- Adrenal gland
- Hormones of Testis
- Prostate
- Ovaries
- Pancreas and Thymus

29-31. The urinary system

Structure of kidney, urethra, urinary bladder, prostate gland and ureter. Difference of right and left kidneys.

32-33. The Reproductive System

- Male reproductive system
- Female Reproductive System
- Different organs of male reproductive system, structure of testis, the scrotum, seminal vesicles, prostate gland, the penis and urethra.
- Different organs of females reproductive system, Mammory glands, Structure of ovaries, uterus, cervix and vagina,

34-35. The Skeleton

Different bones of skull. Bones of upper limbs, lower limbs, thorax, pelvis and vertebral column.

36-38. Structure of individual bones, scapula, humerus, radius, ulna, femur, tibia and hip bones, hands, foot, ribs, sternum, clavical, sacrum, thyroid, hyoid, */

The Joints

1. All joints and their movements
2. Main muscles of body.

39-40. The Special Senses:

Brief anatomy of eye. Three coats of eye ball. Brief anatomy of ear Outer, middle and inner ear, nose- inner and outer, tounge, salivary glands, skin.

Recommended Books:

Foundations of anatomy and physiology by Kathleen J.W. Wilson.

PHYSIOLOGY

The physiology of the following topics will consist of brief description of the function of part of the body.

1-3. **The cell and its functions**

1. Structure and Functions of a human cell
   The cytoplasm and its organelles
   Comparison with animal cell
   Functional system of the cell
2. Endocytosis & Phagocytosis
   Ingestion and digestion by the cell
   Functions/Structures of Golgi apparatus
3. Cell Division
   Mitochondria and reticulum.
   Cell reproduction.

4-9. Tissues and fluids of body.

10-11. Cardiovascular system (Heart and circulation)

Description of Heart and vessels (arteries, vein, and capillaries)
Cardiac cycle, diastole and systole
Functions of atria and ventricles
Functions of valves
Heart pumping (work output of heart)
Cardiac output, stroke volume etc.
Heart sounds
Lymphatic system function

12-14. Respiratory System

Basic mechanism of respiration
Inspiration expiration mechanism
Pulmonary capacities and pulmonary volumes
Respiratory rate and tidal volume definitions
Functions of respiratory pathways (Chemical & Neural Control)
Artificial respiration, mouth breathing
Transport of oxygen and carbon dioxide in the blood and body fluids

15-18. Gastro intestinal tract.

Ingestion of food, mastication (Chewing)/ Digesion and Swallowing
Functions of stomach
Storage function, mixing of food

19-20. Secretions of GIT

Saliva, Salivary glands functions of
Saliva, Gastric Secretion, Functions of
Panacreatic secretion, Bile secretion and its function

Secretions of the small intestine, secretion of large intestine, Digestion and absorption of food

21-25. Metabolism

Introduction to Fat and Protein Metabolism

Introduction to Carbohydrates Metabolism, Role of glucose in Carbohydrate metabolism, Transport of glucose in body tissue, Lipid metabolism transport of lipids in the blood.

Transport from the GIT, and fat deposits, Proteins metabolism, basic properties of protein, use of proteins for energy, Vitamins and their metabolic role.

27-28. Endocrine Glands.

Endocrine glands and their hormones

The pituitary hormones and their functions

The thyroid hormone, The adrenocortical hormones

Parathyroid hormones and their functions

29-32. Reproductive System.

Functions of the male reproductive organs

Functions of the female reproductive system

Testosterone and other male sex hormones

Pregnancy, lactation and female hormones

33-37. Special Senses

Introduction to Sensory organs and their function

The eye functions and elements of eye, Sclera, choroid retina, The eye as a camera, Sense of Hearing, tympanic membrane and external ear, middle ear and vesicles, Internal ear and its functions

Conduction of sound to the cochlea

The functions of Tongue and salivary glands.

The functions of nose and tonsils / Adenoids.

The functions of skin and its appendages

38-40. Nervous System

General design of nervous system types and parts of nervous system Functions of brain, cerebrum cerebellum spinal cord. Cranial nerves. Autonomic nervous system (Parts and functions)

BASIC MEDICAL SCIENCES

PART - II

FIRST AID

1. First Aid

- Definition

- Principles

- Actions at emergency

2. Dressing + Bandages
3. Short structure & function of respiratory system
4. Asphyxia
5. Assisted respiration
6. Short structure and function of C.V.S.
7. Shock (Circulatory failure) Patho-Physiology
8. Cardiogenic shock Treatment
9. Hypo-volumic shock (Haemotologic) with treatment other condition.
10. Anaphylactic shock -Signs
    -Symptoms
    -Treatment
11. Septic Shock "
12. Neurogenic shock "
13. Cardiopulmonary resuscitation principles practical demonstration.
14. Assessment of newborn
15. Resuscitation of newborn
16. Short structure & function of locomotive, Sprains and strains
17. Fractures, First Aid Management
18. Burns, Scalds causes and First Aid Management
19. Wounds cuts stabs and management
20. Management of Bleeding from wound/NOSE/mouth/misc.
21. Drowning-First Aid management
22. Road traffic accidents (First Aid Management)
23. Transport of injured persons especially spinal care
24. Care of Coma / stupor unconscious victim
25. Poisonings-Swallowed persons and first aid management
26. Poisonings inhalation poisonings first aid management
27. Bites Stings management human, cat dog insect
28. Snake bite and first aid management
29. Anaphylactic Shock and its management
30. Choking (Foreign body in airway)
31. Abdominal pain (First aid)

32. Sport injuries
33. Safety at home precautions / safety
34. Precautions at kitchen to avoid accidents.
35. Precautions at bathroom
36. Precautions in living room
37. Precautions at stairs and at terraces

PUBLIC HEALTH

1. **Introduction:** To health field, definition of health, preventive, social, community and family medicine.
2. Health care organization in Pakistan.

    i. General introduction to federal, provincial, divisional and district level organizational structure.
    ii. Role of paramedics in hospitals.

3-6. AIR

Composition and functions-Pollution and pollution indicators-impurities in air-cleaning methods (an over view)

7-12. WATER

Sources of water with special reference to Pakistan. Impurities-Safety-Purification, Natural and artificial methods.

13-17. VENTILATION

Objectives and merits. Over crowing and its effects on human body. Natural ventilation and artificial ventilation.

18-25. Wastage

Introduction-refuse and its collection. Methods of collection and disposal of refuse-Excreta-Methods of collection and disposal of Excreta.

26-27. Infection and disinfecting

Introduction-Terminology-Methods of disaffection.

28-29. Sources of infection-routes of transmission i.e., air, water and food.

30-39. Communicable diseases

Introduction-EPI and diseases related to it, vaccination schedule.
Communicable diseases like T.B., diphtheria, tetanus, polio, whooping cough and measles Epidemiology and prevention methods for above diseases.

40. Family Planning

Need and objectives-general methods.

OPERATION THEATRE TECHNIQUES

PART - I

MICROBIOLOGY

1. Introduction to micro-organisms
2. Classification of Bacteria
3. Structure and reproduction of bacteria
4. Characteristic of Rickettsiae
5. Transmission and diseases caused by Rickettsiae
6. Prevention and control of Rickettsiae
7. Characteristic of Chlamydiae
8. Transmission and diseases caused by Chlamydiae
9. Treatment, prevention and control
10. Characteristics of Spirochetes
11. Transmission, prevention and control
12. Diseases caused by Spirochetes
13. Composition and structure of Virus
14. Classification of Virus
15. Mode of Transmission and common diseases caused by Virus
16. Prevention and control
17. Characteristics of Protozoa
18. Biology and diseases caused by Protozoa
19. Prevention and control
20. Characteristics and reproduction of Fungi
21. Diseases caused by Fungi with reference to O.T.
22. Control and prevention
23. Sterilization and disinfection
24. Introduction to chemotherapy
25. Characteristics and use of chemotherapeutic agents in O.T.
26. Introduction to Immunity and Immunology
27. Acquired Immunity and resistance factors
28. Methods of environmental cleanliness in O.T.
29. How to keep instruments, equipments and other things bacteria free

STERILIZATION AND SUPPLIES

1. Introduction to sterilization
2. Sterilization and Disinfections
3. General Principles of sterilization
4. Types of Sterilizations
5. Methods of Heat Sterilization and equipment.
6. Autoclave, main parts and working principle.
7. Chemical Sterilization and the chemical used in it.
8. Sterilization by radiation.
9. Detergents, types and uses.
10. Gas Sterilization and its uses.
11. Scrubbing and its methods
12. Draping and its methods.

13. Lighting and ventilation requirements.
14. Humidity and heating requirements.
15. Blood Transfusion:- Blood storage, grouping, cross matching etc.
16. Infusion.

O. T. EQUIPMENT

1. Introduction to electro-medical equipment used in O.T.
2. O.T. light, uses, types, lamps etc
3. Shadow less lighting – features, types
4. Direct, semi direct, indirect lighting.
5. Grounding system – parts and structure.
6. Monitoring equipment such as cardiac monitors.
7. Defibrillators
8. Surgical diathermy – structure, block diagram, types.
9. Safety Precautions
10. General equipment maintenance requirements
11. Anesthesia machine – parts, block diagram etc.
12. Sterilizers, types and characteristics

OPERATION THEATRE TECHNIQUES

PART - II

REGIONAL ANATOMY AND PHYSIOLOGY

Brief revision of the following topics. The number shows number of periods in which each topic should be covered :-

1 – 10 General survey of human skeleton

- Skeletal Tissues
- Cartilages
- Tendon
- Ligaments
- Bone
- Joints

11 – 15 Respiratory System

a. Upper and lower respiratory tract
b. Lungs
c. Pleura
d. Diaphragm

16 – 19 Cardiovascular System

- Arteries
- Veins
- Heart

20 – 24 Excretory System

- Kidneys
- Ureter
- Bladder
- Urethera

25 – 28 Endocrine Glands

- Pituitary Gland
- Adrenal Gland
- Thyroid Gland
- Para thyroid Gland

29 – 35 Nervous System

- Nervous Tissues
- Central Nervous System
- Peripheral System

SURGICAL TECHNIQUES

1. Introduction to operating department.
2. O.T.Table and position used for surgery.
3. Operation Preparations.
4. Classification of instruments and apparatus: Disposable/Non disposable, sharp instrument, sutures, needless, syringes and hypodermic needless, special instrument, catheters their working and care.
5. Ligature and suture materials
   Introduction, cat guts (preparation, sizes, handling), absorbable and non absorbable ligatures and sutures, natural materials (silk warm gut, silk threads, linen cotton their sizes and classes) Nylon, polyestars, polyethelene, polyepreypelene, metallic wire, metal clips as sutures and as ligatures.
6. Storage and handlings of suture materials associated with instrument. Ligature requisits, scalpel blades, handless and needless scissors etc.
7. Draping operation areas.
8. Terminology and technical words used in theatre.
9. Operating microscopes:
   Principle, parts, use and care.
10. Fibre optic endoscopy: Introduction, types, procedure and care of the instrument.
11. Introduction to general instrument, scalpel, scissors, forceps, knives, hooks, retracters etc. The instruments types, sizes and materials.
12. Abdominal surgery: Tabratomy set, types of incisions, gall balder, hernia appendectomy etc.
13. The patient, procedure, instruments used in each operation will be taught and operation on breast.
14. ENT operations:- Definitions of operations, position of the patient, general instrument used in each operations.
15. Neuro-surgical Operations:- Positions of the patient, general instruments used in each operation.
16. Ophthalmic Operations
17. Orthopaedic Operations
18. Urological Operations
19. Thoracic Surgery
20. Gyneacological Operations
21. Plaster of Paris Techniques
22. Radioactive material used in theatre:- Care, use, safety precautions, and disposal.

ANAESTHESIA AND PATIENT CARE

1. Introduction to anesthesia.
2. Physics and chemistry of anesthesia.
3. Anesthetic agents, types and uses.
4. Chemicals and gases.
5. Physiology of Respiration
6. Stages of anesthesia.
7. Patient preparation before and after anesthesia.
8. Patient management during anesthesia.
9. Anesthesia Machine
   Pre and postoperative care of patients

BOOK RECOMMENDED
OPERATIVE TECHNIQUES BY Dr. S. DAS, JAPEE.
SURGERY BY Dr. KUMAR (JAPEE)
BOOK OF SURGICAL INSTRUMENTS BY D

WEIGHTAGE OF VARIOUS SECTION OF THE SYLLABUS

PART - I

S.No	Subject	Part / Class	Section	Weightage	Total Marks
1	Basic Medical Sciences (Anatomy & Physiology)	XI	I – Cell, Basic Tissue, Lymphatic System, Skin, Special Senses. II – GIT, Respiratory System, Cardiovascular System, Skeletal System & Joints. III – Nervous System, Reproductive System, Urinary System, Metabolism.	33 % 33% 33%	75
	Practical				25
2	Applied Sciences (Physics & Chemistry)	XI	Physics I – (1-4) Science, Measurement, Mechanic & Gravity. II – (5-8) Work & Energy, Machines, Density, Pressure. III – (9-11) Heat, Light & Sound IV – (12-14) Electricity and Magnetism V – (16) Electromagnetic Radiation Chemistry VI – (17- 19) Composition, Reactions, Gas Laws VII – (20-21) Water & Solutions VIII – (22-24) Acid, pH, Electrolytes IX – (25-28) Amines, Proteins, Carbohydrates, Lipids.	50 % 10 % 10 % 10 % 10 % 10 % 50 % 10 % 10 % 10 % 10 %	50
	Practical		As per list given		25
3	Operation Theatre Techniques - I	XI	I – Sterilization and Supplies II – Microbiology III – O. T. Equipment	30 % 40% 30%	75
	Practical		As per above		50
4	English	XI	As per approved syllabus for HSSC – I		100
5	Urdu	XI	As per approved syllabus for HSSC – I		100
6	Islamiyat	XI	As per approved syllabus for HSSC – I		50

WEIGHTAGE OF VARIOUS SECTION OF THE SYLLABUS

PART II

S.No	Subject	Part / Class	Section	Weightage	Total Marks
1	Basic Medical Sciences (First Aid & Public Health)	XII	I – Topic 1, 2, 33 – 37 (First Aid), Topic 1 & 2 (Public Health) II – FA Topics 7 – 15, 18, 21 – PH Topics 3 – 17 & 40 III – FA Topics 17, 20, 22, 23, & 32 -- PH Topics 18 -27 IV – FA Topics 24 –26, 29 – 31 – PH 30 – 39	25 % 25% 25% 25%	75
	Practical		Same as above		25
2	Applied Sciences (Computer & Patient Safety)	XII	Computer I – Topics 1- 6 II – Topics 7 - 12 III – Topics 13 – 18 IV – Topics 19 – 24 V – Topics 25 – 30 Patient Safety VI – Electrical Safety VII – Fire and Explosion VIII – Surgical Diathermy IX – Radiation Safety X – Infection in Hospital	50 % 10 % 10 % 10 % 10 % 10 % 50 % 20 % 02 % 08 % 15 % 05%	75
3	Operating Theatre Techniques - II	XII	I – Regional Anatomy II – Surgical Techniques III – Anesthesia and patient care.	30 % 50% 20%	75
	Practical		Same as above		50
4	English	XII	As per approved syllabus for HSSC – I		100
5	Urdu	XII	As per approved syllabus for HSSC – I		100
6	Pak Study	XII	As per approved syllabus for HSSC – I		50