

**TWO YEARS POST MATRIC TEACHING  
PROGRAM OF PARAMEDICS**

**F. Sc. (DENTAL HYGIENE)**

**CURRICULUM WING  
MINISTRY OF EDUCATION, ISLAMABAD**

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## **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. The development of the 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. The present curriculum also passed through many phases of development. Initially it was developed by consultants of Pakistan Institute of Medical Sciences (PIMS) during 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. Level. 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 IBCC.

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 during May 2004. The Committee has approved this draft.

Curriculum development is a continuous and on going process. Efforts have been 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 in 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.

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Islamabad.

## ACKNOWLEDGEMENT

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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.

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Date:- 12<sup>th</sup> June,2004.

## **AIMS AND OBJECTIVE OF THE COURSE**

1. Dental Hygienist should be able to do the following jobs efficiently:-
  - a. Removal of the calculus (Scaling)
  - b. Cleaning and polishing teeth.
  - c. Topical application of the teeth with sodium or stenuous fluoride, or similar prophylactic solutions.
  - d. Extraction of deciduous teeth under spray of Ethylchlorid or any other solution under the supervision of a dentist.
  - e. Individual and group instruction on oral hygiene and dental health education in school and else-where.
  - f. Preparation for operation and layout of instruments and equipment for all dental procedures.
  - g. Routine maintenance of equipment and instruments.
  - h. Assisting at the chair side during all dental procedure (four hands dentistry).
  - i. Dental ethics, Rules and Regulations of the Health service.
  - j. Recording and charting, including medical and dental history under the Dental Surgeon instruction.
  - k. Should know about the application of sealants and applicators.
  
2. **RECEPTION CLERICAL/SECRETARIAL DUTIES AND ADMINISTRATIVE DUTIES:-**
  - a. Reception of patients and arranging appointments.
  - b. General supervision of cleanliness and maintenance of the operatory.
  - c. Filling and maintenance of patients records.
  - d. Correspondence, management of recall system.
  - e. Maintenance of dental supplies, store keeping and ordering supplies.
  - f. Knowledge of dental ethics, law relating to dentistry.
  
3. To prepare the students to become an efficient Medical Technician in Dental medicine (Dental Hygienist) well versed with the techniques and background analyses, in all the branches of the Dental medicine. 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 Dental laboratory.
  
4. 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.

## DENTAL HYGIENE

Name of Subject	Theory / Practical	Topics Included	Marks
Part I & II-			
Basic Medical Sciences	Theory	Anatomy, Physiology, Public Health and First Aid	150
Dental Techniques	Theory	Histology, Systems of body, Microbiology, Immunity, Sterilization, Gen. Pathology. Dental Techniques.	150
	Practical	As per above	100
Applied Sciences	Theory	Physics, Chemistry, Computer & Hospital Safety	100
	Practical	Physics, Chemistry related.	50

## DENTAL HYGIENE

Name of Subject	Theory / Practical	Topics Included	Marks
Part I			
Basic Medical Sciences	Theory	Anatomy, Physiology	75
	Practical	As above	25
Dental Techniques	Theory	Histology, Systems of body, Microbiology, Immunity, Sterilization, Gen. Pathology.	75
	Practical	As per above	50
Applied Sciences	Theory	Physics, Chemistry	50
	Practical	Physics, Chemistry related.	25

## DENTAL HYGIENE

Name of Subject	Theory / Practical	Topics Included	Marks
Part – II			
Basic Medical Sciences	Theory	Public Health and First Aid	75
	Practical	First aid and Field Visits	
Dental Techniques	Theory	Dental Techniques.	75
	Practical	As per above	50
Applied Sciences	Theory	Computer & Hospital Safety	75

## DENTAL HYGIENE PART – I

### HOURS DISTRIBUTION PER WEEK

S.No.	Subject	Theory	Practical	Total
1	DENTAL HYGIENE Technique-I	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	DENTAL HYGIENE 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	DENTAL HYGIENE 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	DENTAL HYGIENE 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 microorganisms
- 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, Mammary 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 cricoid.

### **The Joints**

5. All joints and their movements
6. 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)/ Digestion 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
- Pancreatic 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 crowding 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.

# **DENTAL HYGIENE**

## **PART - I**

## **REGIONAL ANATOMY:**

- a. A brief outline of the systems of the body with general observation concerning its structure,
- b. A detailed knowledge of the surface features of the oral cavity
- c. The lymphatic drainage of the head and neck,
- d. A general knowledge of the salivary glands, the muscles of facial expression and mastication together with the temporomandibular joint, the facial skeleton and mandible as related to recognition of part of the surface
- e. An examination material illustrating the respiratory, cardio-vascular and alimentary system,
- f. A consideration of neurology sufficient to recognize the principles involved in regional anaesthesia.

### **B. DENTAL ANATOMY AND HISTOLOGY**

- i) A detailed account of the deciduous and permanent teeth together with their dates of eruption, formation of crown and roots, common variations and position in the jaws.
- ii) The histology of enamel dentine, pulp, cementum, periodontal, membranes and gingivae.
- iii) A general account of the development of the tooth & its supporting structures including the mechanism of tooth eruption.

### **C. PATHOLOGY AND MICROBIOLOGY**

- a. Mechanism of inflammation, specially occurring in the soft and hard dental tissue.
- b. Common oral pathological conditions.
- c. Knowledge of the nature and types of micro-organisms associated with dentistry and their part in disease process.
- d. Infections in and around the oral cavity, common pathological conditions.
- e. Pathology, Bacteriology and Parasitology (Reaction of injury, nature of injurious agents, sign and symptoms. Acute inflammation and suppuration, Immunity, Pyrexia, Shock, syncope, repair, granulation, organization, hypertrophy, Hyperplasia, degeneration, necrosis).

### **D. STERILIZATION**

- a. The principle of disinfection and sterilization.
- b. Detailed knowledge and understanding of methods of sterilization and disinfection for various instruments and materials used in dentistry.
- c. Care of instruments and materials during and after sterilization.
- d. Principles of avoidance of cross infection.

## **E. NUTRITION**

- a. Constituents of diet, protein, fat, carbohydrates, minerals are vitamins. Nutritional deficiency, diet affecting teeth.
- b. Dental problem of mother during pregnancy. Need of dental attention to mother and child.

## **CARING OF PATIENT**

1. Preparation of the patient.
2. Checking the treatment and equipment.
3. Sharpening of instruments.
4. Appointments.
5. Patient requiring special attention.
  - a. Oral surgery cases.
  - b. Orthodontic patient.
  - c. Cleft palate patient.
  - d. The handicapped.
  - e. Scaling and polishing.

## **ORAL MEDICINE AND PHARMACOLOGY**

The patient's medical history:

- Conditions, which alter the Dental Hygienist's treatment, plan.
- Pregnancy.
- Hepatitis.
- Bleeding Disorder.
- Drugs in Dental use.
- Pain relieving Drugs.
- Anti microbial Drugs.
- Agents used to control bleeding.

## **EMERGENCIES IN THE DENTAL SURGERY**

- a. Responsibilities of the Dental Hygienist in an emergency.
- b. Emergencies and their treatment.
  - Fainting
  - Cardiac arrest.
  - Coronary Thrombosis.
  - Respiratory Obstruction.
  - Epileptic fit.
  - Diabetic crises.
- c. Management of unconscious patient.  
Instruments and equipment.

## **IDENTIFICATION AND CARE OF INSTRUMENTS AND EQUIPMENT USED IN DENTAL SURGERY**

- a. Care of hand pieces.
- b. Sharpening of instruments.
- c. Care of dental chair, unit, evacuator air compressor, ultra sonic scalar sterilizer, endodontic kit.

**DENTAL HYGIENE**  
**PART - II**

## **1. DENTAL CARIES - CONTROL AND PREVENTION**

- a. Definition of Dental caries, teeth affected, order and surface types of caries.
- b. Epidemiology - Age, Sex distribution, Genetics.
- c. Etiology theories, diet, acid attack, control and prevention, fluoride, enzyme inhibitors.
- d. Diet control.
- e. Tooth pastes.
- f. Natural hygiene.
- g. Fluorides, Fluoridation. Prophylactic odontotomy.

## **2. DENTAL HEALTH EDUCATION**

- h. Meaning of Health, positive health, dental health, dental education.
- i. Objective and pre-requisites.
- j. Responsibility for dental education.
- k. Chair side talks, lectures and group talks, exhibitions, health weeks, window displays, film shows, press radio and television articles.
- l. Discussions and seminars.

## **3. LOCAL ANAESTHESIA**

- m. Definition. Used by surgeon, used by dental auxiliary.
- n. Instruments, syringes, hubs, needles.
- o. Local anaesthetic solutions- epinephrin, procaine, lignocaine, topical anaesthetics (all drugs in brief outline).
- p. Types of local anaesthesia, block infiltration, Anatomical distribution of nerves for anaesthesia.
- q. Site and location of injection, technique, contra-in-dications for use of local
- r. and general anaesthetics. Post injection complications.

## **4. RADIOGRAPHY**

Types of X-Ray Indications, for use in dentistry. Dangers and precautions, types of intra-oral films. Bitewing and extra-oral Technique of processing, developing and amounting records. Practical work based on above.

## **5. ORTHODONTICS**

Definition: Brief outline of growth of skull and mandible. Eruption dates. Paths of eruption. Deciduous, Mixed & adult dentition. Normal arches. Roles of muscle in normal development. Brief outline of Angle's classification, skeletal classification. Aetiology of malocclusion. Local and general factors. Habit effect of premature loss of primary teeth, Permanent teeth. Brief account of methods of treatment by removable appliances. Fixed appliances imitations of treatment. Limitations of prevention.

## **6. PREVENTIVE ASPECT**

### **Oral Hygiene:**

The field of operation macroscopic appearance of teeth, gingivae sulcus and epithelial attachment in the normal healthy mouth. Deposits and stains, their common location in the mouth. Factors influencing accumulation and retention. Classification and stains by location and by origin, appearance and treatment of yellow stains, green, black line stain metallic stains arising from degeneration of the pulp and stain caused by filling materials and drugs. Enamel hypoplasia, dental plaque, hard deposits, supragingival and subgingival calculus. Origin and composition of different deposits. Practical procedures for prophylactic removal of deposits. Possible sequelae of failure of removal of stains and deposits and effects on the teeth, supporting tissue and general health, Gingivitis, Instrumentation and description of the instruments included and their use. Maintenance of instruments. Polishing instruments and rotary instruments. Selection of instruments and their use. Maintenance of instruments. Polishing procedures Scaling procedures order of scaling, use of individual instruments, use of brushed rubber cups, etc. The procedures of oral inspection and prophylaxis. Natural and Artificial prophylaxis, self cleansing, food, tooth brushing techniques, and additional cleansing methods. Instructing the patient in personal and oral hygiene. Practical instruction in the use of scaling and polishing of some of the more advanced periodontal conditions which are treated by the dental surgeon.

## **7. PLAQUE, CALCULUS, STAINS**

Plaque formation, composition calculus, composition, type, significance. Stain, Definition Extrinsic, intrinsic stains. Indices, oral hygiene index. Plaque index.

## **8. CHRONIC PERIODONTAL DISEASE**

Classification of gingival and periodontal condition chronic periodontal disease. Epidemiology of periodontal disease. Prevention Juvenile periodontal chronic degenerative gingivitis.

## **9. ACUTE GINGIVAL AND PERIODONTAL DISEASE AND OTHER DISEASES OF ORAL MUCOSA**

Acute ulcerative gingivitis. Cancrum oris. Acute herpetic gingivostomatitis, Acute non-specific gingivitis, periodontal abscesses; stomatitis Aphthous ulceration, Candidiasis cold sores oral keratinosis, oral tumour.

## 10. DENTAL ABNORMALITIES

Attrition, Abrasion Erosion, Developmental abnormalities.

## 11. RESTORATIVE DENTISTRY

- a. Knowledge of the restoration of teeth by various fillings in-lays crowns and bridges.
- b. Root canal therapy and apicoectomy.
- c. Treatment therapy and apicoectomy.
- d. treatment of periodontal disease.
- e. Prosthetic (Partial and full denture and their care including general understanding of the role of Dental Technician.
- f. Knowledge of surgical stages of the above procedures.

## 12. ORAL AND MAXILLO-FACIAL SURGERY

- a. Minor oral surgery, extraction of teeth, surgical removal of teeth and other oral surgical procedures. Pre and post operative care and instruction.
- b. Maxilla facial surgery: Oral diseases requiring major surgery, large cysts, tumours including maxilla facial injuries and their treatment. Pre and post operative care and instruction.
- c. Identification, **care and** maintenance of instruments, appliances and apparatus used in minor and major oral maxilla facial surgery.
- d. Usage of instruments in different surgical operations.

## 13. PROBLEM PATIENTS

Care and handling of:

- a. Mentally handicapped.
- b. Geriatrics.
- c. Nervous patients, non-cooperative patients.
- d. Children.
- e. Here lip and cleft patients.

## 14. HEALTH AND SAFETY AT WORK

General knowledge of:

- a. Hazards of high speed instruments in dental surgery and their precautions.
- b. Fire precautions.
- c. Surgery hazards.
- d. First Aid.
- e. Welfare of patients.
- f. General duties of Dental surgery assistant.
- g. Gases volatile and inflammable material/medicines.
- h. Hazards of electrostatic current, diathermy, electro cautery coagulation in operatory.

# Syllabus for the Practical for Dental Hygienist

1. Dental Surgery and its various components.
2. Dental Chair and unit
  - i. Function / operation.
  - ii. Maintenance.
  - iii. Common hazards / how to cope up.
3. Sterilisation
  - i. Idea.
  - ii. Methods of sterilisation.
    - Physical.
    - Chemical.
4. Auto Claving  
(1 week duty for each student in Operation Theatre)
5. Identification of various dental instruments and their assignments on Trolley.
6. Examination instruments.
7. Recording of data.
8. Scaling instrument and their arrangement on dental tray / trolley.
  - Use on model
9. Polishing instruments and equipment.
  - Slow and High speed hand pieces.
  - Polishing materials
10. Filling instruments and metri and retainer.
11. Rotary Instruments.
  - a. Disposable , Burs FG, slow speed , Stones, polishing cups etc.
12. Endo-dentonic Instruments.
13. Dental Materials in general.
14. Minor oral surgery instruments, arrangement & stitching armamentarium.
15. Scaling procedure.
  - Manual Scaling.
  - Manual scaling (35 cases to be completed).
  - Sharpening of instruments.

- Usage and precautions.
  - Proper positing of patient with respect to operator and operation.
  - Procedure.
16. Ultra sonic scalar and scaling. (35 cases to be completed).
- Introduction to machine indication and contra indication with respect to types of machine.
  - Procedures.
17. Gingival dressing materials with respect to gingival packs.
18. Polishing procedure.
19. Patients requiring special attention.
- A. Physically Handicapped.
  - B. Mentally, handicapped cases.
  - C. Orthodontics.
  - D. Oral surgery - attendance to O.T.

## **PREVENTION**

20. Plaque control
- a. Disclosure of plaque.
  - b. Dental Brushes of various types and technique of Brushing and timings.
  - c. Inter dental cleaning with floss.
21. Chemical plaque control.
- Chlorhexidene Mouth washes.
  - Fluoridation (topical application of fluorides)
  - Identification of caries and proper referred to dental surgery.
  - Fissure sealants.
  - Oral lesions.
22. School Visits for Dental Health Education

## **LIST OF RECOMMENDED BOOKS**

1. Carrana = F.A.
2. Peter son's. = Clinical Dental Hygiene C.V. Mosby co.
3. Steel P.F. Dimensions of Dental Hygiene
4. Wilkins E.M. Clinical Practice of Dental Hygienist, Lea of Febiger.
5. Pattison A and Behrans J The Detection and Removal of Calculus  
Preston Publishing

## 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.	33 %	75
			II – GIT, Respiratory System, Cardiovascular System, Skeletal System & Joints.	33%	
			III – Nervous System, Reproductive System, Urinary System, Metabolism.	33%	
	Practical				25
2	Applied Sciences (Physics & Chemistry)	XI	Physics	50 %	50
			I – (1-4) Science, Measurement, Mechanic & Gravity.	10 %	
			II – (5-8) Work & Energy, Machines, Density, Pressure.	10 %	
			III – (9-11) Heat, Light & Sound	10 %	
			IV – (12-14) Electricity and Magnetism	10 %	
			V – (16) Electromagnetic Radiation	10 %	
			Chemistry	50 %	
			VI – (17- 19) Composition, Reactions, Gas Laws	10 %	
			VII – (20-21) Water & Solutions	10 %	
			VIII – (22-24) Acid, pH, Electrolytes	10 %	
	IX – (25-28) Amines, Proteins, Carbohydrates, Lipids.	10 %			
	Practical		As per list given		25
3	Dental Hygiene - I	XI	I – Regional Anatomy	15%	75
			II- Dental Anatomy & Histology	05%	
			III- Pathology & Microbiology	10%	
			IV- Sterilization	10%	
			V- Nutrition	05%	
			VI- Caring of Patient	15%	
			VII- Oral Medicine & Pharmacology	10%	
			VIII- Emergency in the Dental Surgery	15%	
			IX-Identification & Care of Instrument	15%	
	Practical		Same as above		50
4	English	XI	As per approved syllabus for HSSC – I		100
5	Urdu		As per approved syllabus for HSSC – I		100
6	Islamiyat		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)	25 %	75
			II – FA Topics 7 – 15, 18, 21 – PH Topics 3 – 17 & 40	25%	
			III – FA Topics 17, 20, 22, 23, & 32 -- PH Topics 18 -27	25%	
			IV – FA Topics 24 –26, 29 – 31 – PH 30 – 39	25%	
	Practical		Same as above		25
2	Applied Sciences (Computer & Patient Safety)	XII	Computer	50 %	75
			I – Topics 1- 6	10 %	
			II – Topics 7 - 12	10 %	
			III – Topics 13 – 18	10 %	
			IV – Topics 19 – 24	10 %	
			V – Topics 25 – 30	10 %	
			Patient Safety	50 %	
			VI – Electrical Safety	20 %	
			VII – Fire and Explosion	02 %	
			VIII – Surgical Diathermy	08 %	
			IX – Radiation Safety	15 %	
X – Infection in Hospital	05%				
3	Dental Hygiene - II	XII	I – Dental Caries – Control & Prevention	10%	75
			II. Dental Health Education	05%	
			III. Local Anaesthesia	02%	
			IV. Radiography	03%	
			V. Preventive Aspect.	30%	
			VI. Plaque Calculus , Stains	10%	
			VII. Chronic Periodontal disease.	05%	
			VIII. Acute Gingival & Periodontal disease & Oral Mucosa.	10%	
			IX. Dental Abnormalities	02%	
			X. Restorative Dentistry.	03%	
			XI. Oral & Maxilla facial Surgery	05%	
			XII. Problem Patients.	05%	
			XIII. Health and Safety at work .	10%	
				Practical	
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