**CURRICULUM**

**BS DENTAL TECHNOLOGY**

# INSTITUTE OF PARAMEDICAL SCIENCES KHYBER MEDICAL UNIVERSITY PESHAWAR

**CURRICULUM FOR BS DENTAL TECHNOLOGY**

### Institute mission:

* IPMS is committed to provide window to all those students who aspire to become highly qualified health professionals and enable them to work as professionals. The IPMS KMU will endeavor to provide highly committed technologist to healthcare system ofKPK.

#### Aims of BS Dental Technology:

* To produce highly knowledgeable and skilled dental technologists through training in dental clinics and dental laboratories under supervision of qualified faculty.
* To meet the future Dental care needs of the community and provision of

trained dental Technology teachers andresearchers.

#### Objectives:

1. Toperformaneffectiveroleinthefieldofdentistrytoimprovethecommunitydentalhealth.
2. Toprovidedentaltherapist/technologistsastatusandrecognitioninthedentalcaredelivery systemthroughimprovingtheircapabilityandincreasingawarenessoftheirresponsibilities.
3. To assist Maxillofacial surgeons duringsurgeries
4. To perform effective role in delivering the conservative treatment for the primaryteeth
5. ToenablethedentalTechnologiststofabricateprosthodonticappliances,crownandbridges, orthodontic appliances and surgical splintsetc.
6. To provide primary dental care services to thecommunity.
7. ToenablethedentalTechnologistperformtheexodontiaofprimaryteethandsimplepermanent teeth.
8. To enable the dental Technologist to perform the routine conservative treatment of permanent teeth.
9. Toprovideplatformtoconductresearchintheirrespectivefieldinpursuanceofexcellence.

### FRAME WORK FOR B.S. Dental Technology (4 Year Program)

* Total numbers of Credit hours 130 (HEC recommended:124-133)

|  |  |  |
| --- | --- | --- |
|  | Duration | 4 years |
|  | Semesterduration SemestersCourse LoadperSemester | 16-18 weeks815-18 Credit hours |
|  | Number of coursesper semester | 5-8 |

#### SCHEME OF STUDIES FOR 4 YEAR B.S. DENTAL

|  |  |  |  |
| --- | --- | --- | --- |
| **Semester/Year** | **Name of Subject** | **CODE** | **Credits** |
| **First** | MEDICAL BIOCHEMISTRY-I | PMS-601 | 4(3+1) |
|  | HUMAN PHYSIOLOGY-I | PMS-602 | 4(3+1) |
|  | HUMAN ANATOMY-I | PMS-603 | 4(3+1) |
|  | ENGLISH-I | PMS-604 | 2(2+0) |
|  | PAK STUDIES | PMS-605 | 2(2+0) |
|  | COMPUTER SKILLS | PMS-606 | 2(1+1) |
|  |  |  | **18** |
| **Second** | MEDICAL BIOCHEMISTRY-II | PMS-607 | 4(3+1) |
|  | HUMAN PHYSIOLOGY-II | PMS-608 | 4(3+1) |
|  | HUMAN ANATOMY-II | PMS-609 | 4(3+1) |
|  | ENGLISH-II | PMS-610 | 2(2+0) |
|  | ISLAMIC STUDIES | PMS-611 | 2(2+0) |
|  |  |  | **16** |
| **Third** | GENERAL PATHOLOGY-I | PMS-612 | 3(2+1) |
|  | PHARMACOLOGY-I | PMS-614 | 3(2+1) |
|  | COMMUNICATION SKILLS | PMS-615 | 3(2+1) |
|  | MEDICAL MICROBIOLOGY-I | PMS-613 | 3(2+1) |
|  | DENTALMATERIALS-I | DEN-601 | 3(2+1) |
|  | ORAL HISTOLOGY | DEN-602 | 3(2+1) |
|  |  |  | **18** |
| **Fourth** | BEHAVORAL SCIENCES | PMS-619 | 2(2+0) |
|  | TOOTH MORPHOLOGY | DEN-603 | 3(2+1) |
|  | DENTAL MATERIALS-II | DEN-604 | 3(2+1) |
|  | PERIODONTOLOGY | DEN-605 | 3(2+1) |
|  | ORAL PATHOLOGY AND ORALMEDICINE-I | DEN-606 | 3(2+1) |
|  | PHARMACOLOGY II | PMS-616 | 3(2+1) |
|  |  |  | **17** |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Fifth** | PARTIAL DENTURE PROSTHODONTICS | DEN-607 | 3(2+1) |
|  | ORAL PATHOLOGY AND ORAL MEDICINE-II | DEN-608 | 3(2+1) |
|  | MINOR ORAL SURGERY-I | DEN-609 | 3(2+1) |
|  | COMMUNITY & PREVENTIVE DENTISTRY | DEN-610 | 3(2+1) |
|  | FUNDAMENTALS OF ORAL AND MAXILLOFCIAL RADIOLOGY | DEN-611 | 3(2+1) |
|  | OPERATIVE DENTISTRY | DEN-612 | 3(2+1) |
|  |  |  | **18** |
| **Sixth** |  |  |  |
|  | BIOSTATISTICS | PMS-622 | 3(2+1) |
|  | RESEARCH METHODOLOGY | PMS-621 | 3(2+1) |
|  | ENDODONTICS | DEN-613 | 3(2+1) |
|  | COMPLETE DENTUREPROSTHODONTICS | DEN-614 | 3(2+1) |
|  | ORTHODONTICS-I | DEN-615 | 3(2+1) |
|  | PAEDIATRIC DENTISTRY | DEN-616 | 3(2+1) |
|  |  |  | **18** |
| **Seventh** | ORTHODONTICS-II | DEN-617 | 3(2+1) |
|  | FIXED PROSTHODONTICS | DEN-618 | 3(2+1) |
|  | FUNDAMENTALS OF IMPLANTOLOGY | DEN-619 | 3(2+1) |
|  | FUNDAMENTAL OF INFECTIONCONTROL | PMS-624 | 2(1+1) |
|  | MEDICAL EMERGENCIES IN DENTAL PRACTICE | DEN-620 | 3(2+1) |
|  | MINOR ORAL SURGERY-II | DEN-621 | 3(2+1) |
|  |  |  | **17** |
| **Eight** | RESEARCH PROJECT | PMS-626 | 6 |
|  | SEMINAR | PMS-627 | 1 |
|  | BIOETHICS | PMS- 625 | 2(2+0) |
|  | MAXILLOFACIALPROSTHODONTICS | DEN-622 | 3(2+1) |
|  |  |  | **12** |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **TOTAL CREDIT HOURS** |  | **134** |

##### Total credit hours= 134

**HEC recommendation=124-136**

**1st SEMESTER COURSES**

* 1. **MEDICAL MEDICAL BIOCHEMISTRY-I**
	2. **HUMANPHYSIOLOGY-I**
	3. **HUMANANATOMY-I**
	4. **ENGLISH-I**
	5. **PAKSTUDIES**
	6. **COMPUTERSKILLS**

 **PMS-601 MEDICAL BIOCHEMISTRY-I Credit Hours:4(3+1)**

### Course objectives:

* + To understand the chemical composition, biochemical role, digestion and absorption of macro and micro molecules of thecell.
	+ To understand different biochemical reactions incell.
	+ To understand mechanism of action ofhormones.

**Course contents:**

Acids, bases, pH and buffers, Biochemical composition and functions of the cell membrane, Transport across the cell membrane, Carbohydrates: Introduction, structure, function, digestion and absorption, Amino acids and proteins: Introduction, structure, function, digestion and absorption, Lipids: Introduction, structure, function, digestion and absorption, Vitamins and minerals, Fluid, electrolyte and acid base balance, Cell signaling and hormone action, Body secretions: Composition and function of saliva, gastric acid (HCL), pancreatic juice, bile, hormones and GI functions

**Practicals:**

1. Blood sample collection for biochemicalanalysis
2. Preparation and calculation ofSolutions
3. Principles of MEDICAL BIOCHEMISTRY analyzers(spectrophotometer, flamephotometer)
4. Determination of Cholesterol, Tg, HDL, LDL, sugar, calcium and phosphorus inblood

**Recommended Books**

* + Harper’s MEDICAL BIOCHEMISTRY Robert K. Murray, Daryl K. Granner 28th edition2009
	+ MEDICAL BIOCHEMISTRY by Dr. U. Satyanarayana, UChakrapani Lehninger Principles of MEDICAL BIOCHEMISTRY,6E

Marks’ Essentials of Medical MEDICAL BIOCHEMISTRY A Clinical Approach, Second Edition

 **PMS-602 HUMANPHYSIOLOGY-I Credit Hours:4(3+1)**

**Course Objectives:**

* + - To understand the basic concepts of physiology beginning from the cell organization to organ systemfunction.
		- To understand the organization of cell, tissue organ and system with respect to theirfunctions.
		- To Understand the physiology of Respiration, G.I.T, Urinary system and Endocrinesystem

**Course contents:**

Functional organization of human body, Mechanism of Homeostasis, Cell structure and its function, function of different Tissue, Functions of the skin, , Types and function of muscle, Neuromuscular junction, functions of the endocrine glands, Breathing Mechanism, Exchange of respiratory Gaseous, Transport of respiratory gases, Function of different part of Digestive system, Function of liver and pancreas, Digestion and Absorption in Gastrointestinal tract, Patho-Physiology of Gastrointestinal Disorders, Formation of Urine by the Kidney, Glomerular filtration, Renal and associated mechanism for controlling ECF, Regulation of Acid-Base Balance, Male Reproductive System ( Male ), Prostate gland, Spermatogenesis, Female Reproductive System, Menstrual Cycle and Pregnancy and parturition, Mammary Glands and Lactation and FertilityControl

**Practicals:**

1. Introduction tomicroscope
2. Bleeding time
3. Clottingtime
4. WBCscount
5. RBCs count
6. Platelets count
7. Reticulocytes count

**Recommended Books**:

* + Essentials ofMedicalPhysiology K Sembulingam, Prema Sembulingam Sixth Edition2013
	+ ConcisePhysiology Dr. Raja Shahzad 1st Edition2012
	+ Guyton And Hall Textbook Of Medical Physiology John E. Hall, Arthur C. Guyton Professor and Chair 2006
	+ Ross and Wilson Anatomy and Physiology in Health And Illness 11th Edition Anne Waugh, Allison Grant2010

**PMS-603 HUMANANATOMY-I Credit Hours:4(3+1)**

**Course Objectives:**

* + - To understand the basic concepts of anatomy beginning from the cell organization to organsystem function
		- To understand the basic concepts of general anatomy including skeleton and musculoskeleton.
		- To Understand the anatomy of Thorax Abdomen andpelvis

**Course contents:** Musculo skeletal system(Axial and Appendicular),Axial Skeleton, Different bones of human body, Axial and Appendicular Skeleton, Classification on the basis of development, region and function, General concept of ossification of bones, parts young bone, Blood supply of long bones. Joints Structural Regional and functional classification of joints,Characteristics of synovial joints, Classification of synovial joints, Movements of synovial joints. Muscular System Parts of muscle Classification of muscles (skeletal, Cardiac, smooth) Thoracic wall: Muscles of thorax, Surface Anatomy, Trachea, lungs, pleura, mammary glands (breast), Heart and thoracic vessels. Thoracic cavity: Mediastinum, Lungs, bronchi, blood supply and lymphatic Abdominal wall: Skin, nerve and blood supply, Muscles of anterior abdominal wall. Abdominal cavity: General Arrangement of the Abdominal Viscera, Peritoneum, Omenta, mesenteries, Stomach, blood, nerve, lymphatic supply, Small intestine, blood, nervous and lymphatic supply, Large intestine: blood nerve and lymphatic supply. The pelvic wall: Anterior, posterior wall, diaphragm. Pelvic cavity: Ureters, urinary bladder Male genital organs, Female genital organs, Muscles of pelvic region, blood supply, nerve supply.

**Practicals:**

1. Study Axial and Appendicular skeleton on human skeletalmodel.
2. Study musculoskeletal system on human musculoskeletalmodel.
3. Study organs of specialsenses.
4. Study and understand anatomy of Thorax, Abdomen and Pelvisthrough:
5. HumanModels
6. Videodemonstration.

**Recommended Books:**

* + Ross and Wilson Anatomy and Physiology in health and illness 11th Edition WaughGrant.
	+ Clinical Anatomy (By regions) 9th edition, Richard S.Snell.

**Reference books**:

* + Netter Atlas of human anatomy 5th EditionSaunders.
	+ Gray’s Anatomy for students 2nd Edition Drake VogalMitcell.

 **PMS-604 ENGLISH–I Credit Hours:2(2+0)**

**Course Objective:**

* + To enable the students to meet their real life communicationneeds
	+ To enhance language skills and develop criticalthinking

**Course Contents:**

Vocabulary Building Skills: Antonyms, Synonyms, Homonyms, One word Substitute, Prefixes and suffixes, Idioms and phrasal verbs, Logical connectors, Check spellings, Practical Grammar & Writing Skill: Parts of Speech, Tenses, Paragraph writing: Practice in writing a good, unified and coherent paragraph, Précis writing and comprehension, Translation skills: Urdu to English, Reading skills: Skimming and scanning, intensive and extensive, and speed reading, summary and comprehension Paragraphs, Presentation skills: Developing, Oral Presentation skill, Personality development (emphasis on content, style and pronunciation)

**Recommended books:**

* + Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 2. Third edition.Oxford University Press 1986. ISBN 0 19 4313506.
	+ Reading. Advanced. Brian Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1991. ISBN 0 19 4534030.

**PMS-605 Pakistan Studies(Compulsory) CreditHours:2(2+0)**

### Course Objectives:

* + To develop vision of Historical Perspective, Government, Politics, Contemporary Pakistan, ideological background ofPakistan.
	+ To study the process of governance, national development, issues arising in the modern age and posing challenges toPakistan.

**Course Contents:**

Historical Perspective: Ideological rationale with special reference to Sir Syed Ahmed Khan, Allama Muhammad Iqbal and Quaid-i-Azam Muhammad Ali Jinnah, Factors leading to Muslim separatism, People and Land, Indus Civilization, Muslim advent, Location and Geo-Physical features. Government and Politics in Pakistan, Political and constitutional phases:1947-58,1958-71,1971-77,1977-88,1988-99,1999 onward Contemporary Pakistan: Economic institutions and issues, Society and social structure, Ethnicity, Foreign policy of Pakistan and challenges, Futuristic outlook ofPakistan

**Books Recommended:**

* + Akbar, S. Zaidi. *Issue in Pakistan’s Economy.* Karachi: Oxford University Press,2000.
	+ Mehmood, Safdar. *Pakistan Kayyun Toota,* Lahore: Idara-e-Saqafat-e-Islamia, Club Road,nd.
	+ Amin, Tahir. *Ethno - National Movement in Pakistan,* Islamabad: Institute of Policy Studies, Islamabad.
	+ Afzal, M. Rafique. *Political Parties in Pakistan,* Vol. I, II & III. Islamabad: National Institute of Historical and cultural Research,1998.

**PMS-606 COMPUTERSKILLS CreditCourse:2(1+1)**

##### Course objectives:

* + - To understand the basic ofcomputer
		- To utilize the MS office, internet andemail

##### Course Contents:

Introduction to Computer and Window XP/7; MS Office 2007 (Word, Excel, PowerPoint); Internet access and different data bases available on the internet; Email.

##### Recommended Books:

* + - Computer science by Muhammad Ashraf, edition 1st2010

**2nd SEMERTER COURSES**

### MEDICAL BIOCHEMISTRY-II

#### HUMANPHYSIOLOGY-II

* **HUMANANATOMY-II**
* **ENGLISH-II**
* **ISLAMICSTUDIES**

**PMS-607 MEDICAL BIOCHEMISTRY-II Credit Hours:4(3+1)**

#### Course objective:

By the end of this course the students of BS technology will be able to:

* + Discuss the basic concept of biomolecules and its metabolism in humanbody
	+ Describe the significance of various enzymes and hormones in humanbody
	+ Demonstrate various enzymes and hormones on MEDICAL BIOCHEMISTRY analyzer and interpret it result for the diagnosis and monitoring

**Content:**

Carbohydrates metabolism (Glycolysis, Glycogenolysis, Gluconeogenesis, Glycogenesis, Pentose phosphate pathway, Fermentation and ethanol metabolism, Krebs cycle, ETC, Cori cycle, Glucose alanine cycle), Protein and amino acids metabolism (synthesis and degradation of amino acids, Lipid metabolism (Beta oxidation, Nucleotide metabolism ( Purine and pyrimidine degradation, uric acid formation), Nutrition (Major food groups, B a l a n c e d d i e t , Metabolic changes in starvation, Protein energy malnutrition, Obesity, kwashiorkor, Marasmus), Clinical diagnostic enzymology: clinical significance of ALT, AST, ALP, GGT, LDH and isoenzymes, CK and isoenzymes, Pancreatic lipase and amylase, cholinesterase, G6PD)

**Practical:**

**Books:**

* Determination of liver, cardiac, pancreaticenzymes
* Determination of urea and uricacid
* Demonstration of ELISA, CMIA and CLIAinstrument

MEDICAL BIOCHEMISTRY by Dr. U. Satyanarayana, U Chakrapani

Marks’ Essentials of Medical MEDICAL BIOCHEMISTRY A Clinical Approach, Second Edition Harper’s Illustrated MEDICAL BIOCHEMISTRY a LANGE medical book twenty-sixth edition Lehninger Principles of MEDICAL BIOCHEMISTRY, 6E

Mc Graw Hill’s Manual of laboratory and diagnostic tests by DENISE D. WILSON, PHD, APN, FNP, ANP

**PMS-608 HumanPhysiology-II Credit Hours:4(3+1) CourseObjectives:**

* + To understand the basic concepts of physiology beginning from the organization of the systems totheir role in thebody.
	+ Understand the organization and function of varioussystems
	+ Understand the physiology of Blood, CVS, Nervous System and specialsenses
	+ Students will be able to understand immunity, its types and immunereactions

##### Course Contents:

Physiology of Nervous System, Function of various cranial nerves, Functions of somatic motor nervous system Functions of the autonomic nervous system, function of neurons, neuroglial cells and their components. Resting membrane potential and an action potential, function of a synapse and reflex arc, functions of the specialized sense organs: Eye, physiology of site, accommodation, optic nerve and optic chiasma, Ear, functions of the internal, middle and external ear Physiology of the hearing and balance, Smell, physiology of olfactory nerve. Taste, physiology of taste Location of the taste buds Physiology of speech, Blood: Composition and function of Blood , haematopoisis, Blood grouping, Coagulation mechanism, Physiology of Cardiovascular system The Physiology of Pulmonary Systemic Circulation: Arteries Veins Local Control of Blood Vessels Nervous Control of Blood Vessels Regulation of Arterial Pressure, The function of Lymphatic System, tonsils, lymph nodes, the spleen and the thymus, Classification and physiology of Immune system, Antigens and Antibodies, Primary and secondary responses to an antigen Antibody- mediated immunity and cell-mediated immunity Role of lymphocyte in immunityregulation.

##### Practicals

1. Spirometry
2. Electrocardiography
3. Blood PressureMeasurement
4. Normal and abnormal ECGinterpretation
5. Pulse ratemeasurement
6. Heartsounds

##### Recommended Books

* + Essentials of MedicalPhysiology K Sembulingam, Prema Sembulingam Sixth Edition2013
	+ GuytonAndHallTextbookOfMedical PhysiologyJohnE.Hall,ArthurC.GuytonProfessorandChair2006
	+ Ross and Wilson Anatomy and Physiology in Health And Illness 11th Edition Anne Waugh, Allison Grant2010

## PMS-609 HUMANANATOMY-II Credit Hours:4(3+1)

### Course Objectives:

* + - To understand the basic concepts of anatomy beginning from the cell organization to organsystem function
		- To understand the anatomy of upper limb, lower limb and head andneck.
		- To understand the knowledge about endocrinesystem

**Course contents:**

The upper limb Bones of shoulder girdle and Arm, Muscles, Axilla, Brachial plexus, Cubital fossa, the forearm, hand bones, muscles, Blood supply, Nerve supply, lymphatics, The lower limb Fascia, Bones, Muscles, Femoral triangle, Blood supply, Nerve supply, Lymphatic supply. Head and neck Skull, Mandible, Cranial nerves, cranial cavity, Meninges, Brain, Orbit, Neck, Endocrine System Classification of endocrine glands, Pituitary glands, Thyroid Glands, Adrenal gland and differences between the cortex andmedulla.

**Practicals:**

Study and understand the anatomy of Upper limb, Lower limb, Head and Neck through:

1. HumanModels
2. Videodemonstration
3. Study radiographs of upper and lowerlimb.

**Recommended Books:**

**Essential books** (text books)

* + - * Ross and Wilson Anatomy and Physiology in health and illness 11th Edition WaughGrant.
			* Clinical Anatomy (By regions) 9th edition, Richard S.Snell.

**Reference books**

* + - * Netter Atlas of human anatomy 5th EditionSaunders.
			* Gray’s Anatomy for students 2nd Edition Drake VogalMitcell.
			* BD. Churasia Human Anatomy (Allregions)

 **PMS-610 ENGLISH–II Credit Hours:2(2+0)**

**Course Objectives:**

* + - To enhance students writing, reading and listening skills.
* To enhance language skills and develop critical thinking.

**Course contents:**

Writing Skill: CV and job application, Technical Report writing, Writing styles, Changing narration: Converting a dialogue into a report, Converting a story into a news report, Converting a graph or picture into a short report or story, Active and Passive voice, Letter / memo writing and minutes of the meeting, use of library and internet recourses, Essay writing, Phrases - Types and functions, Clauses - Types and functions, Punctuation: Tenses - Types, Structure, Function, Conversion into negative and interrogative. Speaking Skill: Group Discussion (Various topics given by the teacher), Presentation by the students (individually), Role Play Activities for improving Speaking. Listening Skill: Listening Various Documentaries, Movies, and online listening activities to improve the listening as well as pronunciation of thewords.

**Recommended Books:**

* Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 2. Third edition. Oxford University Press 1986. ISBN 0 19 4313506.
* Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 1. Third edition.Oxford University Press. 1997. ISBN0194313492.
* Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 2. Third edition.Oxford University Press. 1997. ISBN0194313506
* Intermediate by Marie-Christine Boutin, Suzanne Brinand and Francoise Grellet. Oxford Supplementary Skills. Fourth Impression 1993. ISBN 0 19 435405 7 Pages 20-27 and35-41.
* Reading. Upper Intermediate. Brain Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1992. ISBN 0 19 4534022.

###  PMS-611 ISLAMICSTUDIES Credit Hours:2(2+0)

#### Course Objectives:

* + To learn about Islam and its application in day to day life.
* To provide Basic information about Islamic Studies
* To enhance understanding of the students regarding Islamic Civilization
* To improve Students skill to perform prayers and other worships
* To enhance the skill of the students for understanding of issues related to faith and religious life**.**

#### Course contents:

Fundamental beliefs of Islam, Belief of Tawheed, Belief in Prophet hood, Belief in the Day of Judgment, Worships, Salaat / Prayer, Zakat /Obligatory Charity, Saum / Fasting, Hajj / Pilgrimage, Jihad, Importance of Paramedics In Islam, Ethics, Religion and Ethics, Higher Intents / Objectives of Islamic Sharia and Human Health, Importance and Virtues of Medical Profession, Contribution and Achievements of Muslim Doctors, Knowledge of the Rights, Wisdom and Prudence, Sympathy /Empathy, Responsible Life, Patience, Humbleness, Self Respect, Forgiveness, Kindhearted, Beneficence, Self Confidence, Observing Promise, Equality, Relation among the Doctors, Jealousy, Backbiting, Envy, Etiquettes of Gathering, Relation between a Doctor and a Patient, Gentle Speaking, Mercy and Affection, Consoling the Patient, To inquire the health of Patient, Character building of the Patient, Responsibilities of a Doctor,

#### Recommended Books:

* Islamiyat (Compulsory) for Khyber Medical University, Medical Colleges and Allied Institutes

**3rd Semester Courses**

##### PATHOLOGY-I

* 1. **PHARMACOLOGY-1**
	2. **COMMUNICATIONSKILLS**
	3. **MEDICALMICROBIOLOGY-I**
	4. **CHEMISTRY OF DENTALMATERIALS-I**
	5. **ORALHISTOLOGY**

.

### PMS-612 GeneralPathology-I Credit Hours:3(2+1)

##### Course Objectives:

* + To understand different pathologicalprocesses
	+ To the processes blood coagulation andembolism
	+ To understand the mechanism of wound healing andregeneration

**Course Contents:**

Introduction to pathology, Cell injury, Cellular adaptation, Acute Inflammation, Chronic Inflammation, Cell Repair & Wound Healing, Regeneration & Repair, Haemodynamic Disorders**,**Edema, Haemorrhage, Thrombosis, Embolism, Infarction & Hyperaemia, Shock, compensatory mechanism of shock, possible consequences of thrombosis & difference between arterial & venous emboli, Neoplasia, Dysplasia, benign and malignant neoplasms, metastasis

#### Practicals:

1. Estimation of Prothrombin Time
2. Estimation of Clotting Time
3. Estimation of Bleeding Time
4. Estimation of Activated Partial Tromboplastin Time

#### Recommended Books:

* Robbins Basic Pathology Kumar Abbas Aster 9th Edition2013
* Review Of General Pathology Moh. Firdaus 9th Edition
* Short Text Book of Pathology Moh. Inam Danish 3rd Edition2006

### PMS-614 Pharmacology-I Credit Hours:3(2+1)

##### Course Objectives:

By the end of semester students will be able to:

* + Define common terms related to pharmacology and drug therapy.
	+ Discuss relevant historical, legal, and ethical issues related to pharmacology and drug therapy.

**Course Contents:**

Introduction to Pharmacology, Pharmacokinetics, Pharmaco dynamics, Adverse effects of drugs, Classification of drugs, Drugs affecting the Autonomic Nervous System, NSAID, Opioids, Drugs Affecting Endocrine system(Corticosteroids, Thyroid and Anti Thyroid), Gastrointestinal Drugs(PPI,H2 blockers and Antacids), Anti-Histamines, Anesthetics(General and local anesthetics),

**Practical:** 1. Introduction to drug dosage form 2. Study of the action of drugs (Atropine) on the rabbit's eye

#### Recommended books:

Lippincott s pharmacology (text book) by Mycek 6th Edition published by Lippincott Raven 2012.

* Katzung textbook of pharmacology (Reference Book) by Bertram Katzung 12th Edition, Published by Appleton.

### PMS-615 Communicationskills Credit Hours: 2(1+1)

#### Course Objectives

By the end of the course students will be able to:

* + Communicate effectively both verbally andnon-verbally
	+ Apply the requisite academic communication skills in their essay writing and other forms of academic writing
	+ Use various computer-mediated communication platforms in their academic and professional work
	+ Relate to the interpersonal and organizational dynamics that affect effective communication in organizations.

#### Course contents:

Introduction to Communication , Meaning and definition of Communication, The process of communication, Models of communication, Effective Communications in Business, Importance and Benefits of effective communication, Components of Communication, Communication barriers, Non verbal communication, Principles of effective communication, Seven Cs, Communication for academic purposes, Introduction to academic writing, Summarizing, paraphrasing and argumentation skills, Textual cohesion, Communication in Organizations, Formal communication networks in organizations, Informal communication networks, Computer- mediated communication (videoconferencing, internet, e-mail, skype, groupware, etc), Business Writing , Memos, Letters, Reports, Proposals, Circulars, Public Speaking and Presentation skills, Effective public presentation skills, Audience analysis, Effective argumentation skills, Interview skills.

#### Recommended Books:

* Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 2. Third edition. Oxford University Press 1986. ISBN 0 19 4313506.
* Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 1. Third edition. Oxford University Press. 1997. ISBN0194313492.
* Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 2. Third edition. Oxford University Press. 1997. ISBN0194313506
* Intermediate by Marie-Christine Boutin, Suzanne Brinand and Francoise Grellet. Oxford Supplementary Skills. Fourth Impression 1993. ISBN 0 19 435405 7 Pages 20-27 and35-41.
* Reading. Upper Intermediate. Brain Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1992. ISBN 0 19 4534022.

### PMS-613 MedicalMicrobiology-I Credit Hours:3(2+1)

#### Course objectives:

* To introduce the students with basic concepts in bacteriology and mycology.
* To introduce the students with common bacterial and fungal infections.
* To introduce the students with diagnosis of common bacterial and fungal infections.

#### Course contents:

Historical review and scope of microbiology, sterilization, disinfection and antisepsis, structure and function of prokaryotic cell, difference between prokaryotic and eukaryotic cell, bacterial growth and metabolism, bacterial classification, normal microbial flora of human body, mechanism of bacterial pathogenesis, host parasite interaction, Immune response to infection, common bacterial pathogen prevailing in Pakistan, introduction to fungi, fungal characteristic, morphology, structure, replication and classification, mechanism of fungal pathogenesis, common fungal pathogen prevailing in Pakistan.

#### Practical:

1. Introduction and demonstration of Laboratory Equipments used in Microbiology.
2. Inoculation and isolation of pure bacterial culture and its antibiotic susceptibility testing.
3. Demonstration of different types of physical and chemical methods of sterilization, and disinfection.
4. Students should be thorough to work with compound microscope.
5. Detection of motility: Hanging drop examinations with motile bacteria, non-motile bacteria.
6. Simple staining methods of pure culture and mixedculture.
7. Gram’s staining of pure culture and mixedculture.
8. AFB staining of Normal smear, AFB positives mear.
9. KOH preparation for fungal hyphae.
10. Germ tube test for yeast identification.
11. Gram stain for can dida.

#### Recommended books:

* + Sherris Medical Microbiology: An Introduction to Infectious Diseases. Ryan, K. J., Ray, C. G., 4th ed.

McGraw-Hill,2003.

* + Clinical Microbiology Made Ridiculously Simple. Gladwin, M.,& Trattler, B., 3rd ed. MedMaster, 2004.
	+ Medical Microbiology and Infection at a Glance. Gillespie, S., H., Bamford, K., B., 4th ed. Wiley- Blackwell,2012.
	+ Medical Microbiology, Kayser, F., H., &Bienz, K., A., Thieme,2005.
	+ Review of Medical Microbiology and Immunology.Levinson,W., 10th ed. McGraw Hill Professional,2008.
* Jawetz, Melnick, & Adelberg's Medical Microbiology. Brooks, G., Carroll, K., C., Butel, J., &Morse, S., 26th ed. McGraw-Hill Medical,2012.

#### DEN-601 DentalMaterials-I Credit Hours:3(2+1)

##### Course Objectives:

By the end of semester students will be able to:

* + Describe properties and manipulation of different impressionmaterials
	+ Differentiate different types of dentalmaterials

##### Course Content:

Properties of dental materials, Classification of impression materials, Dental plasters, Plastic impression compound, zinc oxide euginol, Elastic hydrocolloids, Elastomers, Addition silicones, condensation silicones ,Gypsum products, Dental waxes, Dental investments, Gypsumbondedinvestment,siliconebonded,phosphatebondedinvestment,Basemetalalloys, Gold alloys, Soldering and welding,Casting

##### Practical:

1. Identification of dentalmaterials
2. Manipulation of dentalplasters
3. Manipulation of impressionmaterials
4. Identification of differentwaxes
5. Identification of different castingtechniques

##### Recommended Books:

* + Basic dental materials by John Jay Manapalil, 2ndeditionJaypee
	+ Essentials of dental materials SH Sotratur, 1st editionJaypee
	+ Applied dental materials by John F McCabe and Angus W.G.Walls, 9th edition Blackwell publishingLtd.
	+ Dental biomaterials by Zohaib Khursheid and Zeshan Sheikh, 2nd edition paramount books

### DEN-602 ORALHISTOLOGY Credit Hours: 3(2+1)

##### Course objectives:

By the end of semester students will be able to:

* + To describe structure and composition of enamel, dentin-pulp complex and periodontium
	+ To explain development of tooth and its supportingstructures

##### Course Content:

Structure of oral tissues, Development of mandible and maxilla, Development of tooth and its Supporting structures, Composition of enamel, Formation of enamel, Structure of enamel, Structure, composition and formation of dentin-pulp complex. Composition ,formation and structureofperiodontium,Physiologicaltoothmovement,Sheddingofteeth,eruptionofteeth, Function of saliva, Histology of major and minor Salivary glands, Functions of oral mucosa, Structure of oralmucosa,

##### Practical:

1. Microscopic slides and images of enamel anddentine
2. Explaining the structural organization of oral tissues

##### Recommended Books:

* 1. TenCates’soralhistology:Development,structureandfunctionbyAntonio Nanci Elsevier Health Sciences
	2. Orban’s Oral Histology and Embryology, Bhaskar S.: 11th edition, 1991, Mosby.
	3. Fundamentals of Oral Histology and Physiology by R. Hand, Marion E. FrankWiley-Blackwell
	4. Textbook of Dental and Oral Histology with Embryology and Multiple Choice Questions *by Chandra Girish, Chandra Mithilesh, Chandra Nidhee, Chandra Satish, Chandra Shaleen*Edition 2/ejaypee

# 4th Semester Courses

##### BEHAVORAL SCIENCES

* + 1. **TOOTHMORPHOLOGY**
		2. **DENTAL MATERIALS-II**
		3. **PERIODONTOLOGY**
		4. **ORALPATHOLOGY**
		5. **PHARMACOLOGY-II**

**PMS-619 BEHAVIOURALSCIENCES Credit Hours: 2(2+0)**

**CourseObjectives**

* Conducting diagnosticinterviews
* Formulating and clarifying diagnostic findings and treatmentrecommendations
* Documenting evaluation and treatment procedures, involving duties such as recording results of diagnostic interviews, lab studies, and/or treatment plans in a timely way according to the medical records protocols of the rotationsite

**Course Contents:**

Introduction to Behavioral Sciences and its importance in health: Bio-Psycho-Social Model of Health Care and the Systems Approach, Normality vs Abnormality, Importance of Behavioral sciences in health, Desirable Attitudes in Health Professionals Understanding Behavior: Sensation and sense organs, Perception, Attention and concentration, Memory, Thinking, Communication, Individual Differences: Personality, Intelligence, Emotions, Motivation, Learning, Stress and Stressors, Life Events, Stress, Management, Interviewing / Psychosocial History Taking, Allied Health Ethics-Hippocratic oath, Culture and Allied Health practice, Psychological reactions, Breaking Bad News, Pain, Sleep,Consciousness.

#### Recommended Books:

* Behavioral Sciences by M.H Rana 2007, edition5th
* Sociology in a Changing World by William Kornblum 8th edition2007
* Changing Behavior: Immediately Transform Your Relationships with Easy-to-Learn, Proven Communication Skills by Georgiana Donadio 2011, edition5th

**DEN-603 ToothMorphology Credit Hours:3( 2+1)**

##### Course Objectives:

By the end of the semester students will be able to:

* + Differentiate between primary and permanentdentition
	+ Describe general characteristics of permanent maxillary and mandibularteeth

##### Course Content:

General characteristics of permanent maxillary and mandibular central incisor, lateral incisor, first premolar, Second premolar, first molar, second molar, third molar, generalcharacteristics of deciduous teeth

##### Practicals:

1. Identification of important landmarks of Teeth on studymodels
2. Diagram sketching of variousteeth

##### Recommended Book:

* + Dental Functional Morphology By Peter W. Lucas, Cambridge UniversityPress
	+ Dental Morphology: An Illustrated Guide by G. C. Van Beek BDS(Brist) (Author) Butterworth-Heinemann;2 edition (27 Jan. 1983)
	+ Dental Anatomy and Tooth Morphology by P. Sampath Kumar (Author) JPB (2007)
	+ Concise Dental Anatomy and Morphology 4th Edition by James L.Fuller(Author)

**DEN-604 DENTALMATERIALS-II Credit Hours: 3( 2+1)**

##### Course Objectives:

By the end of this course students will be able to:

* + - Describe composition and manipulation of different fillingmaterials.

##### Course Content:

Tooth cutting materials, Different types of burs, Finishing and polishing materials, Ceramics, Dental cements, Zinc oxide euginol cement, zinc phosphate cement, Zinc poly carboxylate cement, Calcium hydroxide cement, Silicate cement, Glass ionomer cement, Direct filling gold, Properties and composition of Dental amalgam, Manipulation of dental amalgam, lining materials, Denture base resins, Composition and manipulation of acrylic resins, Composite resins

##### Practical:

1. Identify different shapes ofburs
2. Identify diamond and carbideburs
3. Manipulation ofceramics
4. Manipulation of dentalcements
5. Manipulation ofresins

##### Recommended Books:

* Basic Dental Materials by John J. Manappallil, 2nd edition,Jaypee
* Essentials of dental materials by SH Soratur, 1st edition,Jaypee
* Applied Dental Materials by Jhon F. McCabe and Angus W.G. Walls 9th edition, Blackwell publishingLtd.
* Dental Biomaterials by Zohaib Khurshid and Zeeshan Sheikh, 2nd edition, paramount Books

**DEN-605 PERIODONTOLOGY CreditHours:3(2+1)**

##### Course objectives:

By the end of the semester students will be able to:

* + Describe etiology and classification of periodontaldiseases
	+ Diagnose different periodontaldiseases.

##### Course Contents:

Anatomy of periodontium, Basic etiology of periodontal disease, Classification of periodontal diseases, Gingival enlargement, Periodontitis, Early onset periodontitis, Gingival recession, Pericronitis, Gingival abscess, Cysts, Periodontal examination, diagnosis, prognosis and treatment plan, Plaque control in periodontal therapy

##### Practical:

* Hospital based scaling andpolishing

##### Recommended Book:

1. A Text Book Of Clinical Periodontology By JanLindhe
2. Essentials Of Periodontology ByElizabeth

**DEN-606 ORALPATHOLOGYANDORALMEDICINE-l CreditHours:3(2+1)**

##### Course Objectives:

By the end of the semester students will be able to:

* + Describe different disorders of teeth and supportingstructures
	+ Interpret pathological changes clinically and radiographically

##### Course Outlines:

Disorders of development of teeth, Dental caries, disorders of dental pulp, disorders of Periodontium, cysts of jaws and oral tissues, diseases of salivary glands, disorders of bone, diseases of temporo-mandibular joint, , Diseases of the oral mucosa: Non-infective stomatitis, Tongue disorders, Common benign mucosal swellings.

##### Practical:

* Identification of slides of different oralpathologies
* Visit to maxillofacial ward to observe patients with oral pathologies and their management along with historytaking

##### Recommended Book:

* + Textbook of Oral Pathology by Sanjay Saraf, Jaypee BrothersPublishers
	+ Clinical Outline of Oral Pathology, 4th Edition by Lewis R. Eversole (Author) Pmph USA
	+ Cawson's Essentials of Oral Pathology and Oral Medicine, 8e 8th Edition by Roderick A. Cawson, ChurchillLivingstone

**PMS--616 PHARMACOLOGY-II Credit Hours:3(2+1)**

##### Course objectives:

To provide quality patient care in routine as well as advanced procedures.

To understand the mechanism of drug action at molecular as well as cellular level, both desirable and adverse.

To understand the principles of pharmacokinetics i.e. drug absorption, distribution, metabolism and excretion and be able to apply these principles in therapeutic practice.

**Course contents:**

Drugs acting on cardiovascular system; Drugs for heart failure, anti-hypertensive drugs, antianginal drugs, Anti Hyperlipidemic drugs, Blood drugs(Anticoagulants), Diuretics, Chemotherapeutics drugs([Anti- protozol, Anti-Malarial], Anti-Fungal, Anthelmintic), Antibiotics(Penicillin’s, cephalosporin’s, macrolides, aminoglycosides, fluroquinolones), Drugs acting on Respiratory system(Asthma).

#### Practical:

1. Routes of drug administration 2. Study of action pilocarpine on rabbiteye

#### Recommendedbooks:

Lippincott s pharmacology (text book) by Mycek 6th Edition published by Lippincott Raven 2012. Katzung textbook of pharmacology (Reference Book) by Bertram Katzung 12th Edition, Published byAppleton.

### Fifth Semester

##### PARTIAL DENTURE PROSTHODONTICS

1. **ORAL PATHOLOGY AND ORAL MEDICINE -ll**
2. **MINOR ORALSURGERY-I**
3. **COMMUNITY& PREVENTIVEDENTISTRY**
4. **FUNDAMENTALS OF ORAL AND MAXILLOFCIALRADIOLOGY**
5. **CONSERVATIVE DENTISTRY -I**

**DEN-607 PartialDentureProsthodontics Credit Hours:3(2+1)**

**Course objectives**:

To introduce students with basic concepts of prosthodontics To fabricate removable partial denture

To describe functions and parts of articulator

To describe indications and merits, demerits of immediate denture and over denture.

##### Course contents:

Introduction to prosthodontics, Biological and mechanical considerations of partial denture, component parts of partial Denture, Maxillary major connector, Mandibular major connector, Minor connectors, Direct retainers, Indirect retainers Denture base materials ,Materials of artificial teeth, Designing of partial denture, Surveying, Parts of surveyor, Selection Of major connector, Selection of denture base materials, Selection of artificial teeth, Arrangement of teeth, Try-In, Curing, Finishing and polishing , Insertion of partial denture, Over denture,

##### Practical:

* + Surveying
	+ Designing
	+ Construction of wax pattern, sprueing, investing ,casting, finishing and polishing of metalframework
	+ Repair and relining and rebasing of partialdenture

##### Recommended books:

* + Boucher'sProsthodontics
	+ Fenn's Clinical Dental Prosthetics
	+ A Color Guide To Removable Partial Denture Design Davenport JC, BaskerRM, Heath JR, Ralph JP &Glantz

### DEN-608 OralPathologyandOralMedicinell CreditHours:3(2+1)

**Objectives:**

**At the end of this module the students will be able:**

* + Interpret pathological changes clinically and radiographically
	+ Describe different oral lesions

### Course contents:

Major infection of mouth , jaws and perioral tissue ,tumors, odontogenic ,odontogenic tumors and tumors like lesions of the jaws ,oral premalignancy ,oral cancers, common benign mucosal swellings ,soft tissues neoplasms , melanoma and other pigmented lesions.

### Practical:

* + Identification of slides of different oralpathologies
	+ Visit to maxillofacial ward to observe patients with oral pathologies and their management along with historytaking.

### Recommended Books:

* + - Textbook of Oral Pathology by Sanjay Saraf, Jaypee BrothersPublishers
		- Clinical Outline of Oral Pathology, 4th Edition by Lewis R. Eversole (Author) Pmph USA
		- Cawson's Essentials of Oral Pathology and Oral Medicine, 8e 8th Edition by Roderick A. Cawson, ChurchillLivingstone

##### DEN-609 MINORORALSURGERY-I Credit Hours: 3(2+1)

**Objectives:**

**At the end of this module the students will be able:**

* + To understand the composition of Local Anesthesia
	+ To perform diagnostic procedures of minor oral surgery
	+ To administrate the local anesthesia on patients.
	+ To know about infection control in surgical setup

##### Course contents:

History taking, Clinical examination, Clinical Evaluation, patient surgeon positions, chair positioning, principles of surgery, Wound repair, Infection control in surgical practice, Principles of routine exodontia, indications & contraindications, Instrumentations for basic oral surgery, Pharmacology of local anesthetics, Classification and Compositions, Administration of local anesthesia, Infiltration techniques, Nerve block techniques, Complications of local anesthesia

##### Practical:

* + Administration of local anesthesia
	+ Instruments sterilization
	+ Extraction of primary teeth
	+ Simple extraction of permanent teeth

##### Recommended books:

* + J Peterson, Tucker, Edward Ellis. Contemporary Oral & Maxillofacialsurgery
	+ Hand book of local anesthesia by Stanley F. Malamed.

### DEN-610 COMMUNITY&PREVENTIVEDENTISTRY C-H: 3(2+1)

***Course objectives***:

To produce awareness towards dental problem of the community prior to occurrence

##### Course contents:

Basic concepts of health, disease and infection, Relationship of environment and health, Role of Nutrition in health and disease, Objectives and principles of health education, Epidemiological methods, Epidemiology of oral diseases, Prevention of oral diseases, primary preventive services, fluorides in caries Prevention.

##### Recommended books:

* + - Community Oral Health by Cynthia M.Pine
		- Preventive Dentistry by John O.Forrest

**DEN-611 FundamentalsofOral&MaxillofacialRadiology CreditHours:3(2+1)**

##### Course objectives:

* + To understand biology of radiation and radiation safety in dentistry along with the knowledge of radiologic techniques for procuring, exposing and developing dental films.
	+ Identification of the anatomical features and common pathology visible on dental radiographs
	+ Interpretation of dental radiographs as relevant todentistry

##### Course contents:

Legislation and regulations relating to dental radiography and ionizing radiation, Dentalx- ray tube and apparatus, ionizing radiation and its effects on body tissues hazards involved in dental radiography, and measures to be taken to protect patients and operator during the takingofradiographs,Aknowledgeofthedifferenttypesofradiographsandtheirusese.g; Periapical radiographs, Bitewing radiographs, Occlusal radiographs, PA view of skull, Lateral view, OPG, CEPH, Digital radiography, Identification of the anatomical features and common pathology visible on dental radiographs, Interpretation of dental radiographs as relevant todentistry

##### Practical:

1. The techniques for taking dentalradiographs
2. Preparation of developer and fixer solution
3. Dry processing ofradiographs
4. The principles of processing dental radiographs and the faults which mayoccur,
5. The importance of quality assurance in dentalradiographs

##### Recommended books:

CLARK’S POSITIONING IN RADIOGRAPHY 12TH EDITION

1. Stewart Whitley Charles Sloane Graham Hoadley Adrian D. Moore Chrissie W. Alsop

**DEN-612 OPERATIVEDENTISTRY CREDIT HOURS3(2+1)**

##### COURSE OBJECTIVES:

To introduce students with different moisture control methods To design cavity according J.V blacks classification

To introduce cavity preparation for inlay and on lay wax

##### COURSE CONTENTS:

Assesment, examination, diagnosis and treatment planning of dental caries ,Fundamentals of tooth preparation

,Preliminary consideration for operative dentistry ,Direct tooth colored and non tooth colored restorative materials,Composite and Amalgam ,Class I,II and III cavity preparation ,Restorative failure ,Postoperative Problems.

##### PRACTICALS:

* 1. Cavity preparation on mountedteeth
	2. Oral examination and treatmentplanning
	3. Saliva control techniques (rubberdam)

##### RECOMMENDED BOOKS:

Operative Dentistry by M.A.Marzouk

Art and Science of Operative Dentistry by Sturtevant Inlays Crowns and Bridges by Colin R Cowel

Introduction to Metal Ceramic Technology by W. Patrick Naylor

A Colour Atlas of Clinical Operative Dentistry, Crowns and Bridges 2nd Edition. Grundy and Glyn Jones

Resin Bonded Bridges Tay W-M

# Sixth Semester

##### BIOSTATISTICS

* + 1. **RESEARCH METHODOLOGY**
		2. **ENDODONTICS**
		3. **COMPLETE DENTURE PROSTHODONTICS**
		4. **ORTHODONTICS-I**
		5. **PEDIATRIC DENTISTRY**

**PMS—622 BIOSTATISTICS Credit Hours:3(2+1)**

**Course objectives:**

After studying this course the students will be able to:

* + - * Describe basic terms used inBiostatistics
			* Use various statistical test depending upondata
			* Select sample and samplingtechnique
			* Categorize variousvariables
			* Illustrate various types ofhypothesis
			* Estimate various variables and theirsignificance
			* Assemble and analysis ofdata

##### Course Contents:

Introduction to Biostatistics and its types; Descriptive and inferential statistics, Measure of central tendency,Measureofdispersion,Statisticaldata,PresentationofDatabyGraphs,Dataanditstypes, Datacollectiontools,DataanalysistoolsHealthRelatedData,Presentationofquantitativedata**,**The concept of sampling, types and methods of sample, sample distribution, error of sampling, Variable and its types, Tests used in biostatistics their use and interpretation( t-tests, Chi- square ANOVA, Regression and correlation) Hypothesis formulation and testing on the basis of statistics and statistical tests, Sample and population, Basic considerations in sampling, random sampling, stratified random sampling, cluster sampling, systematic sampling, determination of sample size, elimination of sampling bias**,** two types of errors, acceptance and rejection Regions, Tow sided and one sided tests, general steps in hypothesis testing, test about means, confidence interval for mean, Preparing data analysis by various software, Use ofSPSS

##### Practical Work:

* Manual calculation related to measure of central tendency and measure ofDispersion
* Defining variables inSPSS
* Entry of data inSPSS
* Analysis of data inSPSS

##### Recommended Books:

* + Aquidetoresearchmethodology,biostatisticsandmedicalwritingbycollegeofphysiciansan d surgeons Pakistan by WHO collaborationcenter
	+ ReadingunderstandingmultivanantstatisticsgiimmLGYardADPR,publisherAmeric an Psychologicalassociation
	+ IlyasAnsari’scommunitymedicine(TextBook)byIlyasandAnsari2003publishedbyMedic al division Urdu BazzarKarachi

**PMS-621 RESEARCH METHODOLOGY Credit Hours: 3(2+1)**

**Course Objectives:**

After studying this course the students will be able to:

* + - Write various types ofresearch
		- Planning ofresearch
		- Choose appropriate samplingmethodology
		- Design a comprehensivequestionnaire
		- Develop proposal for the researchproject
		- Describe and use Literaturereview
		- Recognize variousvariables
		- Write a researchreport/Thesis

**Course Contents:**

Introduction to research (in simple term and a scientific term), concept of research, why do need research,advantageandscopeofresearch,identificationofresearchneedsanditsqualities,Typesof research; Qualitative, Quantitative and their sub types, Research process Introduction (Deciding, formulatingresearchquestions,planning,conductofstudy,datacollection,processingandanalysis, Research writing and reporting), Literature review (What, why, where from, how and qualities of good literature and its use), Writing a research problem/question and selection of the title of study, Identification of various research variables, Hypothesis its types, formulation and testing of hypothesis, Research study designs used in qualitative and quantitative studies, Designing of data collectiontools/questionnaires,Selectionofappropriatesamplingtechniqueinvariousstudydesigns, Concept of validity and reliability, Research proposal writing, Ethical principles of Research and their examples to apply those principles, Data collection and processing/displaying techniques, Writing of research report (Chapters in research report/thesis, Outline/Abstract of research, Referencing andBibliography0

**Practical Work:**

* + - LiteratureSearch
		- Surveyconduct
		- Citation andReferencing
		- Proposalwriting
		- Data collection anddisplaying

**Recommended Books:**

* Research Methodology by Ranjit Kumar 3rdEdition
* Foundation of Clinical Research by Portney LG Walkais MP in 1993, Publisher by Appleton and laugeUSA
* A guide to Research Methodology, Biostatistics and Medical writing by college of physicians and surgeons Pakistan by WHO collaborationcenter HealthsystemresearchprojectbyCorlienMVarkerisser,IndraPathmanathan,AnnBrownleei

n 1993byInternationalDevelopmentResearchCenterinNewDehli,Singapore.

### DEN-613 ENDODONTICS Credit Hours: 3(2+1)

##### OBJECTIVES*:*

Enables to diagnose dental caries lesion

Enables to form the tooth cavities according J.V black classification Enables to know the properties and requirements of restorative material

##### COURSE CONTENTS*:*

Injury to the permanent teeth , Pulp therapy for the young permanent teeth , Apexification , Apexogenesis , Anesthesia, Rampant caries ,Fluorides ,Treatment of handicapped children ,Endodontics , Diagnostic Procedures, Clinical Classification of pulpal & Periapical disease ,Reversible pulpitis. Irreversible pulpitis. Acute apical periodontitis. Acute apical abscess ,Chronic apical periodontitis, Instruments , Internal Morphology & Access opening, Pulpectomy – diagnostic & working length, cleaning filing, shaping, Bio-mechanical canal preparation etc. , Irrigants & intra canal medicaments . Root canal sealers & obturation. Failures in endodontics, Endo – perio lesion, Internal, external resoption, Radiographic Analysis.

##### PRACTICALS*:*

* Access cavitypreparation
* Cannal locations on mountedteeth.
* Root canal preparation and obturation steps on mountedteeth

##### RECOMMENDED BOOKS:

Operative Dentistry by M.A.Marzouk

Art and Science of Operative Dentistry by Sturtevant Inlays Crowns and Bridges by Colin R Cowel

Introduction to Metal Ceramic Technology by W. Patrick Naylor Endodontics - Problem Solving in Clinical Practice – Ford Textbook of Endodontics, 3E Nisha & Amit Garg (2014)

Mastering Endodontic Instrumentation, John T. McSpadden, D.D.S. Cloudland Institute

### DEN-614 CompleteDentureProsthodontics Credit Hours3(2+1)

##### Course objectives:

To describe steps involved in complete denture fabrication To fabricate complete denture

##### Course contents:

Biomechanicsofedentulousstate.Tissueresponsetocompletedenture.Constructionofspecial tray from primary impression construction of secondary denture base from secondary impression. Formation of occlusal wax rims articulators and articulation. Biological consideration in jaw relation and jaw movements biological consideration in vertical jaw relation. Biological consideration in horizontal jaw relation recording and transferring bases andocclusionrims.Relatingthepatienttoarticulatorselectionofartificialteethforedentulous patient. Set up of teeth completion of try- in .laboratory procedures tooth supported complete denture. Single complete denture opposing natural teeth. Relining and rebasing of complete denture. Management of manufacturing defects repair ofdenture.

##### Practical:

* Construction of special tray from primaryimpression
* Construction of permanent denture base from secondaryimpression
* Formation of occlusal waxrims
* Articulators and articulation
* Selection ofteeth
* Set up ofteeth
* Flasking, dewaxing and processingprocedures
* Finishing and polishingtechniques
* Relining andrebasing
* Immediatedentures

##### Recommended books:

* Boucher'sProsthodontics
* Fenn's Clinical Dental Prosthetics
* A Color Guide To Removable Partial Denture Design Davenport JC, BaskerRM, Heath JR, Ralph JP &Glantz
* Removable Denture Construction. Bates JF, Huggett R & StaffordGD
* Over Dentures in General Dental Practice. Basker RM, Harrison A, Ralph JP & WatsonC

### DEN-615 Orthodontics-I Credit Hours:3(2+1)

**Objectives:**

**At the end of this module the students will be able:**

* + To diagnose various malocclusions.
	+ To describe development of occlusion
	+ To understand removable orthodontic appliances.
	+ To describe Myofunctional orthodontic appliances
	+ To know preventive and interceptive procedures

### Course contents:

Development of occlusion, classification and etiology of malocclusion, orthodontic diagnosis, parafunctional habits, general concept of orthodontic appliances, removable appliances, Myofunctional appliances, vestibular screen, activators, bionators, frankels appliances, inclined plan, headgear, space maintainers, interceptive orthodontics.

### Practical:

* Laboratory procedures for different appliances
* Wire bending techniques
* Fabrication of adams clasp, labial bows, springs and retractors
* Fabrication of Myofunctional appliances, Removable appliances

### Recommended Books:

* + Orthodontics, The art and science by S.I bhalajhi
	+ Orthodontics at a glance by Daljit Gill, Blackwell

**DEN-616 PAEDIATRIC DENTISTRY Credit Hours:3(2+1)**

##### Objectives;

1. To enable the dental therapist to perform the simple restorative procedure inchildren
2. To enhance the dental and oral status of children
3. Able to early detect caries in children and manageit.

##### Course Contents:

local anesthesia for children, diagnosis and prevention of dental caries, treatment of dental caries in the preschool child, operative treatment of dental caries in the primary dentition, operative treatment of dental caries in the young permanent dentition, advanced restorative dentistry in children’s, periodontal disease in children, anomalies of tooth formation and eruption pulp therapy for primary teeth, one step and two step pulpotmy. Fissure sealants and fluoride applications, space management, space maintainers, splinting.

##### Practical;

1. Application of fluoride in primaryteeth
2. Application of fit and fissure sealant in primaryteeth
3. Pulpotmy
4. Simple restorative procedures in primaryteeth

References;

1. pediatric dentistry - 3rd ed. (2005) Richard welbury, montyduggal
2. dentistry for the child by ralph EMcDonald

### Seventh Semester

##### ORTHODONTICS-II

* 1. **FIXED PROSTHODONTICS**
	2. **FUNDAMENTALS OF IMPLANTOLOGY**
	3. **FUNDAMENTAL OF INFECTION CONTROL**
	4. **MEDICAL EMERGENCIES IN DENTAL PRACTICES**
	5. **MINOR ORAL SURGERY-II**

**DEN-617 ORTHODONTICS-II Credit Hours3(2+1)**

**Objectives:**

**At the end of this module the students will be able:**

* To demonstrate various fixed orthodontic appliances.
* To plan treatment planning for some common malocclusion.
* To understand different lab procedures related to fixed orthodontics like soldering and welding etc.

### Course contents:

Cephalometrics, types, uses, landmarks, soft tissue land marks, line and planes, down analysis Model analysis, Carrey’s analysis and Bolton’s analysis, fixed appliances, Methods of gaining spaces, Arch Expansion, extraction in routine orthodontic treatment,Treatment planning, Anchorage,Management of common malocclusion, Lab procedures,welding, soldering, study model, acrylization.

### Practical:

* Brackets placement
* Model analysis
* Land marking of Cephalometric
* Fabrication of Arch expansion appliance
* Fabrication, Soldering and welding of molar tubes

### Recommended Books:

* Orthodontics, The art and science by S.I bhalajhi
* Orthodontics at a glance by Daljit Gill, Blackwell

### DEN-618 FIXED PROSTHODONTICS Credit Hours:3(2+1)

##### Objectives:

To demonstrate cavity designs for inlays or on lays To describe different types of crowns and bridges To fabricate different types of crowns and bridges

##### Course Contents:

Crowns Terminology, Indications & Contra indications, Diagnosis & Treatment Planning, Basic Principles of preparation, Porcelain Jacket Crowns, Indications & Contraindications, Clinical assessment, and steps of preparation. Porcelain Fused to metal crowns Indications, Contraindications ,Clinical assessment ,Steps of preparation Full Crowns Indications, Contraindications,Elementaryknowledgeofcavitydesignforinlays(MOD,ClassII,ClassV) andonlaysPrinciplesofbridgedesign,Waxpatternofinlays,onlays,fullveneercrown,jacket crown, Partial veneer crown, Resin bonded bridges, Types of crowns and bridges, Pontic designs, and Causes Of bridge failure, Porcelain fused to metal post and core crowns, full crowns.

##### Practical:

* Inlays (class II, M.O.D., and ClassV).
* Onlay and labpreparation
* Bridge design (Cantilever, fixed). And labpreparation
* Inlays (Class I, Class V, ceramic inlays). And labpreparation
* Full veneer crown. And labpreparation
* Jacketcrown.
* Inlays, onlays and labpreparation
* Bridge design and labpreparation
* Crown and labpreparation

##### Recommended Books:

Contemporary of fixed prosthodontics by 4th edition by Rossential.land.fujimoto Prosthodontics at a Glance by Irfan Ahmad

**DEN-619 FUNDAMENTALSOFIMPLANTOLOGY CreditHours3(2+1)**

##### Objectives:

To introduce the students with the types and classification of implants To describe implant placement.

To prepare implant supported prosthesis.

##### Course Content:

IntroductionofdentalimplantsTypesofimplants,Subperiostealimplants,Endostealimplants, Osseo integration, Uses of dental implants, Planning of implants, Biomechanical considerations of implants, Main surgical procedures, placing the implant, Timing of implants aftertoothextraction,Healingtime,Onstagesurgery–twostagesurgery,Immediateplacement, Additional surgical procedures, Hard tissue reconstruction, Soft tissue reconstruction, Recovery, Prosthetic procedures for single teeth, bridges and fixed dentures, Prosthetic procedures for removable denture, Maintenance, Risks andcomplications.

##### Practical:

Practical demonstration of surgical procedures involved in placement of implants Fabrication of implant supported prosthesis.

##### Recommended Books:

* + Misch, Carl E (2007). Contemporary Implant Dentistry. St. Louis, Missouri: MosbyElsevier.
	+ Balaji, S. M. (2007). Textbook of Oral and Maxillofacial Surgery. New Delhi: Elsevier India.

**PMS-624 FUNDAMENTAL OF INFECTION CONTROL Credit Hours2(1+1)**

##### Course objectives:

* To introduce the students with basic concepts in infection control.
* To introduce the students with infection control principles and practices.
* To introduce the students with importance of immunization and hand hygiene in infection control.
* To introduce the students with the role of clinical laboratory in infection control.

##### Course contents:

Introduction to infection control, principle of infection control, source and transmission of infection, infection in the hospital environment, immunization prophylaxes, exposure prophylaxes, sterilization, disinfection and antisepsis, practical disinfection, epidemiology of infectious disease, antimicrobial agents, antibiotic and their uses (prophylactic, empirical , and therapeutic), antibiotic resistance and policy, principles of laboratory diagnosis of infectious diseases, biomedical waste management, biosafety levels, hand hygiene, standard precautions and PPE.

##### Practical:

1. Demonstration of hand washing and hand rubbing technique.
2. Preparation of different disinfection and antiseptic solutions.
3. Demonstration of biomedical waste managements in hospitals.
4. Demonstration of cleaning and disinfection of working premises.
5. Demonstration of how to handle spills and aseptic handling.
6. Demonstration of standard precautions and PPE.

##### Recommended Books:

* Fundamentals of Infection Prevention and Control: Theory and Practice.Weston, D.,Wiley-Blackwell, 2013.
* Sherris Medical Microbiology: An Introduction to Infectious Diseases. Ryan, K. J., Ray, C. G., 4th ed.

McGraw-Hill, 2003.

* District Laboratory Practice in Tropical Countries, Part1 & Part 2. Cheesbrough, M., 2nd ed. Cambridge University Press, 2006.
* Medical Microbiology and Infection at a Glance. Gillespie, S., H., Bamford, K., B., 4th ed. Wiley-

Blackwell, 2012.

**DEN-620 MEDICAL EMERGENCIES INDETAL PRACTICES Credit Hours:(2+1)**

##### Course Objectives:

* + To enable the students to identify the medically compromised patient before the oral procedures
	+ To assist and help the complicated and complexcases
	+ Enable the students to manage the medically compromisedpatient

##### Course Contents:

Biographic Data , Chief Complaint History of Chief Complaint ,Medical History ,Review of Systems ,physical examination ,management of patients with compromising

medical conditions ,Cardiovascular Problems ,Ischemic Heart Disease ,Cerebrovascular Accident (Stroke), Dysrhythmias ,Heart Abnormalities that Predispose to Infective Endocarditis,,CongestiveHeartFailure(HypertrophicCardiomyopathy),PulmonaryProblems

,,Asthma ,,Chronic Obstructive Pulmonary Disease ,Renal Problems ,,Renal Failure

,Transplant and Transplant of Other Organs ,Hypertension ,Hepatic Disorders Endocrine Disorders ,Diabetes Mellitus ,Adrenal Insufficiency ,Hyperthyroidism,Hypothyroidism

,Hematologic Problems ,Hereditary Coagulopathies ,Therapeutic Anticoagulation , Neurologic Disorders, Seizure Disorders, Ethanolism (Alcoholism) management of patients during and after pregnancy**,** Pregnancy, Postpartum Period,

##### Practical:

History taking and evaluation of the patients in opds and wards

##### Recommended Books:

CONTEMPORARY ORAL AND MAXILLOFACIAL SURGERY,

SIXTH EDITION ., James R. Hupp, DMD, MD, JD, MBA , Edward Ellis III, DDS, MS, Myron

1. Tucker, DDS

### DEN-621 MINORORALSURGERY-II Credit Hours:3(2+1)

**Objectives:**

##### At the end of this module the students will be able:

* To describe diseases of oral cavity
	+ To perform diagnostic procedures of minor oral surgery
	+ To manage complications of minor oral surgical procedures

### Course contents:

Tooth extraction, specific technique for removal of each tooth, modification for primary teeth extraction, principles of flap design & management, techniques for open extractions, multiple extractions, indications and contraindications of impacted teeth, classification for third molar impaction, removal of impacted teeth and surgical procedure, post-operative patient management, management of extraction complications, Management of dent alveolar fracture, extractions of broken down root, suturing, excision of mucocele, apicectomy, operculectomy, epulis removal, frenactomy biopsy taking.

### Practical:

* Demonstration of patient and chair positioning
	+ To perform of all minor oral surgical procedure
	+ Extraction of Permanent teeth, impacted teeth
	+ Post extraction management

### Recommended Books:

* J Peterson, Tucker, Edward Ellis. Contemporary Oral & Maxillofacial surgery
* Oral and maxillofacial surgery by Kruger

##### Eight Semester

* 1. **RESEARCHPROJECT**
	2. **SEMINAR**
	3. **BIOETHICS**
	4. **MAXILLOFACIAL PROSTHODONTICS**

**PMS-626 RESEARCHPROJECT Credit Hours:6(0+6)**

**Objectives:**

* Students will learn some basic research methodology and gain knowledge aboutresearch.
* It will hopefully result in some of presentation or publication for the students and will providea research orientedenvironment

**Course contents:**

During last year each student should select a topic of research report with consultation of his/her supervisor and shall prepare and submit research report to Khyber Medical University by the end of last year.

#### Practical:

A hard copy of research project should submit to examination for degree requirements fulfillment.

# PMS--627 SEMINAR CreditHours:1(1+0)

During last year each student should select a topic of research work with consultation of his/her supervisor and shall present his/her research work through a seminar

# PMS-625 BIOETHICS CreditHours1(1+0)

Course Objectives:

* Use the approach of ethical principles the safety and benefits of the patients
* Analyze bioethical issues in practice

##### Course Contents:

Introduction of bioethics ,ethical principles ,autonomy ,informed consent, intentional non disclosure ,patient self determination act ,the health insurance potability and accountability act of 1996(HIPAA),privacy and security rules , non maleficence ,slippery slope arguments, benefiance, paternalism, justice, social justice , the patient protection and affordable care act, professional patient relationships ,unavoidable trust ,human dignity , patient advocacy ,moral suffering ,ethical dilemmas

##### Recommended Books:

* Introduction to bioethics and ethical decision making by Karen L. Rich (chapter 2).2015

**DEN-622 Maxillofacialprosthodontics Credit Hours:3(2+1)**

##### Course Objectives:

To introduce students with different maxillofacial prosthesis and their applications.

##### Course Contents:

Elementary knowledge of various maxillofacial prosthesis, Trauma, Orthognathic surgery, Classification Of obturators and its uses, Various types of jaw splints and their uses, Classification of gunning splints and Uses, various types of jaw exercises and uses, Various types of stunts and uses.

##### Practical:

* + Clinical diagnosis of various maxillofacial and craniofacialdefects
	+ Lab procedures involved in fabrication of splints, stunts andobturators

##### Recommended Books:

* + J Peterson, Tucker, Edward Ellis. Contemporary Oral & Maxillofacialsurgery
	+ Oral and Maxillofacial Surgery byKruger