

### CURRICULUM FOR BS RENAL DIALYSIS TECHNOLOGY INSTITUTE OF PARAMEDICAL SCIENCES (IPMS) KHYBER MEDICAL UNIVERSITY PESHAWAR



**Missionof BS DialysisProgram:**

MissionofBSDialysisprogramistoproducehighlyqualified,knowledgeableandskillfuldialysistechnologistbyhighqualifiedfaculty,structuredcurriculum,videodemonstration,clinicalpracticeandadvancedialysissetupstomeetthefuturehealthcareneedsofthenationalandinternationallevel.Whowillbecontributeinthefieldofdiagnosis,management,technicalandteachingskillsinhealthcareinstitutes.

### Objectivesof BSDialysisProgram:

1. Todemonstratein-depthknowledgeofbasicanddialysisbothintheirfundamentalcontextandtheirapplicationinthehealthcareinstitutes.
2. To equipthe students with relevant Professional Knowledge, Skills and Ethical

values

1. Totrainthestudentsinthedifferentdialysissetupsintertiarycarehospital.
2. Toincorporateanddemonstratepositiveattitudeandbehaviortoallpersonals
3. Totrainthestudentswithbasicresearchskillstounderstandandconductresearch
4. ToequipstudentswithEnglishlanguage,computerandcommunicationskills

### SPECIFICLEARNINGOUTCOMES OF BSRENAL DIALYSIS TECHNOLOGY:

Followingcompetencieswillbeexpectedfromastudentcompleting4yearsdegreecourseinRenalDialysisTechnology,thestudentswillbeableto

* DemonstrateCounselingofpatientaboutprocedure
* AnalyzeInspectsapatient'sdialysisaccess
* Writedocumentpre-dialysisvitalsigns,weight,andtemperature
* Preparationofthedialyzer,reprocessinganddeliverysystems
* Equipmentmaintenance
* Skillstomonitorandrecordapatient’svitalsignsduringprocedure
* Assessmentofpatientsforanycomplicationsthatoccurduringaprocedure
* Preparedialysateaccordingtoestablishedproceduresandthedialysisprescription
* AssemblesandpreparesthedialysisextracorporealcircuitaccordingtoprotocolandDialysisprescription
* Testsmonitorandmachinefunctions,includingalarms,conductivityandtemperature
* Setsmonitorandalarmsaccordingtounit
* Administerlocalanesthesia,insertsneedles,andinitiatesdialysisaccordingtopatientprescription
* Administeranticoagulantaccordingtoprescription
* Measureandadjustbloodflowrateaccordingtoprescription
* Calculateandadjustfluidremovalratesaccordingtoprescription
* Monitorpatientsandequipment,respondstoalarms,andreadjusttreatmentparametersaspatientrequirements
* Changefluidremovalrateandpatientposition,andadministersreplacementsalineas directedbythedialysistechnologist,physicianorder
* Respondappropriatelytodialysis-relatedemergenciessuchashypotensiveepisodes,needledisplacementorinfiltration,clottingepisodes,bloodleaks,airemboli,etc.
* Initiatecardiopulmonaryresuscitation(CPR)intheeventofacardiacarrest
* Discontinuedialysisandestablisheshemostasisfollowingaccordingtoprotocol.

Inspects,cleans,anddressesaccessetc

* Obtainandrecordpost-dialysisvitalsigns,temperature,andweight.
* Discarddialysissuppliesandsanitizesequipmentaccordingtomanufacturerprotocol.
* Patienttrainingforat-homedialysistreatmentandtechniquestoprovideemotionalsupportpatientsneedforself-care.
* Maintainprofessionalconduct,goodcommunicationskills,andconfidentialityinthecareofpatients.
* CollaboratewiththeRenalDialysisTechnologistinidentifyingandmeetingpatienteducationgoals.

### FRAMEWORK FORBS RENAL DIALYSIS TECHNOLOGY (4 YEAR PROGRAMME)

* TotalnumbersofCredithours 130(HECrecommended:124-136)
* Duration 4years
* Semesterduration 16-18weeks
* Semesters 8
* CourseLoadperSemester 15-18Credithours
* Numberofcoursespersemester 4-6

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| **SCHEMEOF STUDIESFOR4 YEARBSRENALDIALYSISTECHNOLOGY** | | | | |  |
|  | **Semester/Year** | **NameofSubject** | **CODE** | **Credits** |  |
|  | **First** | MEDICAL BIOCHEMISTRY-I | PMS-601 | 4(3+1) |  |
|  |  | HUMANPHYSIOLOGY-I | PMS-602 | 4(3+1) |  |
|  |  | HUMANANATOMY-I | PMS-603 | 4(3+1) |  |
|  |  | ENGLISH-I | PMS-604 | 2+0 |  |
|  |  | PAKSTUDIES | PMS-605 | 2+0 |  |
|  |  | COMPUTERSKILLS | PMS-606 | 1+1 |  |
|  |  |  |  | **18** |  |
|  | **Second** | MEDICAL BIOCHEMISTRY-II | PMS-607 | 4(3+1) |  |
|  |  | HUMANPHYSIOLOGY-II | PMS-608 | 4(3+1) |  |
|  |  | HUMANANATOMY-II | PMS-609 | 4(3+1) |  |
|  |  | ENGLISH-II | PMS-610 | 2+0 |  |
|  |  | ISLAMICSTUDIES | PMS-611 | 2+0 |  |
|  |  |  |  | **16** |  |
|  | **Third** | HAEMATOLOGY-I | MT-601 | 2+1 |  |
|  |  | GENERALPATHOLOGY-I | PMS-612 | 2+1 |  |
|  |  | MEDICALMICROBIOLOGY-I | PMS-613 | 2+1 |  |
|  |  | CommunicationSkill | PMS-615 | 2(1+1) |  |
|  |  | G.PHARMACOLOGY-I | PMS-614 | 2+1 |  |
|  |  | ANTOMYANDPHYSIOLOGYOFKIDNEY | RDT-601 | 2+1 |  |
|  |  |  |  | **17** |  |
|  | **Fourth** | HAEMATOLOGY-II | MT-604 | 2+1 |  |
|  |  | G.PHARMACOLOGY-II | PMS-616 | 2+1 |  |
|  |  | MEDICALMICROBIOLOGY-II | PMS-618 | 2+1 |  |
|  |  | G.PATHOLOGY-II | PMS-617 | 2+1 |  |
|  |  | SPECIALPATHOLOGYOFKIDNEY | RDT-602 | 2+1 |  |
|  |  | PRINCIPLEANDPROCEDUROFDIALYSIS | RDT-603 | 2+1 |  |
|  |  |  |  | **18** |  |
|  | **Fifth** | SPECIALPATHOLOGYOFKIDENY-II | RDT-604 | 2+1 |  |
|  |  | ACUTECOMPLICATIONOFDAILYSIS | RDT-605 | 2+1 |  |
|  |  | SPECILIZEDDIALYSIS | RDT-606 | 2+1 |  |
|  |  | PERITONEALDIALYSIS | RDT-608 | 2+1 |  |
|  |  | LEADERSHIPANDMANAGMENT | ANS-610 | 2+1 |  |
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|  |  | CHRONICCOMPLICATIONOFDIALYSIS-I | RDT-607 | 2+1 |  |
|  |  |  |  | **18** |  |
|  | **Sixth** | CHRONICCOMPLICATIONOFDIALYSIS-II | RDT-609 | 2+1 |  |
|  |  | DIALYSISINSPECIALSITUATION | RDT-610 | 2+1 |  |
|  |  | COMPLICATIONOFPERITONEADIALYSIS | RDT-611 | 2+1 |  |
|  |  | DIALYSISADEQUACY | RDT-612 | 2+1 |  |
|  |  | UROLOGICALPROCEDURE-I | RDT-613 | 2+1 |  |
|  |  | RENALPHARMACOLOGY | RDT-614 | 2+1 |  |
|  |  |  |  | **18** |  |
|  | **Seventh** | INFECTIONCONTROLINDIALYSISUNIT | RDT‐615 | 1+1 |  |
|  |  | NUTRITIONANDDIETTHERAPY | RDT‐616 | 2+1 |  |
|  |  | RESEARCHMETHODOLOGY | PMS‐621 | 2+1 |  |
|  |  | EPIDIMOLOGY | PMS‐623 | 2+0 |  |
|  |  | BIO‐STATISTIC | PMS‐622 | 2+1 |  |
|  |  | UROLOGICALPROCEDURE‐II | RDT‐617 | 2+1 |  |
|  |  |  |  | **16** |  |
|  | **Eight** | RESEARCHPROJECT/FINALPROJECT | PMS‐626 | 6+0 |  |
|  |  | SEMINAR | PMS‐627 | 1 |  |
|  |  | RENALEMERGENCY | RDT‐618 | 2+1 |  |
|  |  | BIOETHICS | PMS‐625 | 2+0 |  |
|  |  |  |  | **12** |  |
|  |  | **TOTALCREDITHOURS** |  | **133** |  |
| **Total credit hours= 133 HEC recommendation=124‐136** | | | | |  |

# 1stSEMESTERCOURSES

## MEDICAL BIOCHEMISTRY-I

* + HumanPhysiology-I
  + HumanAnatomy-I
  + PAK-Study
  + English-I
  + ComputerSkill

### PMS‐601 MEDICAL BIOCHEMISTRY‐I Credit Hrs: 4(3+1)

#### Courseobjectives:

After successful completion of this course, students will be able to,

* Describe the chemical composition, biochemical role, digestion and absorption of macro and micro molecules of the cell.
* Discuss different biochemical reactions in cell
* Explain mechanism of action of hormones

#### Coursecontents:

Biochemicalcompositionandfunctionsofthecellmembrane;Chemistryofsignalsandreceptors;StructureandfunctionofCarbohydrates,Proteinsandlipids;biochemicalfunctionsofvitamins;biochemicalfunctionofSodium,potassium,chloride,calcium,phosphorus,magnesium,sulfur,iodineandfluoride;Compositionandfunctionofsaliva,gastricjuice,gastricacid(HCL),pancreaticjuice,bileandintestinalsecretion;Digestionandabsorptionofproteins,carbohydrates,lipids,vitaminsandminerals;Bodybuffersandtheirmechanismofaction;Acidbaseregulationinhumanbody;Biochemicalmechanismsforcontrolofwaterandelectrolytebalance;Mechanismofactionofhormones.

#### Practicals:

1. GoodlaboratoryPractices
2. PreparationofSolutions
3. PrinciplesofMEDICAL BIOCHEMISTRYanalyzers(spectrophotometer,flamephotometer)
4. DeterminationofCholesterol,Tg,HDL,LDL,sugar,calciumandphosphorusinblood
5. SOPofcentrifuge,waterbathandmicroscope

#### RecommendedBooks

* + Harper’sMEDICAL BIOCHEMISTRYRobertK.Murray,DarylK.Granner28thedition2009
  + MedicalMEDICAL BIOCHEMISTRYMushtaqAhmadvol.IandII8thedition2013

### PMS‐602 HUMANPHYSIOLOGY‐I CreditHrs:4(3+1)

#### CourseObjectives:

After successful completion of this course, students will be able to,

* Describe the basic concepts of physiology beginning from the cell organization to organ system function.
* Discuss the organization of cell, tissue, organ and system with respect to their functions.
* Explain the physiology of Respiration, G.I.T, Urinary system and Endocrine system

#### Coursecontents:

Functionalorganizationofhumanbody,MechanismofHomeostasis,Cellstructureanditsfunction,functionofdifferentTissue,Functionsoftheskin,,Typesandfunctionofmuscle,Neuromuscularjunction,functionsoftheendocrineglands,BreathingMechanism,ExchangeofrespiratoryGaseous,Transportofrespiratorygases,FunctionofdifferentpartofDigestivesystem,Functionofliverandpancreas,DigestionandAbsorption

inGastrointestinaltract,Patho-PhysiologyofGastrointestinalDisorders,FormationofUrinebytheKidney,Glomerularfiltration,Renalandassociatedmechanism forcontrollingECF,RegulationofAcid-BaseBalance,MaleReproductiveSystem(Male),Prostategland,Spermatogenesis,FemaleReproductiveSystem,MenstrualCycleandPregnancyandparturition,MammaryGlandsandLactationandFertilityControl

#### Practicals:

1. Introductiontomicroscope
2. Bleedingtime
3. Clottingtime
4. WBCscountandRBCscount
5. PlateletscountandReticulocytescount

#### RecommendedBooks:

* + EssentialsofMedicalPhysiologyKSembulingam,PremaSembulingamSixthEdition2013
  + ConcisePhysiologyDr.RajaShahzad1stEdition2012
  + GuytonAndHallTextbookOfMedicalPhysiologyJohnE.Hall,ArthurC.GuytonProfessorandChair2006
  + RossandWilsonAnatomyandPhysiologyinHealthAndIllness11thEditionAnneWaugh,AllisonGrant2010

### PMS‐603 HUMAN ANATOMY‐I CreditHrs:4(3+1)

#### CourseObjectives:

After successful completion of this course, students will be able to,

* Identify the principle structures of tissues, organs and systems
* Discuss the different concepts and terms of general anatomy including skeleton and Musculo skeletal system.
* Explain the anatomy of Thorax, Abdomen and pelvis

#### Coursecontents:

Musculoskeletalsystem(AxialandAppendicular),AxialSkeleton,Differentbonesofhumanbody,AxialandAppendicularSkeleton,Classificationonthebasisofdevelopment,regionandfunction,Generalconceptofossificationofbones,partsyoungbone,Bloodsupplyoflongbones.JointsStructuralRegionalandfunctionalclassificationofjoints,Characteristicsofsynovialjoints,Classificationofsynovialjoints,Movementsofsynovialjoints.MuscularSystemPartsofmuscleClassificationofmuscles(skeletal,Cardiac,smooth)Thoracicwall:Musclesofthorax,SurfaceAnatomy,Trachea,lungs,pleura,mammaryglands(breast),Heartandthoracicvessels.Thoraciccavity:Mediastinum,Lungs,bronchi,bloodsupplyandlymphaticAbdominalwall:Skin,nerveandbloodsupply,Musclesofanteriorabdominalwall.Abdominalcavity:GeneralArrangementoftheAbdominalViscera,Peritoneum,Omenta,mesenteries,Stomach,blood,nerve,lymphaticsupply,Smallintestine,blood,nervousandlymphaticsupply,Largeintestine:bloodnerveandlymphaticsupply.Thepelvicwall:Anterior,posteriorwall,diaphragm.Pelviccavity:Ureters,urinarybladderMalegenitalorgans,Femalegenitalorgans,Musclesofpelvicregion,bloodsupply,nervesupply,SpecialSenses.

#### Practicals:

1. StudyAxialandAppendicularskeletononhumanskeletalmodel.
2. Studymusculoskeletalsystemonhumanmusculoskeletalmodel.
3. Studyorgansofspecialsenses.
4. StudyandunderstandanatomyofThorax,AbdomenandPelvisthrough:
5. HumanModels
6. Videodemonstration

#### RecommendedBooks:

* + RossandWilsonAnatomyandPhysiologyinhelthandillness11thEditionWaughGrant.
  + ClinicalAnatomy(Byregions)9thedition,RichardS.Snell.

#### Referencebooks:

* + NetterAtlasofhumananatomy5thEditionSaunders.
  + Gray’sAnatomyforstudents2ndEditionDrakeVogalMitcell

#### PMS‐604 ENGLISH –I CreditHrs:2(2+0)

**CourseObjective:**

After successful completion of this course, students will be able to,

* Compose a well-constructed essay that develops a clearly defined claim of interpretation which is supported by close textual reading.
* Utilize literary terminology, critical methods, and various lenses of interpretation in their writing.
* Apply the rules of English grammar.
* Adhere to the formatting and documenting conventions of our discipline

#### CourseContents:

VocabularyBuildingSkills:Antonyms,Synonyms,Homonyms,OnewordSubstitute,Prefixesandsuffixes,Idiomsandphrasalverbs,Logicalconnectors,Checkspellings,PracticalGrammar&WritingSkill:PartsofSpeech,Tenses,Paragraphwriting:Practiceinwritingagood,unifiedandcoherentparagraph,Préciswritingandcomprehension,Translationskills:UrdutoEnglish,Readingskills:Skimmingandscanning,intensiveandextensive,andspeed reading,summary and comprehensionParagraphs, Presentationskills:Developing, OralPresentationskill, Personalitydevelopment (emphasis oncontent,styleandpronunciation)

#### Recommendedbooks:

* + PracticalEnglishGrammarbyA.J.ThomsonandA.V.Martinet.Exercises2.Thirdedition.OxfordUniversityPress1986.ISBN0194313506.
  + Reading.Advanced.BrianTomlinsonandRodEllis.OxfordSupplementarySkills.

ThirdImpression1991.ISBN0194534030.

### PMS‐605 PakStudies(Compulsory) CreditHrs:2(2+0)

#### CourseObjectives:

After successful completion of this course, students will be able to,

* Develop vision of Historical Perspective, Government, Politics, Contemporary Pakistan, ideological background of Pakistan.
* Study the process of governance, national development, issues arising in the modern age and posing challenges to Pakistan.
* Inculcate patriotism in the hearts of students so that they may become a good citizen.

#### CourseContents:

HistoricalPerspective:IdeologicalrationalewithspecialreferencetoSirSyedAhmedKhan,AllamaMuhammadIqbalandQuaid-i-AzamMuhammadAliJinnah,FactorsleadingtoMuslimseparatism,PeopleandLand,IndusCivilization,Muslimadvent,LocationandGeo-Physicalfeatures.GovernmentandPoliticsinPakistan,Politicalandconstitutionalphases:1947-58,1958-71,1971-77,1977-88,1988-99,1999onwardContemporaryPakistan:Economicinstitutionsandissues,Societyand socialstructure,Ethnicity,ForeignpolicyofPakistanandchallenges,FuturisticoutlookofPakistan

#### BooksRecommended:

* + Akbar,S.Zaidi.*IssueinPakistan’sEconomy.*Karachi:OxfordUniversityPress,2000.
  + Mehmood,Safdar.*PakistanKayyunToota,*Lahore:Idara-e-Saqafat-e-Islamia,ClubRoad,nd.
  + Amin,Tahir.*Ethno‐NationalMovementinPakistan,*Islamabad:InstituteofPolicyStudies,Islamabad.Afzal,M.Rafique.*PoliticalPartiesinPakistan,*Vol.I,II&III.Islamabad:NationalInstituteofHistoricalandculturalResearch,1998.

### PMS‐606 COMPUTERSKILLS CreditHrs:2(1+1)

#### Courseobjectives:

After successful completion of this course, students will be able to,

* Use technology ethically, safely, securely, and legally.
* Identify and analyze computer hardware, software, and network components.
* Design basic business web pages using current HTML/CSS coding standards.
* Install, configure, and remove software and hardware

#### CourseContents:

IntroductiontoComputerandWindowXP/7;MSOffice2007(Word,Excel,PowerPoint);Internetaccessanddifferentdatabasesavailableontheinternet;Email.

#### RecommendedBooks:

IZComputersciencebyMuhammadAshraf,edition1st2010

# 2ndSEMERTERCOURSES

## MEDICAL BIOCHEMISTRY-II

* + - HumanPhysiology-II
    - HumanAnatomy-II
    - English-II
    - IslamicStudies

**PMS‐607** **MEDICAL BIOCHEMISTRY‐II** **CreditHrs:4(3+1)CourseObjectives:**

After successful completion of this course, students will be able to,

* Describe the synthesis of proteins, lipids, nucleic acids, carbohydrates and their role in metabolic pathways along with their regulation
* Discuss the clinical role of enzymes in human being.
* Interpret and apply nutritional concepts to evaluate and improve the nutritional health of individuals with medical conditions.

#### CourseContents:

Balancefood,Majorfoodgroups,NutritionalstatusofPakistanination,Metabolicchangesinstarvation,Proteinenergymalnutrition,Regulationoffoodintake,Obesity;metabolismofcarbohydrates(CitricAcidCycle,Glycolysis,PentosePhosphatePathway),proteins(ureaandcoriecycle),nucleotides(uricacidformation)andlipids(betaoxidation);Respiratorychainandoxidativephosphorylation,componentsofrespiratorychain,electroncarriers,ATPsynthesiscoupledwithelectronflow,phosphorylationofADPcoupledtoelectrontransfer;clinicaldiagnosticenzymology:clinicalsignificanceofALT,

AST,ALP,LDH,CK,CKMB,Pancreaticlipaseandamylase,cholinesterase,G6PD,GGT.

#### Practicals:

1. Determinationofliver,cardiac,pancreaticenzymes
2. Determinationofureaanduricacid

#### RecommendedBooks:

* + Harper’sMEDICAL BIOCHEMISTRYRobertK.Murray,DarylK.Granner28thedition2009
  + MedicalMEDICAL BIOCHEMISTRYMushtaqAhmadvol.IandII8thedition2013

**PMS‐608** **HUMAN PHYSIOLOGY‐II** **CreditHrs:4(3+1)**

#### CourseObjectives:

After successful completion of this course, students will be able to,

* Demonstrate a systematic and coherent knowledge of the physiological functioning of the central nervous system, special senses (CNS & SS), cardiovascular system and respiratory system.
* Describe the formation of the formed element components of blood.
* Identify the components and function of the lymphatic system and discuss the role of the innate immune response against pathogens

#### CourseContents:

PhysiologyofNervousSystem,Functionofvariouscranialnerves,FunctionsofsomaticmotornervoussystemFunctionsoftheautonomicnervoussystem,functionofneurons,neuroglialcellsandtheircomponents.Restingmembranepotentialandanactionpotential,functionofasynapseandreflexarc,functionsofthespecializedsenseorgans:Eye,physiologyofsite,accommodation,opticnerveandopticchiasma,Ear,functionsoftheinternal,middleandexternalearPhysiologyofthehearingandbalance,Smell,physiologyofolfactorynerve.Taste,physiologyoftasteLocationofthetastebudsPhysiologyofspeech,Blood:CompositionandfunctionofBlood,haematopoisis,Bloodgrouping,Coagulationmechanism,PhysiologyofCardiovascular systemThePhysiologyofPulmonarySystemicCirculation:ArteriesVeinsLocalControlofBloodVesselsNervousControlofBloodVesselsRegulationofArterialPressure,ThefunctionofLymphaticSystem,tonsils,lymphnodes,thespleenandthethymus,ClassificationandphysiologyofImmunesystem,AntigensandAntibodies,PrimaryandsecondaryresponsestoanantigenAntibody mediatedimmunity andcell-mediatedimmunityRole of lymphocyte inimmunityregulation.

#### Practicals

* + SpirometryandElectrocardiographyandBloodPressureMeasurement
  + NormalandabnormalECGinterpretationandPulseratemeasurementandHeartsounds

#### RecommendedBooks

* + Essentialsof MedicalPhysiology KSembulingam, PremaSembulingam Sixth Edition2013
  + GuytonAndHallTextbookOfMedicalPhysiologyJohnE.Hall,ArthurC.GuytonProfessorandChair2006

### PMS‐609 HUMANANATOMY‐II Credit Hrs: 4(3+1)

#### CourseObjectives:

After successful completion of this course, students will be able to,

* Identify bones of the upper limb and bony landmarks that articulate at each joint with all muscular compartments of the upper limb.
* Discuss bones of the lower limb and bony landmarks that articulate at each joint with all muscular compartments of the lower limb and identify these structures on radiographic images.
* Describe the topographical and functional anatomy of the head and neck, in particular the arrangement, relations and structure of the major skeletal, muscular and neurovascular components of the head and neckCoursecontents:

The upper limb Bones ofshoulder girdle and Arm,Muscles, Axilla, Brachial plexus, Cubitalfossa,theforearm,handbones,muscles,Bloodsupply,Nervesupply,lymphatics,ThelowerlimbFascia,Bones,Muscles,Femoraltriangle,Bloodsupply,Nervesupply,Lymphaticsupply.HeadandneckSkull,Mandible,Cranialnerves,cranialcavity,Meninges,Brain,Orbit,Neck,EndocrineSystemClassificationofendocrineglands,Pituitaryglands,ThyroidGlands,Adrenalglandanddifferencesbetweenthecortexandmedulla.

#### Practicals:

StudyandunderstandtheanatomyofUpperlimb,Lowerlimb,HeadandNeckthrough:

1. HumanModels
2. Videodemonstration
3. Studyradiographsofupperandlowerlimb.

**RecommendedBooks:Essentialbooks**(textbooks)

* + RossandWilsonAnatomyandPhysiologyinhealthandillness11thEditionWaughGrant.
  + ClinicalAnatomy(Byregions)9thedition,RichardS.Snell.

#### Referencebooks

* + NetterAtlasofhumananatomy5thEditionSaunders.
  + Gray’sAnatomyforstudents2ndEditionDrakeVogalMitcell.
  + BD.ChurasiaHumanAnatomy(Allregions)

### PMS‐610 ENGLISH –II CreditHrs:2(2+0)

#### CourseObjectives:

After successful completion of this course, students will be able to,

* Develop writing, reading and listening skills.
* Demonstrate integrative and independent thinking, originality, imagination, experimentation, problem solving, or risk taking in thought, expression, or intellectual engagement.
* Participate in discussions by listening to others' perspectives, asking productive questions, and articulating original ideas.

#### Coursecontents:

WritingSkill:CVandjobapplication,TechnicalReportwriting,Writingstyles,Changingnarration:Convertingadialogueintoareport,Convertingastoryintoanewsreport,Convertingagraphorpictureintoashortreportorstory,ActiveandPassivevoice,Letter

/memowritingandminutesofthemeeting,useoflibraryandinternetrecourses,Essay

writing,Phrases-Typesandfunctions,Clauses-Typesandfunctions,Punctuation:Tenses

* Types,Structure,Function,Conversionintonegativeandinterrogative.SpeakingSkill:GroupDiscussion(Varioustopicsgivenbytheteacher),Presentationbythestudents(individually),RolePlayActivitiesforimprovingSpeaking.ListeningSkill:ListeningVariousDocumentaries,Movies,andonlinelisteningactivitiestoimprovethelisteningaswellaspronunciationofthewords.

#### RecommendedBooks:

* + PracticalEnglishGrammarbyA.J.ThomsonandA.V.Martinet.Exercises2.Thirdedition.OxfordUniversityPress1986.ISBN0194313506.
  + PracticalEnglishGrammarbyA.J.ThomsonandA.V.Martinet.Exercises1.Thirdedition.OxfordUniversityPress.1997.ISBN0194313492.
  + PracticalEnglishGrammarbyA.J.ThomsonandA.V.Martinet.Exercises2.Thirdedition.OxfordUniversityPress.1997.ISBN0194313506
  + IntermediatebyMarie-ChristineBoutin,SuzanneBrinandandFrancoiseGrellet.

OxfordSupplementarySkills.FourthImpression1993.ISBN0194354057Pages

20-27and35-41.

* + Reading.UpperIntermediate.BrainTomlinsonandRodEllis.OxfordSupplementarySkills.ThirdImpression1992.ISBN0194534022.

### PMS‐611 ISLAMIC STUDIES CreditHrs:2(2+0)

#### CourseObjectives:

After successful completion of this course, students will be able to,

* Recognize basic concept of Islam (faith, pillars and systems etc.) and express their impact on society.
* Present Islam as complete code of life and demonstrate understanding of Islamic Ethics.
* Demonstrate the role of a medical professional in Islam.

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#### CourseContent:

FundamentalbeliefsofIslam,BeliefofTawheed,BeliefinProphethood,BeliefintheDayofJudgment,Worships,Salaat/Prayer,Zakat/ObligatoryCharity,Saum/Fasting,Hajj/Pilgrimage,Jihad,ImportanceofParamedicsInIslam,Ethics,ReligionandEthics,HigherIntents/ObjectivesofIslamicShariaandHumanHealth,ImportanceandVirtuesofMedicalProfession,ContributionandAchievementsofMuslimDoctors,KnowledgeoftheRights,WisdomandPrudence,Sympathy/Empathy,ResponsibleLife,Patience,Humbleness,SelfRespect,Forgiveness,Kindhearted,Beneficence,SelfConfidence,ObservingPromise,Equality,RelationamongtheDoctors,Jealousy,Backbiting,Envy,EtiquettesofGathering,RelationbetweenaDoctorandaPatient,GentleSpeaking,MercyandAffection,Consolingthe Patient,Toinquire thehealthofPatient,CharacterbuildingofthePatient,ResponsibilitiesofaDoctor,

#### RecommendedBooks:

* + Islamiyat(Compulsory) for Khyber Medical University, Medical Colleges andAlliedInstitutes

# 3rdSAMESTERCOURSE

## Hematology-I

* GeneralPathology-I
* MedicalMicrobiology-I
* GeneralPharmacology-I
* CommunicationSkills
* AnatomyandPhysiologyofkidney

### MLT‐601 HEMATOLOGY‐I CreditHrs:3(2+1)

#### CourseObjectives:

* TointroducethestudentsaboutthebasicconceptsinHematologyandacquireskillinpracticalworktoproducestudentssteepedinknowledgeofHematology.
* Toequipstudentswithlatestadvancementsinthefieldofhematology.

#### CourseOutlines:

Introductiontohematology,physiologyofbloodandcomposition,introductiontobonemarrow,structureandfunctionofbonemarrow,bloodformationinthebody(Intra-uterineandextra-uterine),factorsgoverninghematopoiesis,erythropoiesis,differentstagesandfactoreffectingonerythropoiesis,granulopoiesis,differentstagesandfactoreffectingongranulopoiesis,megakariopoiesis,different stagesandfactor effectingonmegakariopoiesis,introductiontohemoglobin structure,synthesisandfunction,completebloodcountanditsimportance,morphologyofredbloodcellsandwhitebloodcells,introduction toanemiaandclassificationofanemia,introductiontohemolysis(physiologicalandpathological),introductiontoWBCdisorders,introductiontoleukemia,etiology,pathogenesisanditsclassification,leukocytosis,leukopenia,neutrophilia,condition relatedtoneutrophilia,neutropenia,conditionrelatedtoneutropenia,eosinophilia, conditionrelatedtoeosinophilia,eosinopenia,conditionrelatedtoeosinopenia,monocytosis,conditionrelatedtomonocytosis,monocytopenia,conditionrelated tomonocytopenia,lymphocytosis,conditionrelatedtolymphocytosis,lymphopenia, conditionrelatedtolymphopenia,basophilia,conditionrelatedtobasophillia,introductiontohemostasis,mechanismofhemostasis,functionofplateletsand coagulationfactors,coagulationcascade,quantitativedisorderofplatelets,,qualitativedisorderofplatelets.

#### Practical:

1. collectionofbloodsampleandpreparationandstainingofperipheralbloodsmear
2. totalleucocytecount,RBCcountanddeterminationofabsolute values
3. differentialleucocytecount;plateletscountandreticulocytescountandtodeterminetheESR
4. determinebleedingtime;prothrombintime;activatedpartialthromboplastin time

#### RecommendedBooks:

* + EssentialofHematology,A.VHoffBrand,6thedition2006
  + ClinicalHematology,G.CDegrunchi,5thedition2002

### PMS‐612 GENERALPATHOLOGY‐I CreditHrs: 3(2+1)

#### CourseObjectives:

After successful completion of this course, students will be able to,

* Specifythe abnormalities of cell growth and differentiation.
* Describe cellular responses to stress and noxious stimuli and inflammation.
* Discuss cell injury, cell death and mechanisms involved in wound healing.
* Explain the hemodynamic disorders and neoplasia.

#### CourseContents:

Introductiontopathology,Cellinjury,Cellularadaptation,AcuteInflammation,ChronicInflammation, CellRepair &Wound Healing, Regeneration &Repair, HaemodynamicDisorders**,**Edema,Haemorrhage,Thrombosis,Embolism,Infarction&Hyperaemia,Shock,compensatorymechanismofshock,possibleconsequencesofthrombosis&differencebetweenarterial&venousemboli,Neoplasia,Dysplasia,benignandmalignantneoplasms,metastasis

#### Practicals:

1. EstimationofProthrombinTime
2. EstimationofClottingTime
3. EstimationofBleedingTime
4. EstimationofActivatedPartialTromboplastinTime

#### RecommendedBooks:

* + RobbinsBasicPathologyKumarAbbasAster9thEdition2013
  + ReviewOfGeneralPathologyMoh.Firdaus9thEdition
  + ShortTextBookofPathologyMoh.InamDanish3rdEdition2006

### PMS‐613 MEDICAL MICROBIOLOGY‐I Credit Hrs:3(2+1)

#### Courseobjectives:

* Tointroducethestudentswithbasicconceptsinbacteriologyandmycology.
* Tointroducethestudentswithcommonbacterialandfungalinfections.
* Tointroducethestudentswithdiagnosisofcommonbacterialandfungalinfections.

#### Coursecontents:

Historicalreviewand scopeofmicrobiology,sterilization,disinfection andantisepsis,structureandfunctionofprokaryoticcell,differencebetweenprokaryoticandeukaryoticcell,bacterialgrowthandmetabolism,bacterialclassification,normalmicrobialfloraofhumanbody,mechanismofbacterialpathogenesis,hostparasiteinteraction,Immuneresponsetoinfection,commonbacterialpathogenprevailinginPakistan,introductiontofungi, fungalcharacteristic,morphology,structure,replicationandclassification,mechanismoffungalpathogenesis,commonfungalpathogenprevailinginPakistan.

#### Practical:

1. IntroductionanddemonstrationofLaboratoryEquipmentsusedinMicrobiology.
2. Inoculation andisolation of pure bacterial culture and its antibiotic susceptibilitytesting.
3. Demonstrationofdifferenttypesofphysicalandchemicalmethodsofsterilization,and

disinfection.

1. Studentsshouldbethoroughtoworkwithcompound microscope.
2. Detectionof motility: Hanging drop examinationswith motile bacteria, non-motilebacteria.
3. Simplestainingmethodsofpurecultureandmixed culture.
4. Gram’sstainingofpurecultureandmixed culture.
5. AFBstainingofNormalsmear,AFBpositivesmear.
6. KOHpreparationforfungal hyphae.
7. Germtubetestforyeast identification.
8. Gramstainsfor candida.

#### Recommendedbooks:

* + SherrisMedicalMicrobiology:AnIntroductiontoInfectiousDiseases.Ryan,K.J.,Ray,C.G.,4thed.McGraw-Hill,2003.
  + ClinicalMicrobiologyMadeRidiculouslySimple.Gladwin,M.,&Trattler,B.,3rded.

MedMaster,2004.

* MedicalMicrobiologyandInfectionataGlance.Gillespie,S.,H.,Bamford,K.,B.,4thed. Wiley-Blackwell,2012.
* MedicalMicrobiology,Kayser,F.,H.,&Bienz,K.,A.,Thieme,2005.
* ReviewofMedicalMicrobiologyandImmunology.Levinson,W.,10thed.McGrawHillProfessional,2008.
* Jawetz,Melnick,&Adelberg'sMedicalMicrobiology.Brooks,G.,Carroll,K.,C.,Butel,J., &Morse,S.,26thed.McGraw-HillMedical,2012.

### PMS‐615 CommunicationSkill CreditHrs :2( 1+1)

#### CourseObjectives

After successful completion of this course, students will be able to,

* Communicate effectively both verbally and non-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 the interpersonal and organizational dynamics that affect effective communication in organizations.

#### Coursecontents:

IntroductiontoCommunication,MeaninganddefinitionofCommunication,Theprocessofcommunication,Modelsofcommunication,EffectiveCommunicationsinBusiness,ImportanceandBenefitsofeffectivecommunication,ComponentsofCommunication,Communication barriers,Non verbalcommunication, Principles ofeffectivecommunication,SevenCs,Communicationforacademicpurposes,Introductiontoacademicwriting,Summarizing,paraphrasingandargumentationskills,Textualcohesion,CommunicationinOrganizations,Formalcommunicationnetworksinorganizations,Informalcommunicationnetworks,

Computer-mediatedcommunication(videoconferencing,internet,e-mail,skype,groupware,etc),BusinessWriting,Memos,Letters,Reports,Proposals,Circulars,PublicSpeakingandPresentationskills,Effectivepublicpresentationskills,Audienceanalysis,Effectiveargumentationskills,Interviewskills.

#### RecommendedBooks:

* + PracticalEnglishGrammarbyA.J.ThomsonandA.V.Martinet.Exercises2.Thirdedition.OxfordUniversityPress1986.ISBN0194313506.
  + PracticalEnglishGrammarbyA.J.ThomsonandA.V.Martinet.Exercises1.Thirdedition.OxfordUniversityPress.1997.ISBN0194313492.
  + PracticalEnglishGrammarbyA.J.ThomsonandA.V.Martinet.Exercises2.Thirdedition.OxfordUniversityPress.1997.ISBN0194313506
  + IntermediatebyMarie-ChristineBoutin,SuzanneBrinandandFrancoiseGrellet.

OxfordSupplementarySkills.FourthImpression1993.ISBN0194354057Pages

20-27and35-41.

* + Reading.UpperIntermediate.BrainTomlinsonandRodEllis.OxfordSupplementarySkills.ThirdImpression1992.ISBN0194534022.

### PMS‐614 G.Pharmacology‐I CreditHrs:3(2+1)

#### CourseObjectives:

After successful completion of this course, students will be able to,

* Describe common terms related to pharmacology and drug therapy.
* Identify a range of drugs used in medicine and discuss their mechanisms of action.
* Report the clinical applications, side effects and toxicities of drugs used in medicine.

#### CourseContents:

Definitions ofadrugpharmacology,clinicalpharmacology,therapeutics,pharmacogenetics, therapeuticindex,Pharmacokinetics:Drugpassageacrosscellmembrane,Plasmahalf-life,Steadystateconcentration,biologicalhalflife,Absorption:sites,enterohepaticcirculation,bioavailability,factorsaffectingsystemicavailability,pre-systemicelimination,effectoffoodondrugkinetics,Distribution:proteinbinding,Metabolism:resultsofmetabolismofdrugs,

sitesofmetabolism,phasesofmetabolism,enzymeinduction,enzymeinhibition,Elimination:Excretion,Mechanismofdrugaction:Differentmechanismsofdrugaction.Receptors:Drugbindingtoreceptors,secondmessenger,receptorregulation.Dose-responserelationship:agonist,antagonist,affinity,potency,efficacy,factorsmodifyingdrugresponse.Druginteractions:Definitions.Typesofinteraction:harmfulanduseful.Pharmacologicalbasisofdruginteraction:pharmacokineticinteractions;pharmacodynamicsinteractions;antagonism,synergism.AnoverviewofDrugsactingonparasympatheticsystem,Antihypertensivedrugs,AnoverviewofAnalgesics:NarcoticsandNon-narcotics,AnoverviewofDrugsactingingastrointestinaltract,Drugsactingonrespiratorytract,AnoverviewofDrugsactingonendocrinesystem.

#### Practicals:

1. Routesofdrugadministration
2. Dose-ResponseCurves
3. Affectofadrenalineonpulserate
4. Affectofbetablockersonheartrateafterexercise
5. Sourceofdrugandidentificationofsomerawmaterialsthataresourceofdrug
6. Weightconversionsandmeasurements
7. PreparationSulfurointment
8. Preparationofpilocarpinedrops
9. Prescriptionwriting

#### RecommendedBooks

* + Lippincott’spharmacology(textbook)byMycek2ndEditionpublishedbyLippincottRaven2000.
  + Katzungtextbookof pharmacology (Reference Book) by Bertram Katzung8thEdition,PublishedbyAppleton.dec2007.

### RDT‐601 AnatomyandPhysiology of Kidney Credit Hrs:3(2+1)

#### CourseObjective:

Attheendofthisofcoursestudentwillbeable

* + ToIdentifydifferentfunctionofkidney
  + ToDescribemechanismofurineformation
    - ToAnalyzeregulationofbloodchemistrythroughkidney

#### CourseContents:

Introduction,anatomyofurinarysystem,functionofkidney,endocrinefunctionokkidney,regulationofbloodpressure,Differentlayersofkidney,Renalcorpuscle,tubularportionofnephron,passageofurine,structureofjuxtaglomerularapparatus,functionofjuxtaglomerularapparatus,RegulationofGlomerularbloodflowandglomerularfiltration,Renalbloodvessels,measurementofrenalbloodflow,regulationofrenalbloodflow,specialfeatureofrenalcirculation,urineformation,glomerularfiltrationrate,filtrationfraction,tubularreabsorption,mechanismofreabsorption,routeofreabsorption,siteofreabsorption,tubularsecretion,concentrationmedullarygradient,countercurrentmechanismmultiplier,countercurrentmechanismexchanger,roleofADH,acidificationofurineand roleofkidneyinacidbasebalance, Propertiesandcompositionofnormalurine,RenalFunctiontests,Examinationofbloodandurinerenalfunctiontests.

#### Practical:

1. Identificationofvariouspartsofkidneystructure
2. MicroscopicandStructuralexaminationofhumankidney
3. Ultrasoundexaminationofkidney
4. Laboratoryanalysisofbloodandurinespecimenofnephrologypatient

#### RecommendedBooks:

* + EssentialsofMedicalPhysiologyKSembulingam,PremaSembulingamSixthEdition2013
  + GuytonAndHallTextbookOfMedicalPhysiologyJohnE.Hall,ArthurC.GuytonProfessorandChair2006

# 4thSemesterCourses

## Haematology-II

* GeneralPhermacology-II
* MedicalMicrobiology-II
* GeneralPathology-II
* SpecialPathologyofKidney-I
* PrincipleandProcedureofDialysis

### MLT‐604 HAEMATOLOGY‐II CreditHrs:4(2+1)

#### CourseObjectives:

* TointroducethestudentsaboutthebasicconceptsinHematologyandacquireskillinpracticalworktoproduceateamofMedicalTechnologistssteepedinknowledgeofPathology.
* ToequipMedicalTechnologistswithlatestadvancementsinthefieldofhematology.

#### CourseOutlines:

Ironmetabolism,introductiontoirondeficiencyanemia,differentstagesanddiagnosis,introductiontothalassemia,classification,pathophysiologyanditsdiagnosis,introductiontoSidroblasticanemia,etiologyanddiagnosis,folatandvitaminB12metabolism,introductiontomegaloblasticanemia,etiologyanddiagnosis,introductiontoG6PDdeficiencyanemia,pathophysiologyanddiagnosis,introductiontosicklecellanemia,pathophysiologyanddiagnosis,introductiontohereditaryspherocytosis,pathophysiologyanddiagnosis, introduction tohemolyticanemia,Immunehemolytic anemia,non immunehemolyticanemia,

aplasticanemia,etiologyanddiagnosis.ABOandRhDgroupsystem,kellbloodgroupsystem,kedbloodgroupsystem,duffybloodgroupsystem,donorselectioncriteria,phlebotomyofdonor,bloodproducts,preparation,storageanditsimportance,hemvigilanceinbloodbank,crossmatch,typesofcrossmatch,procedureanditsimportance,bloodgroupinganditsimportance,coomb,stest,typesandimportance,introductiontohemolyticdiseaseofnewborn,types,pathophysiology,diagnosisandmanagement,hemolytictransfusionreactionsandmanagement.

#### Practical:

1. ABObloodgrouping(ForwardandReversegrouping)
2. RhBloodgrouping
3. Antibodiesscreening
4. Crossmatching(MajorandMinor)
5. Coombstests(DirectandIndirect)
6. Separationofdifferentbloodcomponents
7. DuTest

#### Recommendedbooks

* + EssentialofHematology,A.VHoffBrand,6thedition2006
  + ClinicalHematology,G.CDegrunchi,5thedition2002
  + PracticalHematology,DacieJ.V.10thedition2012

### PMS‐616 PHARMACOLOGY‐II CreditHrs: 3(2+1)

#### COURSEOBJECTIVES:

* + Toprovidequalitypatientcareinroutineaswellasadvancedprocedures.
  + Tounderstandthemechanismofdrugactionatmolecularaswellascellularlevel,bothdesirableandadverse.
  + Tounderstandtheprinciplesofpharmacokineticsi.e.drugabsorption,distribution,metabolismandexcretionandbeabletoapplytheseprinciplesintherapeuticpractice.

#### Coursecontents:

Drugsactingoncardiovascularsystem;Drugsforheartfailure,antihypertensivedrugs,antiarrhythemicdrugs,antianginaldrugs,AntiHyperlipidemicdrugs,Blooddrugs,Diuretics,Insulinandglucoseloweringdrugs,Chemotheraputicdrugs,Antibiotics,DrugsactingonRespiratorysystem

#### Practical:

1. Routesofdrugadministration
2. Dose-ResponseCurves
3. Affectofadrenalineonpulserate
4. Affectofbetablockersonheartrateafterexercise
5. Sourceofdrugandidentificationofsomerawmaterialsthataresourceofdrug
6. Weightconversionsandmeasurements
7. PreparationSulfurointment
8. Preparationofpilocarpinedrops
9. Prescriptionwriting

#### RecommendedBooks:

* + Lippincott’spharmacology(textbook)byMycek2ndEditionpublishedbyLippincottRaven2000.
  + Katzungtextbookofpharmacology(ReferenceBook)byBertramKatzung8thEdition,PublishedbyAppleton.dec2007.

### PMS‐618 MDICALMICROBIOLOGY‐II CreditHrs:3(2+1)

#### Courseobjectives:

* + Tointroducethestudentswithbasicconceptsinvirologyandparasitology.
  + Tointroducethestudentswithcommonviralandparasiticinfections.
  + Tointroducethestudentswithdiagnosisofcommonviralandparasiticinfections.

#### Coursecontents:

Biosafetylevels,controlofhospitalinfection,biomedicalwastemanagement,introductiontovirology,Viralmorphology,structure,replicationandclassification,generalpropertiesofvirus,pathogenesisandcontrolofvirus,commonviralpathogenprevailinginPakistan,introductiontoparasitology,Parasite(protozoanandhelminthes)morphologyandclassification,generalprincipalofpathogenesis,immunologyanddiagnosisofparasiticinfection,commonparasiticpathogenprevailinginPakistan.

#### Practical:

1. Cleaningofnewandusedglasswaresformicrobiologicalpurposes.
2. Studentsshouldbefamiliartouseautoclave,hotairoven,waterbath,steamer etc.
3. Macroscopicandmicroscopicexaminationofstoolforadultworms,ova,cysts, larvae.
4. Visittohospitalfordemonstrationofbiomedicalwastemanagement.
5. Demonstrationofcommonserologicaltestsusedforthediagnosisofviralandparasiticinfection.
6. Demonstrationofmalarialparasitesinbloodandbone marrow.
7. Demonstrationofleishmaniainblood film.
8. Concentrationtechniquesforintestinalparasitesin stool.

#### Recommendedbooks:

* + SherrisMedicalMicrobiology:AnIntroductiontoInfectiousDiseases.Ryan,K.J.,Ray,C.G.,4thed.McGraw-Hill,2003.
  + ClinicalMicrobiologyMadeRidiculouslySimple.Gladwin,M.,&Trattler,B.,3rded.

MedMaster,2004.

* + MedicalMicrobiologyandInfectionataGlance.Gillespie,S.,H.,Bamford,K.,B.,4thed.Wiley-Blackwell,2012.
  + MedicalMicrobiology,Kayser,F.,H.,&Bienz,K.,A.,Thieme,2005.

### PMS‐617 G.PATHOLOGY‐II CreditHrs:3(2+1)

#### CourseObjectives:

* + Tointroducestudentswithdifferentenvironmentalhazards
  + Togainknowledgeofsomebasicsystemicdiseases

#### Coursecontents:

Healtheffectsofclimatechange,toxicityofchemicalandphysicalagents,environmentalpollution,effectoftobacco,effectofalcohol,injurybytherapeuticdrugsanddrugsofabuse,generalprinciplesofmicrobialpathogenesis,specialtechniquesforidentifyinginfectiousagents,agentsof bioterrorism,heartfailure,congenital heartdiseases,ischemicheartdiseases,hypertensiveheartdiseases,arrhythmias,atelectasis,chronicobstructivepulmonarydisease,asthma,bronchiactasis,pneumonias,pneumothorax,hemothorax,nephroticsyndrome,renalstone,hydronephrosis,aphthousulcer,gastritis,pepticulcer,hemorrhoid,jaundice,livercirrhosis,viralhepatitis,cholecystitis,urinarytractinfections,arthritis,facialpalsy

#### Practicals:

1. Helicobacterpyloritest
2. DiagnosismethodsofUTI
3. Determinationofrenalfunctiontests
4. Determinationofliverfunctiontests
5. Determinationofcardiacprofile

#### RecommendedBooks:

* + RobbinsBasicPathologyKumarAbbasAster9thEdition2013
  + ReviewOfGeneralPathologyMoh.Firdaus,9thEdition
  + ShortTextBookofPathologyMoh.InamDanish3rdEdition2006

### RDT‐602 SPECIAL PATHOLOGYOFKIDNEY‐I CreditHrs:3(2+1)

#### Courseobjective:

Attheendofthiscoursestudentwillbeable

* + Tocategorizedifferentrenaldisease
  + Toanalyzeclinicaldiagnosisofdifferentrenaldisease.
  + TodescribePathologicalcausesofdifferentrenaldisease.
  + Toexplainpathologicalmechanismofdifferentrenaldisease.

#### Coursecontent:

ClinicalManifestationofrenaldisease,Imagingtechniquesforkidney,Polyuria,proteinuria,Hematuria,urinaryretention,AKI,CKD,glomerulardisease,thenephroticsyndrome,thenephriticsyndrome,Minimalchangeglomerulardisease,Membranousglomerulonephritis,Membranoproliferativeglomerulonephritis,IgAnephropathy,RPGN,GoodPasturesyndrome,FSGN,FSGS,SLE,Diabeticnephropathy,Amyloidosis,MalarialNephropathy,Rheumatoidarthritis,AnalgesicNephropathy,

#### Practical:

1. Examinationofmicroscopicsectionofkidneyinlaboratory
2. Ultrasoundexaminationofkidney
3. IdentificationofkidneyinabdomenX-ray
4. Examinationofkidneydiseasespecimen
5. Laboratoryanalysisofstoolandurinespecimenofnephrologypatient
6. Visitofnephrologypatients(Inpatientsandoutpatients)

#### RecommendedBooks:

* + RobbinsBasicPathologybyKumar,AbbasandAster;9thedition
  + FandamentalofRenalPathology,ArthurH.Cohen,RobertB.Calvin,J.Charles,Jennette,ChartesE.Alphers,2ndEdition
  + Medicaldiagnosisandmanagement,InamDanish

### RDT‐603 PRINCIPLEANDPROCEDURE OFDIALYSIS Cr Hrs3(2+1)

#### Courseobjectives:

Attheendofthiscoursestudentwillbeable

* + Todescribeprincipleofdialysis
  + Tocategorizedifferentprocedureofdialysis
  + Todemonstratemechanismofultrafiltration
  + Torecognizemachinekeyfeature
  + Todescribewatercomposition

#### CourseContent:

HistoryandtheoryofDialysis,PrinciplesofHemodialysis,FactorAffectingSoluteClearanceonHemodialysis,UltrafiltrationProcessduringHemodialysis,HighefficiencyandHighFluxHemodialysis,DialyzerTechnicalSpecification,DialyzermembraneandDialyzertypes,DialysisMachinekeyFeature,facilities,machinemonitorandpatientmonitor,Waterpurification,dialysatesolutionandcomposition,vascularaccess,formationofvascularaccess,vascularcomplication,Hemodialysisprocedure,orderandpre–postdialysisassessment,needleplacement,Prescriptionfor1stdialysissessionforCKD,Anticoagulation

#### Practical:

1. Identificationofpartsofdialysismachine
2. Setupbloodlineanddialyzeronmachine
3. Preandpostassessmentofdialysispatient
4. Visittowatertreatmentplantofdialysisunit

#### RecommendedBook:

* + Handbookofdialysis,JohnT.Daulrdas,PeterG.Black,Todd,5thedition
  + OxfordHandbookofdialysis,JeremyLevy,EdwinaBrown,ChristinDaleyandAnastasiaLawrence,
  + Fluid,ElectrolyteandacidbasePhysiology,Halperin,GoldstainandKamal,4thEdition

# 5THSAMESTERCOURSE

## SpecialPathologyofkidney-II

* + - AcutecomplicationofDialysis
    - SpecializedDialysis
    - Chroniccomplicationofdialysis-I
    - PeritonealDialysis
    - LeadarshipandManagement

### RDT‐609 SPECIALPATHOLOGY OFKIDNEY‐II CrHrs:3(2+1)

#### CourseObjectives:

Attheendofthiscoursestudentwillbeable

* + Todescribedifferentstagesofkidneyfailure
  + TodescribePathologicalcausesofkidneyfailure
  + ToanalyzevariationofBloodcompositionduetorenalfailure

#### CourseContent:

AcuteInterstitialNephritis,ChronicinterstitialNephritis,Acutetubularnecrosis,Toxicacutetubularnecrosis,Ischemicacutetubularnecrosis,RenalTubularacidosis,RenalTuberculosis,RenovascularHypertension,RenalOsteodystrophy,Electrolytedisorder,UrinaryTractinfection,Pyelonephritis,Prostatitis,urinarytractobstruction,kidneyfailureduetoGIproblem,RenalCellcarcinoma,Sicklecellnephropathy

#### Practical’s:

1. Ultrasoundexaminationofkidney
2. Clinicalexaminationofrenalfailurepatient
3. Primingofbloodtubelining,dialyzeranddialysismachine
4. Laboratoryanalysisofrenalfailurepatient
5. Dialyzingpatientwithacuterenalfailure

#### RecommendedBook:

* + OxfordHandbookofdialysis,JeremyLevy,EdwinaBrown,ChristinDaleyandAnastasiaLawrence,4thEdition
  + TheEssentialsRenalPathophysiology,HelmurG.Rennke,BradleyM.Denker,3rdEdition
  + FandamentalofRenalPathology,ArthurH.Cohen,RobertB.Calvin,J.Charles,Jennette,ChartesE.Alphers,2ndedition
  + OxfordDeskReferenceNephrology,JonatanBarratt,KevinHarris,PeterTopham

### RDT‐606 Specialized Dialysis CreditHours:3(2+1)

#### Courseobjectives:

Attheofthiscoursestudentwillbeable

* + TointerprethemodialysisandCRRT
  + TooperateCRRTMachine
  + ToidentifydifferenttypeofCRRT

#### CourseContent:

ContinuousHemodialysis,continuoushemofiltration,continuousheamodifiltration,slowcontinuousultrafiltration,sustainedlowefficiencydialysis,clinicalindication,differenceamongC-HD,C-HFandC-HDFinclearanceofsmallandlargemoleculeweightsolute.VascularaccessforSpecializeddialysis,CRRTfilter,dialysisandreplacementsolution,prescribinganddeliveringofCRRT,equipment,settingtheultrafiltrationrate,anticoagulation,hemodiafiltrationversushemofiltration,indicationforplasmapheresis,plasmapheresis,principleoftreatment,Pharmacokineticsofimmnuoglobuline,technicalconsideration,vascularaccess,anticoagulation,replacementofsolution,Useofdialysisandhemoperfusionintreatmentofpoisoning,dialysisandhemoperfusion,indication,choiceoftherapy,importanceofvolumedistribution,technicalpoint,ComplicationoffluidmanagementinCRRT,ProblemofsoluteremovalinCRRT.

#### Practical:

1. SetupofextracorporealcircuitofCRRT
2. PrimingofCRRTcircuit
3. OperatingofCRRTmachine
4. Assessmentofpatientinintensivecareunite

#### RecommendedBook:

* + OxfordHandbookofdialysis,JeremyLevy,EdwinaBrown,ChristinDaleyandAnastasiaLawrence
  + Handbookofdialysis,JohnT.Daulrdas,PeterG.Black,Todd,5thedition
  + OxfordHandbookofNephrologyandhypertension,SimonSteddon,NeilAshman,AlistairChesser,JohnCunnigham,2ndedition

### RDT‐605 ACUTECOMPLICATIONOFDIALYSIS C.H:3(2+1)

#### CourseObjectives:

Attheendofthiscoursestudentwillbeable

* + Tointerpretassessmentandmanagementofdifferentcomplicationduringdialysis
  + Todescribehowpreventofdifferentcomplicationduringdialysis

#### CourseContent:

Acutecomplicationofdialysis,hypotension,(Intradialytic),Managementofhypotension,Preventionofhypotension,PreventionofHypotensionBloodvolumemonitoring,MuscleCramp,CausesofMuscleCramp,ManagementofMuscleCramp,PreventionofMuscleCramps,NauseaandVomiting,causesofNauseaandVomiting,managementofNauseaandVomiting,Prevention,Headache,Causes,Management,prevention,ChestpainandBackpain,causes,management,prevention,DisequilibriumSyndrome,causes,management,prevention,DialyzerReaction,causes,types,managementpreventionSeizures,causes,management,prevention,Hemolysis,causes,management,prevention,FeverandChills,causes,management,AirEmbolism,causes,management,prevention,Arrhythmia,causes,management,prevention.

#### Practicals:

1. Preandpostassessmentofdialysispatient
2. ConnectingviacentrallineorA.Vfistula
3. Intradialyticassessmentandmonitoring
4. Changingsettingduringdialysis
5. Terminatingdialysis
6. Responsetoemergencysituationduringdialysis

#### RecommendedBook:

* + Handbookofdialysis,JohnT.Daulrdas,PeterG.Black,Todd,5thedition
  + OxfordHandbookofdialysis,JeremyLevy,EdwinaBrown,ChristinDaleyandAnastasiaLawrence,
  + Fluid,ElectrolyteandacidbasePhysiology,Halperin,GoldstainandKamal,4thEdition

### RDT‐607 CHRONICCOMPLICATIONOFDIALYSIS‐I CH: 3(2+1)

#### CourseObjectives:

Attheofthisthestudentwillbeable

* + Todescribechroniccomplicationofhemodialysis
  + Todemonstratetherapyofchroniccomplicationofdialysispatient
  + Todescribehowpreventionofcommunicabledisease

#### CourseContent:

PsychosocialIssueinEndStagerenaldisease,Hypertension,HematologicalAbnormalities,DefinitionofAnemia,ConsequenceofAnemia,Treatment,ESATherapy,Bloodandbloodproducttransfusionreaction,Hemolysis,coagulationproblemindialysispatient,Immunedysfunctioninhemodialysis,infectiousproblemindialysispatients,bacterialinfection,viral infectionandfungalinfection,Endocrinedisturbances,Bonedisease,Pathophysiology, managementBoneDisease,Dermatologicalproblemsindialysispatients,Acidbaseproblemsinhemodialysispatients.

#### Practicals:

1. Basicdiagnosticmethodinhematology
2. Clinicalmanagementofdifferentcomplicationduringdialysis
3. Methodofpreventiontocommunicabledisease
4. Visitofnephrologyward

#### RecommendedBook:

* + FandamentalofRenalPathology,ArthurH.Cohen,RobertB.Calvin,J.Charles,Jennette,ChartesE.Alphers,2ndedition
  + OxfordHandbookofNephrologyandhypertension,SimonSteddon,NeilAshman,AlistairChesser,JohnCunnigham,2ndedition
  + OxfordHandbookofNephrologyandhypertension,SimonSteddon,NeilAshman,AlistairChesser,JohnCunnigham,2ndedition

### RDT‐608 PERITONEAL DIALYSIS CreditHrs:3(2+1)

#### CouseObjectives:

Attheendofthiscoursestudentwillbeable

* + Todescribeprincipleofperitonealdialysis
  + Todemonstrateinsertionandconformationofperitonealcatheter
  + Todescribeperitonealmembranecomplication

#### CourseContent:

PeritonealDialysis,anatomyofperitonealmembrane,functionofperitonealmembrane,physiology of peritoneal transport, clinical assessment and implication of peritonealtransport,principleofperitonealdialysis,factoreffectingefficiencyofperitonealdialysis,effectofdwelltimeofsoluteandfluidtransfer,Apparatusforperitonealdialysis,CAPD,automatedperitonealdialysis,hybridregimens,peritonealaccessdevice,acuteversuschronic catheter, types of chronic catheter, placement procedure, catheter break inprocedure, complication of peritoneal catheter, care of peritoneal catheter, acuteperitoneal dialysis prescription, introduction, peritoneal catheter, use of automatedcyclers, prescribing acute peritoneal dialysis, monitoring clearance, complication,Adequacyofperitonealdialysisandchronicperitonealdialysisprescription,choiceofPDtreatment modality, choice of prescription, nutritional issues in peritoneal dialysis,volumestatusandfluidoverloadinperitoneal.Peritonealdialysate:assessmentoffluidstatus, mechanismof fluid overload, diagnosis of ultrafiltration, management of fluidoverload,glucosesparingstrategies,hypertensionandhypotensioninperitonealdialysis.**Practical:**

1. Tubingofperitonealdialysisondialysis
2. Operatingofperitonealdialysis
3. Laboratoryanalysisofperitonealdialysispatient
4. Adequacyofperitonealdialysis

#### RecommendedBook:

* + OxfordHandbookofdialysis,JeremyLevy,EdwinaBrown,ChristinDaleyandAnastasiaLawrence
  + TextbookofPeritonealDialysis,NolphandGokal’s,3rdEdition
  + PeritonealDialysis:AClinicalUpdate,ClaudioRonco,RobertoDell’Aquila,MariaPiaRodighiero

### ANS‐610 LEADERSHIP ANDMANAGEMENT Credit Hrs: (2+0)

#### CouseObjectives:

* + Studentsareexpectedtounderstandvarious leadershipmodels, styles ofleadership,togaintheexpertisetomaximizeresultwithminimeffort,toutilizetheresourcesinskillfullmannerandensurehumanbettermentandjustice.

#### Coursecontents:

Introductionofleadership,theories,processmodle,skillofleadership,principlesofleadership,emotionalintelligence,professionalism.introductionofmanagement,scopepolicymaking,procedureandmethodofplanning,limitationofplanning,importanceoforganization,linerelationship,staffrelation,functionalrelation,comitteorganization,motivationandtheirthoeise,motivationaltechnique,commutation,Controlling:spanofcontrole,factorlimitingeffectivecontrol,supermanagement,generalmanger,middlemanger,supervior,planningandcontrollingrelationship,managementcontrolprocess.budget,principlesandtechniqueofco-ordination,personalmanagement,staffingandworkdistributiontechnique,recuretmentandselectionprocess,complaintsandgrievances,terminationofemployee,healthandsafetyofemployee,finalincalmanagement,profitmaximation,retrunmaximation,short,midlle,longetermfinicaing,

#### Recommendedbooks:

* + Theartofmedicalleadership.SuzanOran.ScottConrad
  + Strategicmanagement.Ritson,.neil
  + Managementbasics.Quinn,.susan,.
  + Emotionalintelligence.MTDtraining
  + OnBecomingALeader.Bennis,.warren,.4thedition.
  + HowToWinFriends&Influnce.Kouzes,.M,.james,.&Posner,.Z,.barry,.5thedition.

# 6thSemestercourse

## Chroniccomplicationofdialysis-II

* DialysisinSpecialSituation
* ComplicationofPeritonealDialysis
* DialysisAdequacy
* UrologicalProcedure-I
* RenalPharmacology

### RDT‐609 Chronic complication of dialysis‐II CreditHrs:3(2+1)

#### CourseObjectives:

Attheofthisthestudentwillbeable

* Todescribechroniccomplicationofhemodialysis
* Todemonstratetherapyofchroniccomplicationofdialysispatient
* Todescribehowpreventionofcommunicabledisease

#### CourseContent:

CardiovascularDisease,Traditionalriskfactor,NonTraditionalRiskfactor,IschemicHeartDisease,Valvulardisease,ValvularCalcificationandStenosis,Arrhythmia,CardiacArrest,and Sudden CardiacDeath, Pulmonary problemin Hemodialysispatients, GastrointestinalcomplicationintheHemodialysispatients,Ascites,liverdisease,Pancreatitis,urogenitalsystemcomplicationindialysispatients,ocularcomplicationindialysispatient,MusculoskeletalandRheumaticdisease,Neurologicalcomplicationindialysispatient,Nutritionalcomplicationinchronichemodialysis,dialysisininfantsandchildren

.

#### Practicals:

1. Basicdiagnosticmethodinhematology
2. Clinicalmanagementofdifferentcomplicationduringdialysis
3. Methodofpreventiontocommunicabledisease
4. Visitofnephrologyward

#### RecommendedBook:

* FandamentalofRenalPathology,ArthurH.Cohen,RobertB.Calvin,J.Charles,Jennette,ChartesE.Alphers,2ndedition
* OxfordHandbookofNephrologyandhypertension,SimonSteddon,NeilAshman,AlistairChesser,JohnCunnigham,2ndedition
* OxfordHandbookofNephrologyandhypertension,SimonSteddon,NeilAshman,AlistairChesser,JohnCunnigham,2ndedition

### RDT‐610 DIALYSISINSPECIALSITUATION CreditHrs: 3(1+2)

**Course Objectives:**

Attheendofthiscoursestudentwillbeable

* TodemonstratehowtomanagewithspecialcomplicationofDialysisPatient
* Toillustratetechniquesandprincipleofplasmapheresis

#### CourseContent:

Dialysisintheelderly,Dialysisinthepeads,complicationofacuteandchronicDialysisinchildren,ManagingDiabeticPatientsonDialysis,ProblemforDiabeticPatientsonDialysis,SurgeryinDialysisPatient,SurgeryinDialysisPatient(HDandPD),MyelomaRenalFailure,MyelomaRenalfailureTreatment,PainmanagementinESRF,DifficultyofpainmanagementinRenalpatient,Analgesicdrugs,PregnancyinDialysispatient,managingPregnancyindialysispatient,DialysiswithpatientHIV,Plasmapheresis,TechniquesofPlasmapheresis,Ancillarymeasure,ComplicationofPlasmapheresis,specificindicationforPlasmapheresis,ImmuneAdsorptionTechniques,IndicationforImmuneAdsorption,Complicationduringplasmaexchange,

#### Practical:

1. Preandpostpatientassessment
2. Verifyingsafetyparametersofhemodialysismachine
3. SettinglimitsonHemodialysismachine
4. Changingsettingduringdialysis
5. Responsetoemergencysituationduringdialysis

#### RecommendedBook:

* Handbookofdialysis,JohnT.Daulrdas,PeterG.Black,Todd,5thedition
* OxfordHandbookofdialysis,JeremyLevy,EdwinaBrown,ChristinDaleyandAnastasiaLawrence,
* Complicationofdialysis,Norbortlameire,RavindaL.Metha
* OxfordDeskReferenceNephrology,JonatanBarratt,KevinHarris,PeterTopham

### RDT‐611COMPLICATIONOFPERITONEAL DIALYSIS CrH:3(2+1)

#### CourseObjectives:

Attheofthiscoursestudentwillbeable

* ToanalyzeLaboratoryanalysisofbloodandurinewithdialysispatient
* TodescribehowtomanagebloodchemistryregulationthroughPD

#### CourseContent:

Introduction,malfunctioningofcatheters,investigationandmanagementofmalfunctioningcatheters,constipationofperitonealdialysispatient,repositioningperitonealdialysiscatheters,peritonealdialysateproblemwithlactate/dextrose,Peritonitis,incidenceofperitonitis,pathogenesis,etiology,diagnosis,andtreatmentofinitialmanagementofperitonitis,exitsiteinfection,mechanicalcomplicationofperitonealdialysis,herniaformation,pathogenesisofhernia,etiologyofhernia,investigationandtreatmentofhernia,abdominalwallandpericatheterleak,genitaledema,respiratorycomplication,backpain,Metaboliccomplicationofperitonealdialysis, glucoseabsorption,lipidabnormalities,proteinloss,hypernatremiaandhyponatremia,hypokalemiaandhyperkalemia,hypocalcemiaandhypercalcemia,magnesiumandvascularcalcification,acidosisandalkalosis.

#### Practical:

1. InsertionofPeritonealcatheter
2. Managementofperitonealcatheter
3. Preparationofperitonealsolutionandoperatingdifferenttypeofperitonealdialysis

#### RecommendedBook:

* TextbookofPeritonealDialysis,NolphandGokal’s,3rdEdition
* PeritonealDialysis:AClinicalUpdate,ClaudioRonco,RobertoDell’Aquila,MariaPiaRodighiero
* OxfordHandbookofdialysis,JeremyLevy,EdwinaBrown,ChristinDaleyandAnastasiaLawrence
* Handbookofdialysis,JohnT.Daulrdas,PeterG.Black,Todd,5thedition

### RDT‐612 DIALYSISADEQUACY CreditHrs: 3(2+1)

**Course Objectives:**

Attheendofthiscoursestudentwillbeable

* Tointerpretdifferentmethodtocalculateadequacyofdialysis
* Todescribehowtocontroldryweightofdialysispatient

**Course Content:**

Dialysisadequacyoverview,dialysisadequacysoluteclearance,ureakineticmodeling,calculationofKt/V,othermeasuresofsoluteclearanceandonlinemeasureofclearance,residualrenalfunction,othermarkersofadequacy,targetforadequatedialysiskt/Vandureareductionratio,increasingdialysisdosedelivered,dialysisadequacyinacuterenalfailure,prescribingacutehaemodialysisureaclearance,prescribingchronicheamodialysisdialyzerfactor,laboratorytestforpatientonregularheamodialysis,dryweight,novelmeasureofdryweight,re-useofdialysers,re-useofdialysertechnique,re-useofdialyserpotentialproblems.

#### Practical:

1. Bloodanalysistouseforadequacyofdialysis
2. Measurementofrisdualrenalfunctionmethod
3. Dryweight
4. Labializingofdialyzer
5. Re-useofdialyzertechnique

#### RecommendedBook:

* OxfordHandbookofdialysis,JeremyLevy,EdwinaBrown,ChristinDaleyandAnastasiaLawrence
* Handbookofdialysis,JohnT.Daulrdas,PeterG.Black,Todd,5thedition

### RDT‐613 UROLOGICAL PROCEUDRE‐I CreditHrs:3(2+1)

#### Courseobjective:

* + Toprovideknowledgeandskillsregardingurologicalprocedures.
  + Toprovideknowledgehowtohandlethekidneyanduretercomplication.
  + Toprovideknowledgeregardingkidneyandupperurinarytractsurgeries.

#### COURSECONTENT

Anatomyandembryologyofkidneyandureter,Congenitalanomaliesofkidney,PelvicKidney,horseshoekidney,crossdystopiaofkidney,renalectopia,kidneycalculus,hydronephrosis,Polycystickidneydisease,Nephrolitothomy,Nepherectomy,partialNephrectomy, RenalTxsurgery,Congenitalanomaliesofureter,doubleureter,megaureter, uretercalculus,Ureterolithotomy,pyelolithotomy,Pyeloplasty,Re-implantationofureter,ESWL,Urodynamics,IVU

#### Practical’s

* Visitingofurologyward
* Observationofurologicalprocedure
* Assessmentofurologicalprocedure

#### RecommendedBook:

* + NancyMariePhillips,11thedition.BerryKohn’sOperatingRoomTechnique.
  + Baileyandlove’s,26thedition.Shortpracticeofsurgery.

### RDT‐614 RENALPHARMACOLOGY C.H:3(2+1)

#### CourseObjectives:

At theendof this course studentwill be able

* To understand dose calculation for renal patients
* To understand drug induced kidney disease

#### CourseContent:

Drughandling inrenalfailure,Dosingofcommonlyuseddrugs(antimicrobial,antifungalantituberculous,opioidanalgesics,andcardiovascular).Drugsthatdonotrequiredosagealterationinrenalfailure.DrugstobeavoidedinsevererenalfailureheamodialysisandPD.Doseadjustmentandmethodsofdoseadjustmentinkidneypatients.Drugsinducedkidneydiseases,mechanismandprecautions.Pharmacokineticsalterationinkidneyfailure.Diuretics,antibacterialsusedforurinarytractinfections.Bacterialresistance

#### Practical:

* Visitofnephrologywardanddialysisunits
* Calculationofdosesofsomeimportantdrugs

#### RecommendedBooks:

* Lippincott’s pharmacology(text book) by Mycek2ndEdition published byLippincottRaven2000.
* Katzungtextbookofpharmacology(ReferenceBook)byBertramKatzung8thEdition,PublishedbyAppleton.dec2007.

# 7thSEMESTERCOURSE

## InfectioncontrolinDialysisUnit

* + NutritionandDietTherapy
  + ResearchMethodology
  + Bio-statistic
  + Epidemiology

### RDT‐615 INFECTION CONTROL IN DIALYSIS UNIT C.H:3(2+1)

#### Courseobjectives:

* Tointroducethestudentswithbasicconceptsininfectioncontrol.
* Tointroducethestudentswithinfectioncontrolprinciplesandpractices.
* Tointroducethestudentswithimportanceofimmunizationandhandhygieneininfectioncontrol.
* Tointroducethestudentswiththeroleofclinicalpracticeindialysisunit.

#### Coursecontents:

Introductiontoinfectioncontrol,principleofinfectioncontrol,sourceandtransmissionofinfection,infectionpreventionandcontrolinHDandPD,Enivromentalcleaninganddisinfection,Equipment cleaning and disinfection, Handhygiene, PatientimmunizationandTBscreening,Medicationsafetyandinjectionpractices,Patientandemployeducation, Presurgicalinfectionprevention,postsurgicalcare,standarprecautions,HBVisolationandprecaution,Respiratoryhygiene,trnsmissionbasedprecaution,vascular accessinfectionpreventionandcontrol,sterilization,disinfectionandantisepsis,practicaldisinfection,epidemiologyofinfectiousdisease,antimicrobialagents,antibioticandtheiruses(prophylactic,empirical,andtherapeutic),antibioticresistanceandpolicy.

#### Practical:

1. Demonstrationofhandwashingandhandrubbingtechnique.
2. Preparationofdifferentdisinfectionandantisepticsolutions.
3. Demonstrationofbiomedicalwastemanagementsinhospitals.
4. Demonstrationofcleaninganddisinfectionofworkingpremises.
5. Demonstrationofhowtohandlespillsandaseptichandling.
6. DemonstrationofstandardprecautionsandPPE.

#### RecommendedBooks:

* Associationforprofessionalininfectioncontrolandepedemiology
* FundamentalsofInfectionPreventionandControl:TheoryandPractice.Weston,D.,Wiley-Blackwell,2013.

### RDT‐616 NUTRITION ANDDIETTHERAPY CH:3(2+1)

#### CourseObjectives:

Attheendofthiscoursestudentwillbeable

* TodescribeimportanceofdietforRenaldialysispatients
* Todemonstratewhichtypeofdietrestrictedfordialysispatient
* Todiscusshowtomaintainbodystatusofdialysispatient

#### CourseContent:

Introductiontothestudyof nutrition,function ofnutrition,foodcomposition,relationshipofnutritionandhealth,nutritionandtheirfunction,characteristicofgoodnutrition,malnutrition,cumulativeeffectofnutrition,nutritionassessment,digestion,absorptionandmetabolismofnutrition,carbohydrate,lipid,protein,minerals,vitaminandwater,Principalofdiettherapyandtherapeuticnutrition,dietandweightcontrol,overweightandunderweight,dietanddiabetesmellitus,dietandcardiovasculardisease,dietandrenaldisease,dietandgastrointestinalproblem,dietandcancer,dietandclientwithspecialneeds,nutritioninfeverandlungdisease,dietaryguideline,fluidrequirementinrenalfailureandroutesfornutritionalsupportinacuterenalfailure.

#### Practicals:

1. Routeofadministrationfordietuse
2. Assessmentofnutritionalassessment
3. Laboratoryanalysisfordialysispatients

#### RecommendedBooks:

* Nutritioninkidneydisease,LauraD.ByhamGray,JerrilynnD.Burrow2ndedition
* ModernNutritioninhealthanddisease,Shils.FME&VRYoung,2ndEdition
* NutritionandDiettherapy,PeggyS.Starfield,3rdedition

### PMS‐622 BIO‐STATISTIC Credit Hrs: 3(2+1)

#### CourseObjectives:

Tointroducethestudentwiththesignificanceofbio-statistics,statisticsmeansbasicconcept,describingandexploringdata,normaldistribution,saplingdistributionandhypothesistesting,basicconceptofprobabilityandapplicationofstatisticsandsocialresearch.

#### CourseContents:

Topicsinunivariatestatistics:basic,Introduction,importantterms,senses,methodusesfortakingsensus,informationcollectionduringsensus,methodofestimatingthepopulationofanyyear,measurementscale,describingandexploringdata,measuresofcentraltendencyandvariability,healthstatistics,percentiles,quartilesanddeciles,normaldistribution,thestandardnormaldistributionSND,usingtablesofSND,measuresrelatedto‘Z’scores,samplingdistributionandhypothesistesting,basicconceptsofprobability,datacollection(purposeandtechnique),categoricaldataandneumericaldata,applicationofstatisticsinsocialresearch,percentages,measureofcentraltendencies,means,Meidan,Mode,Quatile,decileandpercentile

#### RecommendedBooks:

* StatisticalmethodsforpsychologybyhowellDCin7thedition2013.
* Aguidetoresearchmethodology,biostatisticsandmedicalwritingbycollegeofphysiciansandsurgeonsPakistanbyWHOcollaborationcenter
* Reading understandingmultivanantstatistics giimmLG Yard AD PR, in 1995publisherAmericanPsychologicalassociation
* IlyasAnsari’scommunitymedicine(TextBook)byIlyasandAnsari2003publishedbyMedicaldivisionUrduBazzarKarachi.

### PMS‐621 RESEARCH MATHODOLOGY CreditHrs: 3(2+1):

#### CourseObjectives:

After successful completion of this course, students will be able to,

* Recognize the basic concepts of research and the research process.
* Develop understanding on various kinds of research, objectives of doing research, research designs and sampling.
* Conduct research work and formulating research synopsis and report.

#### Coursecontents:

Introductiontoresearch(insimpletermandascientificterm),conceptofresearch,whydoneedresearch,advantageofresearch,identificationofresearchneedanditsqualities,componentofresearch,ethicalandlegalaspectofresearchandobjectiveofresearch(definition,purpose,structure)Relevance,Avoidanceofduplication,Physibility,Politicalacceptability,Applicability,Costefficiencies,workplan,budgetrequiredforresearchwork,literaturesearching,statisticalhelp,material,typeofmanuscript,printingofmanuscriptforsubmissionandpostage,Principlesandreliabilityofmeasurement,errorsandsourcesofmeasurement,typesofmeasurement,measureofdiseasefrequencyandscreening(introduction,validityandscreeningtest)Studiesdesign (introduction,selectionofdesign),researchquestionnaire,validityandreliabilityofresearchfinding,confoundingfactors,strategiestodealwiththreatstovalidity,hypothesistesting,sampling,collectdata,datacollectionprocedure,stepanddatacollectionsurveyquestionnaire,startingquestionnaire

#### RecommendedBooks:

1. FoundationofClinicalResearchbyPortneyLGWalkaisMPin1993,Publisherby AppletonandlaugeUSA
2. AguidetoResearchMethodology,BiostatisticsandMedicalwritingbycollegeofphysiciansandsurgeonsPakistanbyWHOcollaborationcenter
3. HealthsystemresearchprojectbyCorlienMVarkerisser,IndraPathmanathan,Ann

Brownleein1993byInternationalDevelopmentResearchCenterinNewDehli,Singapore.

### PMS‐623 EPIDEMIOLOGY CreditHrs:2(1+1)

#### CourseObjectives:

Tointroducetothestudentstheknow-howofthesubjectofepidemiologyinordertoapplytheknowledgeofthesubjectregardingthecommunityandcommunityrelatedisease.

#### CourseContents:

Introductiontoepidemiology,Determinants:PrimaryandSecondary,Clinicalepidemiology,Occupationalepidemiology,Importanceofepidemiology,Definitionsofcommontermsrelatedtoepidemiology,Healthindication

#### RecommendedBooks:

* PublicHealthbyIlyasAnsari
* PublicHealthbyJPark

### RDT‐617 Urological Procedure‐II C.H: 3(2+1)

#### Courseobjective:

* Toprovideknowledgeregardinglowerurinarytractcomplication.
* Toenabledialysistechnologisttoknowaboutlowerurinarytractproblemandhowit’s diagnoses.
* Toprovideknowledgeandskillsregardingdifferentlowerurinarytractsurgeriesandprocedures.

#### Courseoutline:

AnatomyandEmbryologyofBladder,Urethra,ProstateGland,Testisandscrotum,RenalNeoplasm, Hypernephroma,Gravitstumor,ectopiavesicae,Retentionofurine,vesicovaginalfistula,vesicalcalculus,Carcinomaofbladder,hypospadias,injuriesofurethra,urethralstricture,phimosis,maldescenttestis,torsionoftestis,epididymo-orchitis,hydrocele,hematocele,cysteconnectedwithepididymis,malignantneoplasmoftestis,BPH,TURP,TURBT,TVP,Cystectomy,Lithotripsy,Litholopexy,Suprapubiccystostomy,Prostectomy,PCNLPCN,,Retrogradepyelography,Antigradepyelography.

#### Practical’s:

* Visitingofurologyward
* Observationofurologicalprocedure
* Assessmentofurologicalprocedure

#### RecommendedBook:

* + NancyMariePhillips,11thedition.BerryKohn’sOperatingRoomTechnique.
  + Baileyandlove’s,26thedition.Shortpracticeofsurgery.

# 8thSemesterCourse

## ResearchProject

* + - Seminar
    - RenalEmergency
    - BioEthics

### PMS‐626 RESEARCHPROJECT CreditHrs: 6(0+6)

* The student will learn some basic research methodology, gain knowledge of the specific area of radiology being researched and have the opportunity for more extensive one-on-one interaction with a member of the radiological staff. It will hopefully result in some form of presentation or publication for the student. This is most suitable for students planning to enter radiology as a career.

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### PMS‐627 SEMINAR Credit Hours:1(1+0)

Duringlastyeareachstudentshouldselectatopicofresearchworkwithconsultationofhis/hersupervisorandshallpresenthis/herresearchworkthroughaseminar.

### RDT‐618 RENAL EMERGENCY CreditHrs 3(2+1)

#### CourseObjectives:

Attheendofthiscoursestudentwillbeable

* Todescribecausesofdeathduringdialysis
* Todemonstratehowtopreventofcausesofdeathduringdialysis
* Todiscusshowtomanagedialysispatientinemergency
* Todescribecomplicationofdialysis

#### CourseContent:

Pulmonaryedema,Pneumothorax,hemothorax,pericardialeffusion,Hyperkalemia,metabolicandrespiratoryacidosis,Respiratoryandmetabolicalkalosis,Electrolytedisturbanceindialysispatient,bloodtransfusionreactionindialysispatient,causesofAVFburstandmanagement,hypertensionduringdialysis,Airembolism,arrhythmia,hemolysis,BLS,Causesofdeathinpatientindialysis,cardiacarrestduringdialysis,managementofcardiacarrestduringdialysis,endoflifeissue,palliativecare,palliativecaremanagementofsymptoms,withdrawalofdialysis,withdrawalofdialysiscasehistories,withdrawalofdialysisdiscussionofcases,withdrawalofdialysisfinalcasehistory.

#### Practical:

1. VisitofICUandCriticalcareunit
2. PerformingCPR
3. Operatingofventilatormachine
4. Usesofdefibrillator

#### RecommendedBooks:

* OxfordHandbookofdialysis,JeremyLevy,EdwinaBrown,ChristinDaleyandAnastasiaLawrence
* Handbookofdialysis,JohnT.Daulrdas,PeterG.Black,Todd,5thedition

### PMS‐625 BIOETHICS CreditHrs:2 (2+0)

#### CourseObjectives:

After successful completion of this course, students will be able to,

* Identify ethical issues in medicine, health care and life sciences.
* Describe rational justification for ethical decisions.
* Practice the ethical principles of the Universal Declaration on Bioethics and Human Rights.
* Recognize and distinguish an ethical issue from other issues.

#### CourseContent:

Introductionbioethics,Ethicalprinciple,autonomy,informedconsent,intentionalnondisclosure,patientselfdeterminationact,thehealthinsuranceportabilityandAcountabilityactof1996(HIPAA)privacyandsecurityrules,non-maleficence,slipery,slopearguments,beneficence,paternalism,justice,socialjustice,thepatientprotectionandaffordablecareact,professionalpatientrelationship,unavoidabletrust,humandignity,patientadvocacy,moralsuffering,ethicaldilemmas.

#### RecommendedBooks:

IZIntroductiontobioethicsandethicaldecisionmakingbyKarenL.Rich(chapter2)2015