Course Information:

School/ Department:	Glocal College of Paramedical Science and Research Center
Programme:	BRIT
Course Tile:	Conventional Radiographic Techniques
Course Code:	MRT-201
Course Level (UG/PG)	UG
Credits	4- L T P .
Prerequisite	No
Year	2nd

Course Objectives: The objective of this course is to provide an understanding of radiologic imaging, X-ray production, the recording system, fluoroscopy and tomographic equipment.

Course Outcomes: 1. The student of the course will be able to develop an insight and knowledge base of the various underlying concepts of construction and working principles of image intensifier. 2. Knowledge of properties, characteristics, quantity and quality of X-ray. 3. Should be able in processing of latent imaging.
4. Should be able to demonstrate general characteristic features of fluoroscopic techniques.
5. Knowledge of portable and mobile equipment used in radio imaging techniques.

Teaching Methodology:

Methodology	Mention Appropriate Methods (Yes/No)
Explanations by the Instructor	**Yes**
Group/Pair Work	**Yes**
Class Discussion	**Yes**
Assignment/s	**Yes**
Viva Voice	**Yes**
Audio/video Class	**No**
Practical/ Case Study/Diary	**No**
Presentations	**Yes**
Hospital Posting	**Yes**

COURSE CONTENT

No	Description	Weightage (%)
1	**Introduction to Radiologic Imaging-**Radiation, Sources of radiation, Radioactivity, Half life, Ionizing & Non-ionizing Radiation, History of x-ray production, Development of modern Radiology X-Ray Tube- External components- X-ray tube support, Protective housing, Glass or metal Enclosure, Internal components- cathode, anode, focusing cup, focal spot, Line focus principle, Heel effect, X-ray tube failure, Rating charts	15
2	**X-ray production**-- Characteristic Radiation, Bremsstrahlung Radiation, X-ray Emission Spectrum, Properties of X-ray, X-ray quality, X-ray quantity, and Half value layer. Interaction of x-ray with matter- Coherent scattering, Compton effect, Photoelectric effect, Pair Production, Photodisintegration, Differential absorption.	15
3	**The Recording System-**X-ray film construction, Emulsion, Formation of latent image, Types of film, Handling and storage of film, Construction of Intensifying screen, Luminescence, screen characteristics, Cassette construction and types, silver recovery, Film artefacts	15
4	**Processing of Latent image-**Manual Processing, Automatic processing, Characteristic curve, Optical density, Geometry of Radiographic image magnification, distortion, focal spot blur, Subject factors.	10
5	**Fluoroscopy-**Introduction to fluoroscopy, Techniques of fluoroscopy, Image Intensifier, Flux gain, Brightness gain, Magnification gain, Multifold image intensifier, Cathode ray tube.	10
6	**Portable & Mobile equipment-**Portable X-Ray equipment Mains requirements Cable connections to wall plugs Mobile X-Ray Equipment X-Ray equipment for the Operating Theatre	10
7	**Fluoroscopy Equipments-**Construction & Working principles of Image Intensifier Direct Fluoroscopy Viewing the Intensified image Recording the intensified Image Digital fluoroscopy	10
8	**Fluoroscopic / Radiographic Tables-**General features of fluoroscopic / radiographic table The serial changer Remote	05

	control table The spot film devices	
9	**Equipment for Special Procedures:** Special Trolleys And Chairs, Portable And Mobile X-Ray Units, Cordless Mobile X-Ray Equipment, Capacitor Discharge Mobile Equipment, Equipments For O.T. Bi-Plane Radiography, Cranial And Dental Equipment, Skull Tables, Mammography, Mass-Miniature Radiography, Tomography, Multi Section Cassettes, Rapid Cassette Changer, Rapid Film Changer, Magnification Radiography, Subtraction Radiography.	10

Lecture Plan

Unit Number	Unit Title	Number of Lectures
1	**Introduction to Radiologic Imaging**	8
2	**X-ray production**	12
3	**The Recording System**	12
4	**Processing of Latent image**	6
5	**Fluoroscopy**	12
6	**Portable & Mobile equipment**	7
7	**Fluoroscopy equipment**	7
8	**Fluoroscopic / Radiographic Tables**	5
9	**Equipment of Special Procedure**	7

Evaluation Scheme

	External	Internal	Total
Assessment (theory)	70	30	100

Evaluation of Practical/Dissertations	35	15	50

Internal Evaluation of Theory	Class Test(2 best out of 3)	Assignment	Attendance	Total
	20	5	5	30

Textbooks, Reference, Supplementary Materials

Text Books: 1. Brant WE, Helms CA, editors. Fundamentals of diagnostic radiology. Lippincott Williams & Wilkins; 2012 Mar 20.
2. Curry TS, Dowdey JE, Murray RC. Introduction to the physics of diagnostic radiology.
3. Adam A, Dixon AK, Gillard JH, Schaefer-Prokop C, Grainger RG, Allison DJ. Grainger & Allison's Diagnostic Radiology E-Book. Elsevier Health Sciences.
4. D N and M O Chesney- X ray equipment for student radiographers- Third edition
5. Burgener FA, Kormano M. Differential diagnosis in conventional radiology

Cos\ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓											✓
CO2												
CO3	✓											
CO4	✓											
CO5												

Departmental Quality Assurance Committee Approval			
No.	**Name**	**Digital Signature**	**Date**
1			
2			

Course Information:

School/ Department:	Glocal College of Paramedical Science and Research Center
Programme:	BRIT
Course Tile:	Special Radiographic Procedures & Radiographic Positioning
Course Code:	MRT-202
Course Level (UG/PG)	UG
Credits	4-L T 1-P .
Prerequisite	No
Year	2nd

Course Objectives: This course introduces to students the importance of indications, contraindication procedure and techniques of all radiographic procedures and radiographic positioning.

Course Outcomes: 1. The student would be able to develop an understanding of Intravenous urogram (IVU).

2. Should be able to demonstrate knowledge of Micturating Cystourethrogram (MCU), Ascending Urethrogram (ASU)/ RGU, Hysterosalpingography (HSG).

3. Knowledge of Sialography and Sinogram and other techniques in Radio imaging.

4. Should be able to handle radiographic positions of patients.

5. Knowledge of pediatric radiography and different positions in pediatric radiography.

Teaching Methodology:

Methodology	Mention Appropriate Methods (Yes/No)
Explanations by the Instructor	**Yes**
Group/Pair Work	**Yes**
Class Discussion	**Yes**
Assignment/s	**Yes**
Viva Voice	**Yes**
Audio/video Class	**No**
Practical/ Case Study/Diary	**No**
Presentations	**Yes**
Hospital Posting	**Yes**

COURSE CONTENT

No	Description	Weightage (%)
1	**Introduction to Radiographic Special Procedures Contrast Media**- Application, types, safety aspects & administration, Reaction to contrast media and management of contrast reactions.	10
2	**Special Procedures I** Barium swallow, Barium meal Barium meal follow through(BMFT) Barium enema	10
3	**Special Procedures II** Intravenous urogram (IVU), Micturating Cystourethrogram (MCU), Ascending Urethrogram (ASU)/ RGU Hysterosalpingography (HSG)	13
4	**Special Procedures III** Myelography ERCP/ PTBD, PTC, T – tube cholangiography	12
5	**Special Procedures IV**Sialography, Dacrocystography, Sinogram, Fistulogram, FNAC Biopsy	10
6	**Radiographic positioning I-** **Principles Of Radiography:** a) Preparation Of The Room, Apparatus And Instruments Positions Of The Patient: Erect, Sitting, Supine, Prone, Lateral, Oblique, Decubitus Etc., Relative Position Of X-Ray Tube And Patient, Relevant Exposure Factors. Use Of Accessories Such as Radiographic Cones, Grid And Positioning Aids b) SKULL Cranial bones and facial bones Basic & special projections Neck ,Thorax, Abdomen Related radiological anatomy Basic & special projection	10
7	**Radiographic positioning II** Construction & Working principles of Image Intensifier Direct Fluoroscopy Viewing the Intensified image Recording the intensified Image Digital fluoroscopy	10
8	**Radiographic positioning III** KUB Related radiological anatomy Positioning Upper & lower extremities -radiological anatomy Basic and special projection . Shoulder joints -radiological anatomy Basic and special projections	10
9	**Radiographic positioning IV** Pelvic Girdle and Proximal Femur- radiological anatomy Basic & special projections	15

	Whole spine positioning Paediatric radiography Trauma/Emergency Radiography- Positioning, care and radiation protection while handling	

Lecture Plan

Unit Number	Unit Title	Number of Lectures
1	Introduction to Radiographic Special Procedures Contrast Media	07
2	Special Procedures I	09
3	Special Procedures II	11
4	Special Procedures III	11
5	Special Procedures IV	9
6	Radiographic positioning I	06
7	Radiographic positioning II	06
8	Radiographic positioning III	06
9	Radiographic positioning IV	10

Practical:
Radiography in various positions for all the special radiological procedures, using contrast media as per syllabus.

Credit Hours: 2/week

Literature/Reference: Lab Manual

Evaluation Scheme

	External	Internal	Total

Assessment (theory)	70	30	100
Evaluation of Practical/Dissertations	35	15	50

Internal Evaluation of Theory	Class Test(2 best out of 3)	Assignment	Attendance	Total
	20	5	5	30

Textbooks, Reference, Supplementary Materials

Text Books: 1. Whitley AS, Jefferson G, Holmes K, Sloane C, Anderson C, Hoadley G. Clark's Positioning in Radiography 13E. CRC Press; 2015 Jul 28.
2. Bontrager KL, Lampignano J. Textbook of Radiographic Positioning and Related Anatomy-E-Book. Elsevier Health Sciences; 2013 Aug 7.
3. Bontrager KL, Lampignano J. Bontrager's Handbook of Radiographic Positioning and Techniques-E-BOOK. Elsevier Health Sciences; 2017 Feb 10.
5. Frank ED, Long BW, Smith BJ. Merrill's Atlas of Radiographic Positioning and Procedures-E-Book. Elsevier Health Sciences; 2013 Aug 13.
6. Clark, Radiographic Positioning and Special Procedure
7. Chapman, Radiological Procedure
8. Krishnamurthy, Medical Radiographic Technique & Darkroom Practice

Cos\ POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1		✓			✓							
CO2					✓							
CO3		✓			✓							
CO4	✓				✓							
CO5	✓				✓							

Departmental Quality Assurance Committee Approval			
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Course Information:

Course Objectives: The main objective of this course is to provide knowledge of ultrasound and

School/ Department:	Glocal College of Paramedical Science and Research Center
Programme:	BRIT
Course Tile:	Basics of USG and Mammography
Course Code:	MRT-203
Course Level (UG/PG)	UG
Credits	3- L - T 1-P .
Prerequisite	No
Year/Semester	2nd

mammography techniques to identify soft tissues and internal organs.

Course Outcomes: 1. after completion of this course student would be able to handle instrumentation of ultrasonography.
2. Knowledge to perform mammography for diagnostic purpose.
3. Demonstration of various types of ultrasounds and mammography equipment.
4. Knowledge of doppler USG and its safety precautions.
5. Should be able to do patient preparation for USG and mammography.

Teaching Methodology:

Methodology	Mention Appropriate Methods (Yes/No)
Explanations by the Instructor	**Yes**
Group/Pair Work	**Yes**
Class Discussion	**Yes**
Assignment/s	**Yes**
Viva Voice	**Yes**
Audio/video Class	**No**
Practical/ Case Study/Diary	**Yes**
Presentations	**Yes**
Hospital Posting	**Yes**

COURSE CONTENT

No	Description	Weightage (%)
1	**Introduction to Ultrasound Imaging** -Sound, Ultrasound, Attenuation, Basic principle of Ultrasound imaging,	10

	Advantages and disadvantages	
2	**Instrumentation of Ultrasonography** Controls of Ultrasound Equipment, USG probes, Coupling agent, Cathode ray tube, Image display, USG contrast agent. Piezoelectric Effect- Definition, Types of element, Properties. Interaction of US with matter. Transducers: Construction and operation, Types of transducers	25
3	**USG Display modes**: A mode, B mode, M mode, TM mode. Gray scale imaging Beam focusing, Resolution Machine control	15
4	**Doppler USG** Principle, Color Doppler, Continuous wave Doppler, Pulsed wave Doppler. USG Bio effects, safety.	20
5	**Mammography**: Mammography Equipment's and Basic views in Mammography.	15
6	**Clinical Practice** Scanning protocol, Indication, Patient preparation, image quality and artifacts in Ultrasound and Mammography,	15

Lecture Plan

Unit Number	Unit Title	Number of Lectures
1	Introduction to Ultrasound Imaging	10
2	Instrumentation of Ultrasonography	13
3	USG Display modes	10
4	Doppler USG	13
5	Mammography	10
6	Clinical Practice	10

Practical:

Based on theory.

Credit Hours: 2/week

Literature/Reference: Lab Manual

Evaluation Scheme

	External	Internal	Total
Assessment (theory)	70	30	100
Evaluation of Practical/Dissertations	35	15	50

Internal Evaluation of Theory	Class Test(2 best out of 3)	Assignment	Attendance	Total
	20	5	5	30

Textbooks, Reference, Supplementary Materials

Text Books: 1. Zwiebel WJ, Sohaey R. Introduction to ultrasound. WB Saunders Company; 1998.
2. Hagen-Ansert SL. Textbook of diagnostic ultrasonography. Mosby Elsevier; 2006.
3. Basics of Ultrasonography for Radiographers and Technologists- Latest edition
4. Tucker AK, Ng YY. Textbook of mammography. Churchill Livingstone; 2001.
5. Wentz G, Parsons WC. Mammography for radiologic technologists. McGrawHill, Health Professions Division; 1997.

Cos\ POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1		✓										
CO2		✓										
CO3												
CO4				✓								
CO5				✓								

Departmental Quality Assurance Committee Approval

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School/ Department:	Glocal College of Paramedical Science and Research Center
Programme:	BRIT
Course Tile:	Radiation Protection and Quality Assurance
Course Code:	MRT-204
Course Level (UG/PG)	UG
Credits	3- L T P .
Prerequisite	No
Year/Semester	2nd

Course Information:

Course Objectives: This course focuses on different characteristic features of radiations and need for radiation protection, it given an understanding of quality control and assessment in radiology.

Course Outcomes: 1.Knowledge of primary and secondary radiations, radiation monitoring.
2. Awareness of Direct & Indirect effects of radiation.
3. Maintenance of mobile equipment.
4. Demonstrate the role of a radiographer in planning, QA, and radiation protection.
5. Should be able to do care and maintenance of diagnostic equipment.

Teaching Methodology:

Methodology	Mention Appropriate Methods (Yes/No)
Explanations by the Instructor	**Yes**
Group/Pair Work	**Yes**
Class Discussion	**Yes**
Assignment/s	**Yes**
Viva Voice	**Yes**
Audio/video Class	**Yes**
Practical/ Case Study/Diary	**No**
Presentations	**Yes**
Hospital Posting	**Yes**

COURSE CONTENT

No	Description	Weightage (%)
1	**Introduction to Radiation Protection, Units & Quantities-** Primary, secondary radiation, need for radiation protection, Exposure, Absorbed dose, absorbed dose equivalent, Effective dose, air KERMA, Radiation weighting factor, Tissue weighting factor, MPD Aim & Principle of Radiation Protection- Concept of ALARA, Cardinal Principle, ICRP regulation, Radiation Protection in: Radiography, CT, Fluoroscopy, Mammography, Ward radiography, radiation shielding.	25
2	**Radiation monitoring: Personnel** – Film badge, TLD, OSLD, pocket dosimeter, Area monitoring Devices. Radiobiology: Radiolysis of water, Direct & Indirect effects of radiation, Stochastic, Deterministic effects, Somatic, Genetic effects, dose relationship, Antenatal exposure.10 day rule, 14 day rule, 28 day rule, structural shielding, work load,	25

	use factor, occupancy factor..	
3	**Quality Control and Assessment in Radiology**: Quality Assurance and quality control of Modern Radiological and Imaging Equipment which includes Digital Radiography, Computed Radiography, CT scan, MRI Scan, Ultrasonography and Teleradiology and PACS related	20
4	**Care and maintenance of diagnostic equipment**: General principles and preventive maintenance for routine - daily, Weekly, monthly, quarterly, annually: care in use, special care of mobile equipment..	10
5	**Role of Radiographer in Planning, QA & Radiation** Protection: Role of technologist in radiology department - Personnel and area monitoring. ICRP, NRPB, NCRP and WHO guidelines for radiation protection, pregnancy and radiation protection. NABH guidelines, AERB guidelines, PNDT Act and guidelines	20

Lecture Plan

Unit Number	Unit Title	Number of Lectures
1	Introduction to Radiation Protection, Units & Quantities	20
2	Radiation monitoring	20
3	Quality Control and Assessment in Radiology	`15
4	Care and maintenance of diagnostic equipment	10
5	Role of Radiographer in Planning, QA & Radiation	15

	Protection	

Evaluation Scheme

	External	Internal	Total
Assessment (theory)	70	30	100
Evaluation of Practical/Dissertations	35	15	50

Internal Evaluation of Theory	Class Test(2 best out of 3)	Assignment	Attendance	Total
	20	5	5	30

Textbooks, Reference, Supplementary Materials

Text Books: 1. Sherer MA, Visconti PJ, Ritenour ER, Haynes K. Radiation Protection in Medical Radiography-E-Book. Elsevier Health Sciences; 2014 Mar 12.
2. Brandon AN, Hill DR. Selected list of books and journals in allied health. Bulletin of the Medical Library Association. 1996
3. Long BW, Frank ED, Ehrlich RA. Radiography Essentials for Limited PracticeE-Book. Elsevier Health Sciences; 2016 Sep 6.
4. Durrani SA, Ilic R, editors. Radon measurements by etched track detectors: applications in radiation protection, earth sciences and the environment. world scientific.
5. Turner JE. Atoms, radiation, and radiation protection. John Wiley & Sons; 2008 Jan 8.
6. www.AERB.com (Guidelines and Details of Quality Control in Radiology)

Cos\ POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1			✓				✓					✓
CO2							✓					

School/ Department:	Glocal College of Paramedical Science and Research Center
Programme:	BRIT
Course Tile:	Technique & Equipment of Computed Tomography
Course Code:	MRT-205
Course Level (UG/PG)	UG
Credits	4- L - T 1-P.
Prerequisite	No
Year/Semester	2nd

CO3							✓					
CO4							✓					
CO5							✓					

Departmental Quality Assurance Committee Approval			
No.	**Name**	**Digital Signature**	**Date**
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Course Information:

Course Objectives: The aim of this course is to provide knowledge of computed tomography, its principle and generations, basic principle of image reconstruction and diagnostic importance of CT.

Course Outcomes: 1. Student would be able to demonstrate classification, types, remedies and causes of CT Artefacts.

2. Knowledge of role of a radio imaging technologists in diagnostic aspects of CT.
3. Should be able to do patient management for CT.
4. Knowledge of protocols for whole body imaging and clinical applications of CT, 2D & 3D imaging, MPR, SSD, Volume Rendering.
5. Should be able to demonstrate Diagnostic aspects of CT and post Processing Techniques.

Teaching Methodology:

Methodology	Mention Appropriate Methods (Yes/No)
Explanations by the Instructor	**Yes**
Group/Pair Work	**Yes**
Class Discussion	**Yes**
Assignment/s	**Yes**
Viva Voice	**Yes**
Audio/video Class	**Yes**
Practical/ Case Study/Diary	**Yes**
Presentations	**Yes**
Hospital Posting	**Yes**

COURSE CONTENT

No	Description	Weightage (%)
1	**Introduction to Computed Tomography** Principle of Computed Tomography History, Advantage and Disadvantages of CT, Basic principle of CT , Generations of Computed Tomography- 1st generation, 2nd generation, 3rd generation, Slip ring technology, 4th generation, Electron beam CT, Dual Source CT, Flat Panel Detector CT Single and Multi slice Technology	25
2	**Instrumentation**-CT scanner gantry, Detectors & Data Acquisition System, Generator, Computer and image processing System Image display system, storage, recording and communication system, CT control console, Options and accessories for CT system	20
3	**Image Reconstruction**- Basic principle, Reconstruction algorithms, Image reconstruction from projections, Types of data reconstruction, Image Display and Image Quality Image	25

	formation and representation, Image processing, Pixel and voxel, CT number Window level and window width, Qualities, Resolution, Contrast, Sharpness in CT	
4	CT Artefacts- Classification, Types, Causes, Remedies	10
5	**Diagnostic aspects of CT and post Processing Techniques** HRCT, Isotropic imaging, Patient management, Patient preparation, positioning, Technologist role, Protocols for whole body imaging Clinical applications of CT, 2D & 3D imaging, MPR, SSD, Volume Rendering.	20

Lecture Plan

Unit Number	Unit Title	Number of Lectures
1	Introduction to Computed Tomography and Principle of Computed Tomography	14
2	Instrumentation	15
3	Image Reconstruction	20
4	CT Artefacts	6
5	Diagnostic aspects of CT and post Processing Techniques	20

Practical:

1. Patient preparation, patient positioning, performing all non-contrast and contrast computed tomography procedures.
2. Radiation protection and care of patient during procedures including contrast media Management in CT.
3. Various post processing techniques and evaluation of image quality and clinical findings, post procedural care of the patient.

Credit Hours: 2/week

Literature/Reference: Lab Manual

Evaluation Scheme

	External	Internal	Total
Assessment (theory)	70	30	100
Evaluation of Practical/Dissertations	35	15	50

Internal Evaluation of Theory	Class Test(2 best out of 3)	Assignment	Attendance	Total
	20	5	5	30

Textbooks, Reference, Supplementary Materials

Text Books: 1. Seeram E. Computed Tomography-E-Book: Physical Principles, Clinical Applications, and Quality Control. Elsevier Health Sciences; 2015 Sep 2
2. Seeram E. Computed tomography: physical principles and recent technical advances. Journal of Medical Imaging and Radiation Sciences. 2010.
3. Kak AC, Slaney M. Principles of computerized tomographic imaging. Society for Industrial and Applied Mathematics; 2001 Jan 1.
4. Hsieh J. Computed tomography: principles, design, artifacts, and recent advances. SPIE press; 2003.
5. Shaw CC, editor. Cone beam computed tomography. Taylor & Francis; 2014 Feb

Cos\ POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1			✓									
CO2		✓	✓							✓		
CO3			✓							✓		
CO4	✓		✓	✓						✓		
CO5			✓	✓						✓		

School/ Department:	Glocal College of Paramedical Science and Research Center
Programme:	Bachelor of Science in Medical Radiography and Imaging Technology
Course Tile:	Orientations in Para Clinical Sciences
Course Code:	MRT-206
Course Level (UG/PG)	UG
Credits	2- L - T -P .
Prerequisite	No
Year/Semester	2nd

Departmental Quality Assurance Committee Approval

No.	Name	Digital Signature	Date
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Course Information:

Course Objectives: This course explains role of paraclinical sciences in Department of Radiology and Medical Imaging which includes awareness of Microbiology, Virology, Bacteriology, Pathology, pharmacology.

Course Outcomes: 1. Understanding of different types of parasites, morphology and physiology of bacteria.
2. Knowledge of different types of viruses and general properties of viruses.
3. Knowledge related to pathology and pharmacology.
4. Should be able to demonstrate about pharmacokinetics of drugs, drug metabolism and absorption. 5. Knowledge of different types of dyes used in radiological procedures and their pharmacology.

Teaching Methodology:

Methodology	Mention Appropriate Methods (Yes/No)
Explanations by the Instructor	**Yes**
Group/Pair Work	**Yes**

Class Discussion	**Yes**
Assignment/s	**Yes**
Viva Voice	**Yes**
Audio/video Class	**Yes**
Practical/ Case Study/Diary	**No**
Presentations	**Yes**
Hospital Posting	**Yes**

COURSE CONTENT

No	Description	Weightage (%)
1	PARASITOLOGY . Entamoeba Histolytica Leishmania Material Parasites of man Helminthology Taenia Saginata Taenia Soleum Echinococcus granulosus Ascaris Lumbricoides Ancylostoma duodenale Strongylids stercoralis	20
2	MICROBIOLOGY Morphology & Physiology of Bacteria Staphylococcus Streptococcus Mycobacterium tuberculosis Spirochetes Cornybacterium Diptheria	20
3	VIROLOGY .General Properties of Virus Herpes virus Poliovirus Hepatitis virus Oncogenic virus HIV	20
4	PATHOLOGY Inflammation	20

	Neoplasia Osteomyelitis Fractures Osteoporosis Rickets .Osteomalacia Tumors of Bone Rhematoid Arthritis Gout Osteoarthritis	
5	PHARMACOLOGY Pharmacokinetics of Drugs a) Absorption b) Distribution c) Metabolism d) Excretion Adverse drug reactions & Management Pharmacology of different dyes used in Radiological procedures	20

Lecture Plan

Unit Number	Unit Title	Number of Lectures
1	PARASITOLOGY	10
2	Microbiology	10
3	Virology	10
4	Pathology	10
5	Pharmacology	10

Evaluation Scheme

	External	Internal	Total
Assessment (theory)	70	30	100

Evaluation of Practical/Dissertations	35	15	50

Internal Evaluation of Theory	Class Test(2 best out of 3)	Assignment	Attendance	Total
	20	5	5	30

Textbooks, Reference, Supplementary Materials

Text Books: 1. Rabbins & Cotran, Pathologic Basis & Diseases
2. Harsh Mohan, Pathologic Basis & Diseases
3. Todd & Sanford, Clinical Diagnosis by Laboratory Method
4. Ramanik Sood, Laboratory Technology Methods and Interpretation
5. Anand Narayan and Panikar, Textbook of Microbiology
6. Baweja, Medical Microbiology
7. Arora, Medical Lab Technology

Cos\ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1									✓			
CO2									✓			
CO3									✓			
CO4									✓			
CO5									✓			

Departmental Quality Assurance Committee Approval			
No.	**Name**	**Digital Signature**	**Date**
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Course Information:

School/ Department:	Glocal College of Paramedical Science and Research Center
Programme:	BRIT
Course Tile:	Hospital Postings
Course Code:	MRT-251
Course Level (UG/PG)	UG
Credits	-L -T 3-P .
Prerequisite	No
Year/Semester	2nd

Course Objectives: The main objective of this subject is deputation of students in various laboratories of Radiology so that they can understand the proper working mechanisms of equipment in Radio imaging Department.

Course Outcomes: 1. Student should be able to aware of different labs in radiology department.
2. They should be practically trained in basic radiographic techniques.
3. Should be able to handle patients directly.
4. Should be able to identify and manage patient's information required for medical record.
5. Would be able to collect and transfer patient's data for diagnostic purposes.

Teaching Methodology:

Methodology	Mention Appropriate Methods (Yes/No)
Explanations by the Instructor	**Yes**
Group/Pair Work	**Yes**
Class Discussion	**No**
Assignment/s	**Yes**
Viva Voice	**Yes**
Audio/video Class	**No**
Practical/ Case Study/Diary	**Yes**
Presentations	**Yes**
Hospital Posting	**Yes**

COURSE CONTENT

No	Description	Weightage (%)
1	Students shall be deputed to various labs of Radiology department wherein they shall undergo practical training of handling patients, collection and processing of investigation (X Ray, Special procedures,CT etc) and equipment. Identification of patient's particulars based on CR number, Lab Number and transfer of samples from collection to different labs. Process of performing various tests in different labs Each student is required to maintain a logbook of the various posting. Student's performance shall be evaluated on continuous basis by the faculty posted in various sections. The faculty shall submit the assessment records of each student posted in his/her section on monthly basis to the HOD. Marks will be awarded out of 50.	100

Practical Description:
Based on course content.

Credit Hours: 6/week

Literature/Reference: Lab Manual

Evaluation Scheme

	External	Internal	Total
Assessment (theory)	70	30	100
Evaluation of Practical/Dissertations	35	15	50

Internal Evaluation of	Class Test(2 best out of 3)	Assignment	Attendance	Total

Theory	20	5	5	30

Cos\ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓					✓						
CO2	✓	✓				✓						
CO3		✓				✓						
CO4		✓				✓						
CO5		✓				✓						

Departmental Quality Assurance Committee Approval			
No.	**Name**	**Digital Signature**	**Date**
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