



**INTEGRAL UNIVERSITY,
LUCKNOW**

**INTEGRAL INSTITUTE OF ALLIED HEALTH SCIENCES &
RESEARCH**

DEPARTMENT OF PARAMEDICAL SCIENCES

**BACHELOR OF MEDICAL RADIOLOGICAL
IMAGING SCIENCES
(BMRIS)**

SYLLABUS

YEAR/ SEMESTER: II/III



Integral University, Lucknow
Department of Paramedical Sciences
Study and Evaluation Scheme

Program: BMRIS

Semester-III

S. N.	Course code	Course Title	Type of Paper	Period Per hr./week/Sem			Evaluation Scheme				Sub. Total	Credit	Total Credits
				L	T	P	CT	TA	Total	ESE			
THEORIES													
1	RS201	Conventional Radiographic Techniques-II	Core	3	1	0	40	20	60	40	100	3:1:0	4
2	RS202	Radiographic Positioning-I	Core	3	1	0	40	20	60	40	100	3:1:0	4
3	RS203	Radiation Protection and Quality Assurance	Core	2	1	0	40	20	60	40	100	2:1:0	3
4	RS204	Fundamental of Microbiology & Immunology	Core	2	1	0	40	20	60	40	100	2:1:0	3
5	ES101	Environmental Studies	Core	2	1	0	40	20	60	40	100	2:1:0	3
PRACTICAL													
1	RS205	Conventional Radiographic Techniques- II Lab	Core	0	0	4	40	20	60	40	100	0:0:2	2
2	RS206	Radiographic Positioning -I Lab	Core	0	0	4	40	20	60	40	100	0:0:2	2
3	RS207	Radiation Protection and Quality Assurance-Lab	Core	0	0	4	40	20	60	40	100	0:0:2	2
4	RS208	Fundamentals of Microbiology & Immunology-Lab	Core	0	0	4	40	20	60	40	100	0:0:2	2
Total				12	05	12	360	180	540	360	900	25	25

S. N.	Course code	Course Title	Type of Paper	Attributes							United Nation Sustainable Development Goal (SDGs)
				Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
THEORIES											
1	RS201	Conventional Radiographic Techniques-II	Core	√	√	√			√	√	3,4
2	RS202	Radiographic Positioning-I	Core	√	√	√	√		√	√	3,4
3	RS203	Radiation Protection and Quality Assurance	Core	√	√	√	√		√	√	3,4
4	RS204	Fundamental of Microbiology & Immunology	Core	√	√	√	√		√	√	3,4
5	ES101	Environmental Studies	Core					√			3,4,11,16
PRACTICAL											
1	RS205	Conventional Radiographic Techniques- II Lab	Core	√	√	√	√		√	√	3,4
2	RS206	Radiographic Positioning -I Lab	Core	√	√	√	√		√	√	3,4
3	RS207	Radiation Protection and Quality Assurance-Lab	Core	√	√	√	√		√	√	3,4
4	RS208	Fundamentals of Microbiology & Immunology-Lab	Core	√	√	√	√		√	√	3,4

L: Lecture **T:** Tutorials **P:** Practical **CT:** Class Test **TA:** Teacher Assessment **ESE:** End Semester Examination,
AE= Ability enhancement, **DSE-** Discipline Specific Elective, **Sessional Total:** Class Test + Teacher Assessment **Subject Total:** Sessional Total + End Semester Examination (ESE)



Integral University, Lucknow

Effective from Session: 2024-25

Course Code	RS203	Title of the Course	RADIATION PROTECTION AND QUALITY ASSURANCE	L	T	P	C
Year	II	Semester	III	2	1	0	3
Pre-Requisite	Nil	Co-requisite	Nil				
Course Objectives	The objective is to learn the aim, objective, philosophy and principle of radiation protection to protect oneself from the biological effects of radiation and monitoring radiation exposure.						

Course Outcomes: After the successful course completion, learners will develop following attributes:

CO1	Student will have knowledge on Radiation, Units & Quantities of radiation and Principle of Radiation Protection.
CO2	Student will have knowledge on Radiation Monitoring & Radiobiology.
CO3	Student will have knowledge on Quality control and assessment of equipment installed in radio department.
CO4	Student will have knowledge about care and maintenance of equipments in radiology department.
CO5	Student will have knowledge on Role of Radiographer in QA & QC of equipments.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	INTRODUCTION TO RADIATION PROTECTION, UNITS & QUANTITIES	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. 2. Aim & Principle of Radiation Protection- Concept of ALARA, Cardinal Principle, ICR Regulation, Radiation Protection in: Radiography, CT, Fluoroscopy, Mammography, Ward radiography, radiation shielding.	6	CO1
2	RADIATION MONITORING & RADIOBIOLOGY	1. Radiation monitoring: Personnel – Film badge, TLD, OSLD, pocket dosimeter, Area Monitoring Devices. 2. 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, workload, use factor, occupancy factor.	6	CO2
3	QUALITY CONTROL AND ASSESSMENT IN RADIOLOGY	1. 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 Tele radiology and PACS.	6	CO3
4	CARE & MAINTENANCE OF DIAGNOSTIC EQUIPMENTS	1. 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.	6	CO4
5	ROLE OF RADIOGRAPHER IN PLANNING, QA & RADIATION PROTECTION	1. 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.	6	CO5

Reference Books:

1. Sherer MA, Visconti PJ, Ritenour ER, Haynes K. Radiation Protection in Medical Radiography-E-Book. Elsevier Health Sciences; 2014Mar12.
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 Practice-E-Book. Elsevier Health Sciences; 2016 Sep6
4. Durrani SA, IlicR, 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; 2008Jan8
6. Radiation protection in medical radiography by Mary Alice, Paula J Visconti et.al.

e-Learning Source:

1. https://en.wikipedia.org/wiki/Radiation_protection
2. <https://youtu.be/mvjYRGjRKHc>
3. <https://www.slideshare.net/RubiSapkota/radiation-protection-and-personnel-monitoring-devices>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3	2	2	3	3	3	3	3	3	2	2	3	3
CO2	2	3	3	3	3	3	3	3	2	3	3	2	3	3	3	3
CO3	3	3	3	2	3	3	3	3	2	2	3	3	2	2	2	3
CO4	3	3	2	3	2	3	2	3	3	2	3	3	3	3	2	2
CO5	2	3	3	3	2	3	2	3	2	2	2	3	2	3	2	3

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
RS203	RADIATION PROTECTION AND QUALITY	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	3,4
		√	√	√	√		√	√	



Integral University, Lucknow

Effective from Session: 2024-25

Course Code	RS204	Title of the Course	FUNDAMENTAL OF MICROBIOLOGY & IMMUNOLOGY	L	T	P	C
Year	II	Semester	III	2	1	0	3
Pre-Requisite	Nil	Co-requisite	Nil				
Course Objectives	This subject gives a general insight into the history, basics of microbiology, sterilization and branches of Microbiology.						

Course Outcomes

CO1	This course makes the students to know about Microscopy & Biomedical waste management.
CO2	This course makes the students to know about general safety in Microbiology Lab & Sterilization
CO3	This course makes the students to know antiseptics & disinfectants.
CO4	This course makes the students to know about antigens & antibodies of immune system.
CO5	This course makes the students to know about branches of Microbiology.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	MICROSCOPY & BIOMEDICAL WASTE MANAGEMENT IN THE LAB	1. Microscopy: Study of compound microscope – magnification, numerical aperture, resolution and components of microscope. 2. Biomedical waste management in a Medical Microbiology laboratory: Types of the waste generated, Segregation, Treatment, Disposal	6	CO1
2	GENERAL SAFETY AND STERILIZATION	1. General safety measures used in Microbiology laboratory, Sterilization and disinfection: Various physical methods of sterilization heat, 2. UV radiation, ionizing radiation, filtration, characters affecting sterilization, auto clave control and sterilization indicators.	6	CO2
3	ANTISEPTIC AND DISINFECTANTS	1. Antiseptics & Disinfectants: Definition, types and properties, mode of action, use, qualities of good disinfectants 2. Chemical disinfectants – phenol and its compounds, alcohol, halogen, heavy metals and quaternary ammonium compounds, aldehyde, gaseous compound use and abuse of disinfectants. precautions while using the disinfectants	6	CO3
4	IMMUNE SYSTEM, ANTIGEN & ANTIBODY	1. General concepts of the immune system 2. Antigens and haptens: Properties, foreignness, molecular size, heterogeneity, B and T cell epitopes; T dependent and T independent antigens 3. Antibodies: Historical perspective of antibody structure; structure, function and properties of the antibodies; different classes, subclasses and biological activities of antibodies.	6	CO4
5	INTRODUCTION TO VARIOUS MICRO ORGANISM AND THEIR FEATURES	1. Introduction to Bacteriology, Virology, Parasitology, Helminthology, Fungi & Protozoa. 2. Brief Discussion on - Structure, life cycle, types, infection caused, diagnosis and treatment by- Common Viruses, Bacteria, Parasites & Helminth.	6	CO5

Reference Books:

1. Ananthanarayan R. and Paniker C.K.J. (2009) Textbook of Microbiology. 8th edition, University Press Publication.
2. Brooks G.F., Carroll K.C., Butel J.S., Morse S.A. and Mietzner, T.A. (2013)
3. Adelberg's Medical Microbiology. 26th edition. McGraw Hill Publication.
4. Goldsby RA, Kindt TJ, Osborne BA. (2007). Kuby's Immunology. 6th edition W.H. Freeman and Company, New York.
5. Willey JM, Sherwood LM, and Woolverton C.J. (2013) Prescott, Harley and Klein's Microbiology. 9th edition. McGraw Hill Higher Education.
6. Ananthanarayan R. and Paniker C.K.J. (2009) Textbook of Microbiology. 8th edition, University Press Publication.

e-Learning Source:

1. <https://youtu.be/pB26B2CXi2U>
2. <https://www.britannica.com/technology/microscope>
3. <https://www.webmd.com/a-to-z-guides/difference-between-disinfectants-antiseptics>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	Course Articulation Matrix: (Mapping of COs with POs and PSOs)															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3	2	2	3	3	3	3	3	3	2	2	3	3
CO2	2	3	3	3	3	3	3	3	2	3	3	2	3	3	3	3
CO3	3	3	3	2	3	3	3	3	2	2	3	3	2	2	2	3
CO4	3	3	2	3	2	3	2	3	3	2	3	3	3	3	2	2
CO5	2	3	3	3	2	3	2	3	2	2	2	3	2	3	2	3

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
RS204	FUNDAMENTAL OF MICROBIOLOGY & IMMUNOLOGY	√	√	√	√		√	√	3,4



Integral University, Lucknow

Effective from Session: 2024-25							
Course Code	RS206	Title of the Course	RADIOGRAPHIC POSITIONING- I LAB	L	T	P	C
Year	I	Semester	II	0	0	2	1
Pre-Requisite	Nil	Co-requisite	Nil				
Course Objectives	Demonstration of various positioning of Skull, Neck, Thorax and abdomen						

Course Outcomes: After the successful course completion, learners will develop following attributes:	
CO1	Student will be able to perform Radiography of Skull.
CO2	Student will be able to perform Radiography of Skull with special projections.
CO3	Student will be able to perform Radiography of PNS and Facial bones.
CO4	Student will be able to perform Radiography of STN & Chest.
CO5	Student will be able to perform Radiography of Chest special views.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	SKULL PROJECTION- I	1. Demonstration of Skull AP view. 2. Demonstration of Skull PA view.	4	CO1
2	SKULL PROJECTION- II	3. Demonstration of Skull Town's view. 4. Demonstration of Skull Lateral & Sella Turcica view. 5. Demonstration of Skull SMV Projection.	4	CO2
3	SKULL PROJECTION- III	6. Demonstration of PNS Open and Close mouth views. 7. Demonstration of Facial Projections. 8. Demonstration of TMJ projection.	4	CO3
4	CHEST PROJECTION- I	9. Demonstration of STN projection. 10. Demonstration of Chest PA view. 11. Demonstration of Chest AP view.	4	CO4
5	CHEST PROJECTION- II	12. Demonstration of Chest Lateral view. 13. Demonstration of Chest Oblique view. 14. Demonstration of Lordotic view.	4	CO5

Reference 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.
4. Frank ED, Long BW, Smith BJ. Merrill's Atlas of Radiographic Positioning and Procedures-E-Book. Elsevier Health Sciences; 2013 Aug 13.

e-Learning Source:

1. <https://radiopaedia.org/articles/skull-radiography>
2. <https://radiopaedia.org/cases/normal-soft-tissue-neck-lateral-radiograph>
3. <https://radiopaedia.org/articles/abdomen-ap-supine-view-1>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	Course Articulation Matrix: (Mapping of COs with POs and PSOs)															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	2	3	3	2	1	2	3	2	1	1	3	2	2	3	3	2
CO2	1	3	2	2	2	3	2	3	2	3	2	3	2	2	3	3
CO3	2	3	2	2	3	2	3	2	1	1	2	3	2	1	3	2
CO4	1	3	2	1	3	3	2	3	3	2	2	1	2	2	3	3
CO5	2	3	2	1	3	2	3	2	1	2	3	2	2	1	3	3

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation
Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
RS206	RADIOGRAPHIC POSITIONING- I LAB	f	f	f	f				3,4



Integral University, Lucknow

Effective from Session: 2024-25

Course Code	RS208	Title of the Course	FUNDAMENTAL OF MICROBIOLOGY & IMMUNOLOGY-LAB	L	T	P	C
Year	II	Semester	III	0	0	4	2
Pre-Requisite	Nil	Co-requisite	Nil				
Course Objectives	This subject gives a general insight into the history, and basics of microbiology and imparts knowledge about the equipment used in microbiology and formulated to impart basic aspects of immunity, antigens, antibodies, various serological reactions, techniques and their utility in laboratory diagnosis of human diseases.						

Course Outcomes

CO1	Student will be able to demonstrate microscope, glassware & Autoclave.
CO2	Student will be able to demonstrate hot air oven, Gram staining & ZN staining.
CO3	Student will be able to perform Indian ink staining, hanging drop method & demonstration of capsule.
CO4	Student will be able to demonstrate bacterial spores and agglutination reactions & RA test.
CO5	Student will be able to perform, Widal, RPR & CRP test.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	MICROSCOPE, GLASSWARE & AUTOCLAVE	1. Demonstration of Microscope and its parts 2. Demonstration of glassware used in microbiology. 3. Demonstration of autoclave and sterilization of glass wares.	8	CO1
2	HOT AIR OVEN & ACID FAST AND GRAM STAINING	1. Demonstration of Hot air oven and sterilization of glass wares. 2. To perform Gram staining 3. To perform Acid-fast staining (Ziehl Neelsen staining)	8	CO1
3	INK STAINING, HANGING DROP METHOD	1. To perform Indian ink staining 2. To perform the Hanging drop method 3. Demonstration of capsule	8	CO2
4	BACTERIAL STAINING & BLOOD TEST	1. Staining of bacterial spores 2. To demonstrate agglutination reaction. 3. To perform the RA test	8	CO2
5	BLOOD TEST	1. To perform the WIDAL test 2. To perform an RPR test. 3. To perform the CRP test	8	CO3

Reference Books:

1. Abbas AK, Lichtman AH, Pillai S. (2007). Cellular and Molecular Immunology. 6th edition Saunders Publication, Philadelphia.
2. Delves P, Martin S, Burton D, Roitt IM. (2006). Roitt's Essential Immunology. 11th edition Wiley- Blackwell Scientific Publication, Oxford.
3. Goldsby RA, Kindt TJ, Osborne BA. (2007). Kuby's Immunology. 6th edition W.H. Freeman and Company, New York.
4. Murphy K, Travers P, Walport M. (2008). Janeway's Immunobiology. 7th edition Garland Science Publishers, New York.
5. Peakman M, and Vergani D. (2009). Basic and Clinical Immunology. 2nd edition Churchill Livingstone Publishers, Edinburgh.
6. Richard C and Geiffrey S. (2009). Immunology. 6th edition. Wiley Blackwell Publication.

e-Learning Source:

1. <https://youtu.be/vvFDyplLkTA>
2. <https://youtu.be/sxa46xKfIOY>
3. <https://www.metropolisindia.com/blog/preventive-healthcare/widal-test-introduction-principle-procedure-preparation-price>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
	CO1	3	3	3	3	2	2	3	3	3	3	3	3	2	2	3
CO2	2	3	3	3	3	3	3	3	2	3	3	2	3	3	3	3
CO3	3	3	3	2	3	3	3	3	2	2	3	3	2	2	2	3
CO4	3	3	2	3	2	3	2	3	3	2	3	3	3	3	2	2
CO5	2	3	3	3	2	3	2	3	2	2	2	3	2	3	2	3

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
RS208	FUNDAMENTAL OF MICROBIOLOGY & IMMUNOLOGY-LAB	√	√	√	√		√	√	3,4



INTEGRAL UNIVERSITY, LUCKNOW
INTEGRAL INSTITUTE OF ALLIED HEALTH SCIENCES & RESEARCH

DEPARTMENT OF PARAMEDICAL SCIENCES

**BACHELOR MEDICAL RADIOLOGICALIMAGING
SCIENCES
(BMRIS)**

SYLLABUS

YEAR/ SEMESTER: II/IV



Integral University, Lucknow
Department of Paramedical Sciences
Study and Evaluation Scheme

Program: BMRIS

Semester-IV

S. N.	Course code	Course Title	Type of Paper	Period Per hr/week/sem			Evaluation Scheme				Sub. Total	Credit	Total Credits
				L	T	P	CT	TA	Total	ESE			
THEORIES													
1	RS209	Radiographic Positioning- II	Core	3	1	0	40	20	60	40	100	3:1:0	4
2	RS210	Special Radiographic Procedures	Core	2	1	0	40	20	60	40	100	2:1:0	3
3	RS211	Basics of USG and Mammography	Core	2	1	0	40	20	60	40	100	2:1:0	3
4	RS212	Basics of CT Scan	Core	2	1	0	40	20	60	40	100	2:1:0	3
5	RS213	Orientation in Clinical Sciences-I	Core	2	1	0	40	20	60	40	100	2:1:0	3
PRACTICAL													
1	RS214	Radiographic Positioning- II Lab	Core	0	0	4	40	20	60	40	100	0:0:2	2
2	RS215	Special Radiographic Procedures- Lab	Core	0	0	2	40	20	60	40	100	0:0:1	1
3	RS216	Basics of CT Scan-Lab	Core	0	0	2	40	20	60	40	100	0:0:1	1
4	RS217	Hospital Posting	Core	0	0	16	40	20	60	40	100	0:0:8	8
Total				11	05	24	360	180	540	360	900	28	28

S. N.	Course code	Course Title	Type of Paper	Attributes						United Nation Sustainable Development Goal (SDGs)	
				Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value		Professional Ethics
THEORIES											
1	RS209	Radiographic Positioning- II	Core	√	√	√	√		√	√	3,4
2	RS210	Special Radiographic Procedures	Core	√	√	√	√		√	√	3,4
3	RS211	Basics of USG and Mammography	Core	√	√	√	√		√	√	3,4
4	RS212	Basics of CT Scan	Core	√	√	√	√		√	√	3,4
5	RS213	Orientation in Clinical Sciences-I	Core	√	√	√	√	√	√	√	3,4
PRACTICAL											
1	RS214	Radiographic Positioning- II Lab	Core	√	√	√	√		√	√	3,4
2	RS215	Special Radiographic Procedures- Lab	Core	√	√	√	√		√	√	3,4
3	RS216	Basics of CT Scan-Lab	Core	√	√	√	√		√	√	3,4
4	RS217	Hospital Posting	Core	√	√	√	√		√	√	3,4

L: Lecture **T:** Tutorials **P:** Practical **CT:** Class Test **TA:** Teacher Assessment **ESE:** End Semester Examination,
AE= Ability enhancement, **DSE-** Discipline Specific Elective, **Sessional Total:** Class Test + Teacher Assessment **Subject Total:** Sessional Total + End Semester Examination (ESE)



Integral University, Lucknow

Effective from Session: 2024-25							
Course Code	RS209	Title of the Course	RADIOGRAPHIC POSITIONING- II	L	T	P	C
Year	II	Semester	III	3	1	0	4
Pre-Requisite	Nil	Co-requisite	Nil				
Course Objectives	The objective is to learn basic and special projections for the better delineation diagnosis of the disease conditions of different anatomical structures (Upper and Lower Extremities, Shoulder Joint, Pelvis Girdle, Whole Spine).						

Course Outcomes	
CO1	Students will be able to learn about Basic and special projection- Related radiological anatomy Upper Extremity and Femur.
CO2	Students will be able to learn Basic and special projections-Related radiological anatomy of Shoulder Girdle.
CO3	Students will be able to learn Basic and special projections of Pelvic girdle.
CO4	Students will be able to learn Related radiological anatomy and Basic views of whole spine.
CO5	Students will be able to learn Positioning, care and radiation protection while handling babies.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	PROJECTIONS OF UPPER & LOWER EXTREMITY	<ol style="list-style-type: none"> Basic and special projection- Related radiological anatomy. Finger-PA, LAT, OBLIQUE- Hand-PA, LAT- Wrist joint-PA, LAT, Ulnar deviation - Forearm-AP, LAT. Elbow joint-AP, LAT- Humerus-AP, LA. Femur-AP, LAT- Knee joint- AP, LAT- Patella-SKYLINE VIEW-Tibia-AP, LAT-Ankle joint-AP, LAT, MORTIS VIEW- Foot –AP, LAT. 	8	CO1
2	PROJECTIONS OF SHOULDER GIRDLE	<ol style="list-style-type: none"> Basic and special projections-Related radiological anatomy. Shoulder-AP, AXIAL Clavicle -AP, AP AXIAL Scapula-AP, OBLIQUE, Y VIEW 	8	CO2
3	PROJECTIONS OF PELVIC GIRDLE & PROXIMAL FEMUR	<ol style="list-style-type: none"> Basic & special projections- Related radiological anatomy Pelvic girdle: AP pelvis, Frog lateral (modified cleaves method), AP axial for pelvic outlet (tayelor method), AP axial for pelvic inlet (modified linienfield method), Posterior oblique-acetabulum (judet method) Hip and proximal femur: AP unilateral hip, Axio-lateral, infero-superior (danelius – miller method), Unilateral frog leg (modified cleaves method), Modified axiolateral (Clements-Nakayama method) Sacro-iliac joints: AP, posterior oblique’s 	8	CO3
4	PROJECTIONS OF WHOLE SPINE	<ol style="list-style-type: none"> Cervical spine: Related radiological anatomy <ol style="list-style-type: none"> Basic views, AP open mouth, AP axial, Oblique, Lateral, Erect, Trauma lateral (horizontal beam), Swimmer’s view) Special views: Lateral- hyperflexion and hyperextension AP (Fuchs method) or PA (Judd method), AP wagging jaw (ottonello method), AP axial (pillars). Thoracic spine: Related radiographic anatomy: Projections, AP, Lateral, and Oblique. Lumbar spine, sacrum and coccyx: Related radiographic anatomy <ol style="list-style-type: none"> Lumbar spine: AP, Oblique, Lateral, Lateral (L5 – S1), AP axial (L5 –S1). Scoliosis series: AP or PA, Erect, lateral, AP (Ferguson method), AP–Rand L bending. Spinal fusion series: AP or PA – R and L bending, Lateral –hyperextension and hyper flexion. Sacrum and Coccyx: AP axial sacrum, AP axial coccyx, Lateral sacrum, Lateral coccyx. 	8	CO4
5	PAEDIATRIC RADIOGRAPHY	<ol style="list-style-type: none"> Positioning, and radiation protection while handling babies. 	8	CO5

Reference Books:

- Whitley AS, Jefferson G, Holmes K, Sloane C, Anderson C, Hoadley G. Clark’s Positioning in Radiography 13E. CRC Press; 2015 Jul28.
- Bontrager KL, Lampignano J. Textbook of Radiographic Positioning and Related Anatomy-E-Book. Elsevier Health Sciences; 2013 Aug7.
- Bontrager KL, Lampignano J. Bontrager’s Handbook of Radiographic Positioning and Techniques-E-BOOK. Elsevier Health Sciences; 2017
- FrankED, LongBW, SmithBJ.Merrill’sAtlasofRadiographicPositioningandProcedures-E-Book. Elsevier Health Sciences; 2013 Aug13.

e-Learning Source:

- <https://www.slideshare.net/InfoUtilRT/upper-extremity-anatomy-positioning>
- <https://youtu.be/LJStHhk5e9w>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3
CO3	3	2	3	3	3	2	3	2	2	3	2	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	3	2	3	3	3

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
RS209	RADIOGRAPHIC POSITIONING- II	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	3,4
		√	√	√			√	√	



Integral University, Lucknow

Effective from Session: 2024-25							
Course Code	RS210	Title of the Course	SPECIAL RADIOGRAPHIC PROCEDURES	L	T	P	C
Year	II	Semester	IV	2	1	0	3
Pre-Requisite	Nil	Co-requisite	Nil				
Course Objectives	The objective is to learn contrast-imaging techniques under the guidance of fluoroscopy, the administration of contrast media and its safety aspect.						

Course Outcomes	
CO1	Students will be able to learn about Contrast media used in Radiology and their reactions along with management.
CO2	Students will be able to learn about the barium procedures of the GIT.
CO3	Students will be able to learn about the procedures of the Urinary system and HSG.
CO4	Students will be able to learn about Nervous system and hepatobiliary procedures.
CO5	Students will be able to learn about Sialography, DCG, Sinogram, FNAC and Biopsy.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	CONTRAST MEDIA	1. Contrast Media- Application, types, safety aspects & administration, Reaction to contrastmedia and management of contrast reactions.	6	CO1
2	BARIUM PROCEDURES	1. Barium swallow, Barium meal 2. Barium meal follow-through (BMFT) 3. Barium enema	6	CO2
3	PROCEDURE OF URINARY & FEMALE REPRODUCTIVE SYSTEM	1. Intravenous program (IVU). 2. Micturating Cystourethrogram (MCU). 3. Ascending Urethrogram (ASU)/RGU. 4. Hysterosalpingography (HSG).	6	CO3
4	PROCEDURE OF NERVOUS & HEPATOBIILIARY SYSTEM	1. Myelography 2. ERCP/ PTBD 3. PTC, T-tube cholangiography	6	CO4
5	OTHER SPECIAL PROCEDURES	1. Sialography, 2. Dacrocystography, 3. Sinogram, 4. Fistulogram, 5. FNAC 6. Biopsy	6	CO5

Reference Books:	
1.	Lakhkar B N, Banavali S, Shetty C. Radiological quiz-head and neck. Indian Journal of Radiology and Imaging.
2.	Snopek AM. Fundamentals of Special Radiographic Procedures-E-Book. Elsevier Health Sciences; 2013 Aug 13.
3.	Davies SG, Chapman S. Aids to radiological differential diagnosis. Elsevier Health Sciences; 2013 Nov 20.
4.	Krishnamurthy, Medical Radiographic Technique & Darkroom Practice
e-Learning Source:	
1.	https://youtu.be/IYfL-V2C9Uw
2.	https://youtu.be/zY12G2Z_T7M
3.	https://youtu.be/JQW9RilqUaw

PO-PSO CO	Course Articulation Matrix: (Mapping of COs with POs and PSOs)															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3	2	2	3	3	3	3	3	2	3	2	3	2
CO2	2	3	2	3	3	3	3	3	2	3	3	3	2	3	3	3
CO3	3	2	3	2	3	2	3	3	2	2	3	3	2	3	3	3
CO4	2	3	2	3	3	3	2	3	3	2	2	3	2	3	3	2
CO5	2	3	3	3	2	3	2	3	2	3	2	3	2	3	2	3

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
RS210	SPECIAL RADIOGRAPHIC PROCEDURES	√	√	√	√		√	√	3,4



Integral University, Lucknow

Effective from Session: 2018-19							
Course Code	RS211	Title of the Course	BASICS OF USG AND MAMMOGRAPHY	L	T	P	C
Year	II	Semester	IV	2	1	0	3
Pre-Requisite	Nil	Co-requisite	Nil				
Course Objectives	The objective is to learn basic knowledge of ultrasound and Doppler equipment for various imaging and equipment used for breast imaging and mammography techniques.						

Course Outcomes	
CO1	Students will be able to learn about Sound and Ultrasound Imaging.
CO2	Students will be able to learn about USG equipment, Transducers and Piezoelectric crystals.
CO3	Students will be able to learn about USG Display Modes.
CO4	Students will be able to learn about Doppler USG and Mammography.
CO5	Students will be able to learn about Clinical aspects of Mammography.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	INTRODUCTION TO USG	1. Sound, Ultrasound, History of ultrasound, Attenuation, Echoes, Basic principle of Ultrasound imaging, Advantages and disadvantages.	6	CO1
2	INSTRUMENTATION OF USG	1. Controls of Ultrasound Equipment, USG probes, Coupling agent, Cathode ray tube, Image display, USG contrast agent. 2. Piezoelectric Effect - Definition, Types of elements, Properties. 3. Transducers : Construction and operation, Types of transducers.	6	CO2
3	USG DISPLAY MODES	1. USG Display modes : A mode, B mode, M mode, TM mode. 2. Gray scale imaging Beam focusing, Resolution	6	CO3
4	DOPPLER USG & MAMMOGRAPHY	1. Principle, Doppler Effect, Colour Doppler, Continuous wave Doppler, Pulsed wave Doppler. 2. USG Bio effects. 3. Introduction of Mammography : Breast -radiological anatomy, Mammography Equipment and Basic views in Mammography.	6	CO4
5	MAMMOGRAPHY TECHNIQUES	1. Scanning protocol, Indication, Patient preparation, image quality and artifacts in Mammography, Sonomammography.	6	CO5

Reference 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. McGraw-Hill, Health Professions Division; 1997

e-Learning Source:	
1.	https://medlineplus.gov/lab-tests/sonogram
2.	https://www.radiologyinfo.org/en/info/mammo
3.	https://en.wikipedia.org/wiki/Doppler_ultrasonography

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
	CO1	3	3	3	3	2	2	3	3	3	3	3	2	2	2	3
CO2	2	3	2	2	3	3	3	3	2	3	3	2	2	3	3	3
CO3	3	2	3	2	3	2	3	3	2	2	3	3	2	3	3	3
CO4	2	3	2	3	3	3	2	3	3	2	3	3	2	3	3	2
CO5	2	3	3	3	2	3	2	3	2	3	2	3	2	3	2	3

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
RS211	BASICS OF USG AND MAMMOGRAPHY	√	√	√	√		√	√	3,4



Integral University, Lucknow

Effective from Session: 2024-25							
Course Code	RS212	Title of the Course	BASICS OF COMPUTED TOMOGRAPHY	L	T	P	C
Year	II	Semester	IV	2	1	0	3
Pre-Requisite	Nil	Co-requisite	Nil				
Course Objectives	The objective is to induce idea on cross sectional imaging of different anatomical area along with the pathologies.						

Course Outcomes	
CO1	Students will be able to learn about CT scan and its generations.
CO2	Students will be able to learn about instruments of CT scan.
CO3	Students will be able to learn about Image reconstruction, Image quality and CT number.
CO4	Students will be able to learn about CT artifacts.
CO5	Students will be able to learn about Clinical aspects and post processing technique of CT scan.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	INTRODUCTION AND GENERATIONS OF CT SCAN	1. History, Advantage and Disadvantages of CT, Basic principle of CT. 2. Generations of Computed Tomography- 1st generation, 2nd generation, 3 rd generation, Slip ring technology, 4th generation, Electron beam CT, Dual Source CT, Flat Panel Detector CT Single and Multi-slice Technology.	6	CO1
2	INSTRUMENTATION	1. CT scanner gantry, Detectors & Data Acquisition System, Generator, Computer and image processing. 2. System Image display system, storage, recording and communication system, CT control console, Options and accessories for CT systems	6	CO2
3	IMAGE RECONSTRUCTION, DISPLAY AND QUALITY	1. Image Reconstruction- Basic principle, Reconstruction algorithms, Image reconstruction from projections, Types of data reconstruction. 2. Image Display and Image Quality Image formation and representation, Image processing, Pixel and voxel, CT number Window level and window width, Qualities, Resolution, Contrast, Sharpness, Noise properties in CT.	6	CO3
4	CT ARTEFACTS	1. CT Artefacts- Classification, Types, Causes, Remedies	6	CO4
5	DIAGNOSTIC ASPECTS AND POSTPROCESSING TECHNIQUES	1. 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, BMD.	6	CO5

Reference 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. McGraw-Hill, Health Professions Division; 1997
e-Learning Source:	
1.	https://www.slideshare.net/shreyacathe/ct-scan-62017319
2.	https://www.slideshare.net/ganesahyogananthem/ct-artifact
3.	https://en.wikipedia.org/wiki/High-resolution_computed_tomography

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
	CO1	3	3	3	3	2	2	3	3	3	3	3	2	2	2	3
CO2	2	3	2	2	3	3	3	3	2	3	3	2	2	3	3	3
CO3	3	2	3	2	3	2	3	3	2	2	3	3	2	3	3	3
CO4	2	3	2	3	3	3	2	3	3	2	3	3	2	3	3	2
CO5	2	3	3	3	2	3	2	3	2	3	2	3	2	3	2	3

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
RS212	BASICS OF COMPUTER TOMOGRAPHY	√	√	√	√		√	√	3,4



Integral University, Lucknow

Effective from Session: 2024-25

Course Code	RS213	Title of the Course	ORIENTATION IN CLINICAL SCIENCES-I	L	T	P	C
Year	II	Semester	IV	2	1	0	3
Pre-Requisite	Nil	Co-requisite	Nil				
Course Objectives	The objective is to learn basic pathological conditions related to cardiology, surgery, nephrology, orthopedic, gastrology, neurology and general medicine for the diagnosis.						

Course Outcomes

CO1	Students will be able to learn about disease of circular and respiratory system.
CO2	Students will be able to learn about pathological conditions of GIT.
CO3	Students will be able to learn about disease of the Urinary system.
CO4	Students will be able to learn about Pathologies of skeletal system.
CO5	Students will be able to learn about some common pathologies of human body.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	PATHOLOGY OF HEART AND RESPIRATORY	1. Pericarditis, Valvular diseases, Rheumatic Heart Disease, Heart failure. 2. Bronchitis, Emphysema, Pneumonia, Tuberculosis, Pleura effusion, Pneumothorax.	6	CO1
2	PATHOLOGY OF GIT	1. Aclasia cardia, Peptic ulcer, Intestinal obstruction, Ulcerative colitis, Pancreatitis, Portal Hypertension, Ascites, Cholecystitis, Appendicitis	6	CO2
3	PATHOLOGY OF URINARY SYSTEM	2. Haematuria, UTI, Hydronephrosis, Horseshoe Kidney, Hydrocele, Glomerulonephritis, Urinary calculi, Polycystic Kidney disease, Renal failure	6	CO3
4	PATHOLOGICAL CONDITIONS OF THE SKELETAL SYSTEM	1. Fracture, Type Mechanism, Healing, Delayed Union, Non- complication, Mal-Union 2. Injuries of the shoulder girdle, Dislocation of the shoulder 3. Dislocation of Hip 4. Fracture of Femur 5. Acute & chronic osteoarthritis 6. Rheumatoid arthritis, Paget's Disease, Ankylosing spondylitis, Club foot, Bone Tumour-Benign & Malignant	6	CO4
5	OTHER PATHOLOGY	1. Cholelithiasis, Peritonitis, Benign Hypertrophy prostate	6	CO5

Reference Books:

1. Lakhkar B N, Banavali S, Shetty C. Radiological quiz-head and neck. Indian Journal of Radiology and Imaging.
2. Snopek AM. Fundamentals of Special Radiographic Procedures-E-Book. Elsevier Health Sciences; 2013 Aug 13.
3. Davies SG, Chapman S. Aids to radiological differential diagnosis. Elsevier Health Sciences; 2013 Nov 20.
4. Krishnamurthy, Medical Radiographic Technique & Darkroom Practice.

e-Learning Source:

1. <https://www.mayoclinic.org/diseases-conditions/hydronephrosis/cdc-20397563>
2. <https://medlineplus.gov/heartfailure.html>
3. <https://medlineplus.gov/fractures.html#:~:text=Patient%20Handouts-.Summary,cause%20weakening%20of%20the%20bones>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	Course Articulation Matrix: (Mapping of COs with POs and PSOs)															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3	2	2	3	3	3	3	3	2	2	2	3	3
CO2	2	3	2	2	3	3	3	3	2	3	3	2	2	3	3	3
CO3	3	2	3	2	3	2	3	3	2	2	3	3	2	3	3	3
CO4	2	3	2	3	3	3	2	3	3	2	3	3	2	3	3	2
CO5	2	3	3	3	2	3	2	3	2	3	2	3	2	3	2	3

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
RS213	ORIENTATION IN CLINICAL SCIENCES-I			√					3,4, 11



Effective from Session: 2024-25							
Course Code	RS214	Title of the Course	RADIOGRAPHIC POSITIONING-II LAB	L	T	P	C
Year	II	Semester	III	0	0	4	2
Pre-Requisite	Nil	Co-requisite	Nil				
Course Objectives	The objective is to learn basic and special projections for the better delineation diagnosis of the disease conditions of different anatomical structures (Upper and Lower Extremities, Shoulder Joint, Pelvis Girdle, Whole Spine).						

Course Outcomes	
CO1	Students will be able to learn about Basic and special projection- Related radiological anatomy a. Finger, Hand, & Wrist joint.
CO2	Students will be able to learn Basic and special projections-Related radiological anatomy, Forearm, Elbow, Humerus & Femur.
CO3	Students will be able to learn Knee, Patella, Tibia & ankle joint.
CO4	Students will be able to learn Pelvis & Foot Radiography.
CO5	Students will be able to learn Positioning, care and radiation protection while handling babies & Spine Radiography.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	HAND & WRIST RADIOGRAPHY	1. Demonstration of Finger -PA, LAT, OBLIQUE. 2. Demonstration of Hand-PA, LAT. 3. Demonstration of Wrist joint-PA, LAT.	8	CO1
2	UPPER EXTREMITY & FEMUR RADIOGRAPHY	1. Demonstration of Forearm-AP, LAT. 2. Demonstration of Elbow joint-AP, LAT- Humerus-AP, LA. 3. Demonstration of Femur-AP, LAT.	8	CO2
3	LOWER EXTREMITY RADIOGRAPHY	1. Demonstration of the Knee joint- AP, LAT, Patella-SKYLINE VIEW 2. Demonstration of Tibia-AP, LAT. 3. Demonstration of Ankle joint-AP, LAT, MORTIS VIEW.	8	CO3
4	PELVIS & FOOT RADIOGRAPHY	1. Demonstration of Foot –AP, LAT. 2. Demonstration of Basic & special projections of Pelvic girdle and proximal femur.	8	CO4
5	SPINE & PEDIATRIC RADIOGRAPHY	1. Demonstration of Basic & special projections of the Cervical spine 2. Demonstration of Basic & special projections of Lumbar spine & sacrum 3. Demonstration of Pediatric radiography.	8	CO5

Reference 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.
- 4 Frank ED, Long BW, Smith BJ. Merrill's Atlas of Radiographic Positioning and Procedures-E-Book. Elsevier Health Sciences; 2013 Aug 13.

e-Learning Source:

1. <https://www.slideshare.net/InfoUtilRT/upper-extremity-anatomy-positioning>
2. <https://youtu.be/LiStHhk5e9w>
3. <https://youtu.be/C2Ud4EwZVQM>

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3	3	3	3	3	3	3	2	3	3	3	2	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	2	3	3	3	2	3	2	2	3	2	3	2	3	2	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
RS214	RADIOGRAPHIC POSITIONING- PART II LAB	√	√	√	√		√	√	3,4

