Department of Radiology and Imaging Techniques Era University, Lucknow

Course Outline

Effective From 2023-24

Name of the Program	**BRIT**			**Year/ Semester:**	**6TH**
Course Name	**Research Methodology & Biostatistics-II**	**Course Code:**	**BRT 603**	**Type: Semester**	**Theory**
Credits	**04**			**Total Sessions Hours:**	**40**
Evaluation Spread	**Internal Continuous Assessment:**	**30**		**End Term Exam:**	**70**
Type of Course	○ Compulsory	● Core		○ Creative	○ Life Skill
Course Objectives	This course is designed to provide the students the basic knowledge of the research process and Bio- statistics. After the course, the students will know data collection, statistical application, and finally, presentation of the statistical data.				
Course Outcomes (CO): *After the successful course completion, learners will develop the following attributes:*					
Course Outcome (CO)					
CO1	Understand the various research methodologies (Remember & Understand).				
CO2	Compare the differences between the central tendency and measures of dispersion.				
CO3	Learn to apply the knowledge of various types of research to clinical aspects of diseases (Apply &Analyze).				
CO4	Augment their learning by making abstracts, charts, diagrams, graphs and learning on visiting hospitals for practical skills in research methods (Synthesize, evaluate & create).				
Pedagogy	Explanations by the Instructor, Group/Pair Work, Discussion, Assignment, Practical, Presentations.				
Internal Evaluation Mode	Terminal Exam, Attendance, Project/Assignment, Class participation, Class presentation, Bedside behavior or Interaction in class.				
Session Details	**Topic**			**Hours**	**Mapped CO**

Unit 1	Critical analysis of research papers, conducting a literature review, Writing Research proposals, and developing of conceptual framework in research.	10	CO 1,2
Unit 2	Introduction to Statistics, Classification of data, Source of data, Method of scaling - nominal, ordinal, ratio and interval scale, measuring reliability and validity of scales, Measures of Central tendency, Measures of Dispersion, Skewness and kurtosis, Sampling, Sample size determination, Introduction and method of collecting and presenting of statistical data.Calculation and interpretation of various measures like mean, median, standard deviations, Skewness and Kurtosis, Probability distribution, Correlation and regression Significance tests, and confidence intervals.	30	CO 2,3, 4

CO-PO and PSO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2	3	2	3	3	2	2	2	3	3	2	1	2	2
CO2	3	2	3	3	2	2	3	3	2	2	3	3	3	3
CO3	3	2	3	3	2	3	2	3	2	3	2	2	2	3
CO4	2	2	2	2	3	2	3	2	3	2	3	3	3	2

Strong contribution-3, Average contribution-2, Low contribution-1,

Suggested Readings:

Recapitulation & Examination Pattern

Internal Continuous Assessment:

Component	Marks	Pattern
Terminal Exam	12	1. Contains a descriptive question of 4 marks 2. Contains 4 MCQs 3. Contains 2 short answer questions. Each question carries 2 marks
Attendance	04	
Project/Assignments	04	
Class participation or any other	04	
Class Presentation	04	
Bed Side Behavior or Interaction in Class	02	
Total Marks	30	

Department of Radiology and Imaging Techniques Era University, Lucknow

Course Outline

Effective From 2023-24

Name of the Program	**BRIT**			**Year/ Semester:**	**6TH**
Course Name	**Hospital Practice and Patient Care**	**Course Code:**	**BRT 602**	**Type: / Semester**	**Theory**
Credits	**03**			**Total Sessions Hours:**	**40**
Evaluation Spread	**Internal Continuous Assessment:**	**30**		**End Term Exam:**	**70**
Type of Course	○ Compulsory	● Core		○ Creative	○ Life Skill
Course Objectives	This course is designed to provide the students the basic knowledge in Radiography. At the end of the course, the student should be able to				
Course Outcomes (CO): *After the successful course completion, learners will develop the following attributes:*					
Course Outcome (CO)					
CO1	introduction to hospital staffing, Medical records, and documentation.				
CO2	Understood Legal issues and professional ethics.				
CO3	Must know Departmental Safety and Infection Control.				
CO4	Body mechanics and transferring of the patient.				
Pedagogy	Explanations by the Instructor, Group/Pair Work, Discussion, Assignment, Practical, Presentations.				
Internal Evaluation Mode	Terminal Exam, Attendance, Project/Assignment, Class participation, Class presentation, Bedside behavior or Interaction in class.				

Session Details	**Topic**	**Hours**	**Mapped CO**
Unit 1	Hospital staffing and administration, records, professionals, ethics, cooperation with other staff and departments, and Departmental organizations. Handling of the patients, seriously ill and	15	CO 1,2

	traumatized patients, visually impaired, speech and hearing impaired mentally impaired, drug addicts, and non-English speaking patients. Understanding patient needs - patient dignity of inpatients and outpatients. Interaction with the patient's relatives and visitors.		
Unit 2	Methods of effective communication - verbal skills, body language, professional appearance, visual contact, etc. Elementary personal and departmental hygiene, dealing with receptacles, bed pans urinals, etc. General preliminaries to the exam.	05	CO 3

Unit 3	Moving chair and stretcher, patient. Unconscious patient, general comfort, and reassurance for the patient. Vital signs and oxygen - patient's Haemostasis status. Body and lines.	05	CO 2, 3
Unit 4	First aid - shock, electrical shock, hemorrhage, bums, Asphyxia, fractures, loss of consciousness. Emergency treatment for the collapsed patient. Artificial respiration and resuscitation. Preparation of patients for general and special radiological examinations. Supervision of patients undergoing special examination. Administration of drugs and contrast media. Aseptic and sterile procedures. Handling of infectious patients in the department or in the ward. Regulation of dangerous drugs. Trolley set up for special x-ray examinations, Radiation hazards, and protective measures.	05	CO 1,4

CO-PO and PSO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	2	3	3	2	2	2	2	3	3	3	3	2	3
CO2	2	3	3	3	3	3	3	3	2	2	3	2	3	2
CO3	3	2	3	2	2	3	2	3	2	3	3	3	3	3
CO4	2	3	2	3	3	2	3	3	3	2	3	2	2	2

Strong contribution-3, Average contribution-2, Low contribution-1,

Suggested Readings:

Text- Books	1) PR Ashalatha& G Deepa'sTextbook of ANATOMY & PHYSIOLOGY 2) N Geetha's textbook of physiology
Reference Books	1) C C Chatterjee's Human Physiology 2) CC Chatterjee's Practical Physiology for Paramedical Courses 3) CN Chandrashekhar'sManipal Manual of Medical Physiology 4) RK Maurya's Medical Physiology

Recapitulation & Examination Pattern

Internal Continuous Assessment:

Component	Marks	Pattern
Terminal Exam	12	1. Contains a descriptive question of 4 marks 2. Contains 4 MCQs 3. Contains 2 short answer questions. Each question carries 2 marks
Attendance	04	
Project/Assignments	04	
Class participation or any other	04	
Class Presentation	04	
Bed Side Behavior or	02	

Interaction in Class		
Total Marks	30	

Department of Radiology and Imaging Techniques Era University, Lucknow

Course Outline

Effective From 2023-24

Name of the Program	**BRIT**			**Year/ Semester:**	**6TH**
Course Name	**Hospital Practice and Patient Care**	**Course Code:**	**BRP 602**	**Type: / Semester**	**Practical**
Credits	**03**			**Total Sessions Hours:**	**60**
Evaluation Spread	**Internal Continuous Assessment:**	**30**		**End Term Exam:**	**70**
Type of Course	○ Compulsory	● Core		○ Creative	○ Life Skill
Course Objectives	This course is designed to provide the students the basic knowledge in Radiography. At the end of the course, the student should be able to				
Course Outcomes (CO): *After the successful course completion, learners will develop the following attributes:*					
Course Outcome (CO)					
CO1	Introduction to hospital staffing, Medical records, and documentation.				
CO2	Understood Legal issues and professional ethics.				
CO3	Must know Departmental Safety and Infection Control.				
CO4	Body mechanics and transferring of the patient.				
Pedagogy	Explanations by the Instructor, Group/Pair Work, Discussion, Assignment, Practical, Presentations, Clinical Postings.				
Internal Evaluation Mode	Terminal Exam, Attendance, Project/Assignment, Class participation, Class presentation, Bedside behavior or Interaction in class.				

Session Details	**Topic**	**Hours**	**Mapped CO**
Unit 1	Medical records and documentation legal issues in the radiology department, PNDT Act Professional Ethics, and Code of conduct of radiographer Handling of patients: Seriously ill and traumatized patients, visually impaired, hearing and speech impaired patients, mentally impaired patients, infectious patientsDepartmental SafetyInfection control: skin care, donning	15	CO 1,2

	of gowns, gloves, face masks, head caps, shoe covers.Vital signs.		
Unit 2	Body mechanics and transferring of the patient, draw sheet lift, use of slide boards, wheelchair to couch, couch to a wheelchair, couch to table, three men lift and four men lift. First aid: artificial respiration, hemostasis Local anesthesia, and general anesthesia Facilities regarding general Anesthesia in the X-ray department Management of adverse reactions to contrast media.	15	CO 1,4
Unit 3	Moving chair and stretcher, patient. Unconscious patient, general comfort, and reassurance for the patient. Vital signs and oxygen - patient's Haemostasis status. Body and lines.	10	CO 2, 3
Unit 4	First aid - shock, electrical shock, hemorrhage, bums, Asphyxia, fractures, loss of consciousness. Emergency treatment for the collapsed patient. Artificial respiration and resuscitation. Preparation of patients for general and special radiological examinations. Supervision of patients undergoing special examination. Administration of drugs and contrast media. Aseptic and sterile procedures. Handling of infectious patients in the department or in the ward. Regulation of dangerous drugs. Trolley set up for special x-ray examinations, Radiation hazards, and protective measures.	20	CO 1,4

CO-PO and PSO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2	3	3	2	3	2	3	2	3	3	2	2	2	3
CO2	3	3	2	3	2	3	2	2	3	2	3	2	3	3
CO3	2	3	2	2	2	2	3	2	3	2	3	3	2	3
CO4	3	2	3	3	3	3	2	3	2	3	2	2	3	2

Strong contribution-3, Average contribution-2, Low contribution-1,

Suggested Readings:

Text- Books	1) PR Ashalatha& G Deepa'sTextbook of ANATOMY & PHYSIOLOGY 2) N Geetha's textbook of physiology
Reference Books	1)C C Chatterjee's Human Physiology 2) CC Chatterjee's Practical Physiology for Paramedical Courses 3)CN Chandrashekhar'sManipal Manual of Medical Physiology 4)RK Maurya's Medical Physiology

Recapitulation & Examination Pattern

Internal Continuous Assessment:

Component	Marks	Pattern
Terminal Exam	12	1. Contains a descriptive question of 4 marks 2. Contains 4 MCQs 3. Contains 2 short answer questions. Each question carries 2 marks
Attendance	04	
Project/Assignments	04	
Class participation or any other	04	
Class Presentation	04	
Bed Side Behavior or Interaction in Class	02	
Total Marks	30	

Department of Radiology and Imaging Techniques Era University, Lucknow

Course Outline

Effective From: 2023-24

Name of the Program	**BRIT**			**Year/ Semester:**	
Course Name	**Quality assurance & radiation safety**	**Course Code:**	**BRT 601**	**Type: Semester**	**Theory**
Credits	**03**			**Total Sessions Hours:**	**40**
Evaluation Spread	**Internal Continuous Assessment:**	**30**		**End Term Exam:**	**70**
Type of Course	○ Compulsory	● Core		○ Creative	○ Life Skill
Course Objectives	Patient protection-Safe work practice in diagnostic radiology- Radiation emergencies-situation handling. AERB safety code and ethics.				
Course Outcomes (CO): *After the successful course completion, learners will develop following attributes:*					
Course Outcome (CO)					
CO1	Enumerate how to work as per the AERB safety guideline in clinical setup.				
CO2	Demonstrate radiation protection and patient care.				
CO3	Enumerate radiation emergencies &radiation protection and patient care.				
Pedagogy	Explanations by the Instructor, Group/Pair Work, Discussion, Assignment, Practical, Presentations.				
Internal Evaluation Mode	Terminal Exam, Attendance, Project/Assignment, Class participation, Class presentation, Bedside behavior or Interaction in class.				

Session Details	**Topic**	**Hours**	**Mapped CO**
Unit 1	Quality Assurance and quality control of Modem Radiological and Imaging Equipment which includes Digital Radiography, Computed Radiography, CT scan, MRI Scan, Ultrasonography and PACS related.	10	CO 1

Unit 2	Image artifacts their different types, causes and remedies, Newer Radiation safety protocols and recent advances in radiation safety including AERB guidelines.	10	CO 1,2

Unit 3	National and international agencies, AERB, BARC, ICRP, WHO, IAEA and their role.	05	CO 2
Unit 4	AERB safety code and ethics: Built-in safety specifications for diagnostic x-ray, fluoroscopy, and CT units, Specifications for radiation protection devices layout. Operational safety-Radiation protection program- Personnel requirements and responsibilities-regulatory controls.	10	CO 3
Unit 5	Radiation emergencies- situation handling, safety, and prevention-legal requirements recent developments in radiation safety-related topics.	05	CO 3

CO-PO and PSO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2	2	3	3	3	2	1	3	3	2	3	3	3	3
CO2	3	3	2	2	2	3	3	3	2	3	3	2	2	2
CO3	3	2	2	3	2	2	3	3	3	2	2	2	2	3

Strong contribution-3, Average contribution-2, Low contribution-1,

Suggested Readings:

Text- Books	1. Textbook of radiology for residents and technicians- s k Bhargava

Recapitulation & Examination Pattern

Internal Continuous Assessment:

Component	Marks	Pattern
Terminal Exam	12	1. Contains a descriptive question of 4 marks 2. Contains 4 MCQs 3. Contains 2 short answer questions. Each question carries 2 marks
Attendance	04	
Project/Assignments	04	
Class participation or any other	04	
Class Presentation	04	
Bed Side Behavior or Interaction in Class	02	
Total Marks	30	

Department of Radiology and Imaging Techniques Era University, Lucknow

Course Outline

Effective From: 2023-24

Name of the Program	**BRIT**			**Year/ Semester:**	
Course Name	**Quality assurance & radiation safety**	**Course Code:**	**BRP 601**	**Type: Semester**	**Practical**
Credits	**03**			**Total Sessions Hours:**	**60**
Evaluation Spread	**Internal Continuous Assessment:**	**30**		**End Term Exam:**	**70**
Type of Course	○ Compulsory	◉ Core		○ Creative	○ Life Skill
Course Objectives	Patient protection-Safe work practice in diagnostic radiology- Radiation emergencies-situation handling. AERB safety code and ethics.				
Course Outcomes (CO): *After the successful course completion, learners will develop the following attributes:*					
Course Outcome (CO)					
CO1	Enumerate how to work as per the AERB safety guidelines in clinical setup.				
CO2	Demonstrate radiation protection and patient care.				
CO3	Enumerate radiation emergencies &radiation protection and patient care.				
Pedagogy	Explanations by the Instructor, Group/Pair Work, Discussion, Assignment, Practical, Presentations.				
Internal Evaluation Mode	Terminal Exam, Attendance, Project/Assignment, Class participation, Class presentation, Bedside behavior or Interaction in class.				

Session Details	**Topic**	**Hours**	**Mapped CO**
Unit 1	Quality Assurance and quality control of Modem Radiological and Imaging Equipment which includes Digital Radiography, Computed Radiography, CT scan, MRI Scan, Ultrasonography, and PACS-related.	10	CO 1, 2

Unit 2	Image artifacts their different types, causes, and remedies, Newer Radiation safety protocols, and recent advances in radiation safety including AERB guidelines.	10	CO 2
Unit 3	National and international agencies, AERB, BARC, ICRP, WHO, IAEA and their role.	05	CO 1
Unit 4	AERB safety code and ethics: Built-in safety specifications for diagnostic x-ray, fluoroscopy, and CT units, Specifications for radiation protection devices layout. Operational safety-Radiation protection program- Personnel requirements and responsibilities-regulatory controls.	10	CO 1, 2, 3
Unit 5	Radiation emergencies- situation handling, safety, and prevention-legal requirements recent developments in radiation safety-related topics.	05	CO 2

CO-PO and PSO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2	2	3	2	2	2	3	3	2	2	3	3	1	2
CO2	2	3	2	3	3	3	3	2	3	2	3	2	2	3
CO3	3	2	1	2	3	3	3	2	2	2	2	3	3	3

Strong contribution-3, Average contribution-2, Low contribution-1,

Suggested Readings:

Text- Books	1. Textbook of radiology for residents and technicians- s k Bhargava

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Component	Marks	Pattern
Terminal Exam	12	1. Contains a descriptive question of 4 marks 2. Contains 4 MCQs 3. Contains 2 short answer questions. Each question carries 2 marks
Attendance	04	
Project/Assignments	04	
Class participation or any other	04	
Class Presentation	04	
Bed Side Behavior or Interaction in Class	02	
Total Marks	30	