Hindi Vidya Prachar Samiti's

Ramniranjan Jhunjhunwala College

of Arts, Science & Commerce

(Empowered Autonomous College)

Affiliated to

UNIVERSITY OF MUMBAI

Syllabus for the TY (under NEP)

Program: B.Sc. MEDICAL IMAGING TECHNOLOGY

Title: DISCIPLINE SPECIFIC ELECTIVE

SEMESTER	:	**VI**
TITLE	:	**DISCIPLINE SPECIFIC ELECTIVE 1**
TITLE OF THE SUBJECT/COURSE	:	Bio-statistics in Hospital
COURSE CODE	:	RJDSEMIT361
CREDITS	:	04
DURATION	:	60 hrs

LEARNING OBJECTIVES	
1	Understand the basic concepts of biostatistics and its relevance in hospital setting
2	Apply statistical methods to analyze and interpret healthcare data.
3	Utilize biostatistical software for data management and analysis
4	Interpret and report statistical findings to support clinical decision-making.

Course Outcome No.	On completing the course, the student will be able to:	PSO Addressed	Bloom's Levels
CO1	Ability to collect, organize, and summarize hospital and clinical data effectively Ability to apply appropriate statistical tests for healthcare research and audits.	PSO13	I, II, III
CO2	Ability to interpret results and communicate findings to medical and administrative teams.	PSO13	I, II, III
CO3	Preparedness to support evidence-based practice through biostatistical analysis.	PSO17	I, II, III

SEMESTER VI			
Course Code: RJDSEMIT361		**Course Title: Biostatistics in Hospital**	**Credits**
Unit	**Unit Name**	**Topic**	**4**
I	Fundamentals of Biostatistics	Introduction to Biostatistics and its role in healthcare Types of Data: Qualitative and Quantitative Measures of Central Tendency: Mean, Median, Mode Measures of Dispersion: Range, Variance, Standard Deviation	2
LEARNING OBJECTIVES		Data Collection Methods and Sampling Techniques	
		Probability and Probability Distributions (Normal, Binomial, Poisson) Graphical Representation of Data: Bar, Pie, Histogram, Boxplot	
II	Applications of Biostatistics	Hypothesis Testing: Null & Alternative Hypothesis Statistical Tests: t-test, Chi-square test, ANOVA Correlation and Regression Analysis Survival Analysis and Kaplan-Meier Curves Epidemiological Measures: Incidence, Prevalence, Mortality Rate Biostatistical Software Applications (SPSS, R, Excel) Reporting and Interpretation of Statistical Results in Clinical Studies	2

References:

"Fundamentals of Biostatistics" – by Bernard Rosner

"Biostatistics: A Foundation for Analysis in the Health Sciences" – by Wayne W. Daniel

SEMESTER	:	**VI**
TITLE	:	**DISCIPLINE SPECIFIC ELCTIVE 2**
TITLE OF THE SUBJECT/COURSE	:	**Interventional Radiology and Radiation Therapy**
COURSE CODE	:	RJDSEMIT362

1	Understand the principles and applications of interventional radiology and radiation therapy. Apply imaging modalities to guide interventional procedures and treatment planning.
2	Demonstrate knowledge of patient preparation, safety protocols, and procedural techniques.
3	Interpret results, monitor outcomes, and manage complications effectively.

Course Outcome No.	On completing the course, the student will be able to:	PSO Addressed	Bloom's Levels
CO1	Ability to assist and perform image-guided interventional procedures safely. Preparedness to maintain safety standards and manage adverse events in radiology and radiation therapy.	PSO13	I, II, III
CO2	Ability to plan and execute radiation therapy treatments with precision.	PSO13	I, II, III
CO3	Ability to integrate imaging findings into clinical decision-making and patient care.	PSO17	I, II, III

SEMESTER VI			
Course Code: RJDSCMIT362		**Course Title:Interventional Radiology and Radiation Therapy**	**Credits**
Unit	**Unit Name**	**Topic**	**4**
I	Interventional Radiology	Introduction to Interventional Radiology (IR) Principles of Image-Guided Procedures Vascular Interventions: Angioplasty, Stenting, Embolization Non-Vascular Interventions: Biopsies, Drainages, Ablation Patient Preparation, Consent, and Safety Measures Complications and Management in IR Advanced Techniques: CT-guided, Ultrasound-guided, and Fluoroscopy-guided Procedures	2
II	Radiation Therapy	Introduction to Radiation Therapy Principles of Radiation Physics and Dosimetry Types of Radiation Therapy: External Beam, Brachytherapy, Stereotactic Treatment Planning and Simulation Safety Protocols for Patients and Staff Side Effects and Management of Radiation Therapy Integration of Imaging in Radiation Therapy (CT, MRI, PET)	2

References:

- **"Interventional Radiology: A Survival Guide"** – by Karthik Raghunathan, Rajeev K. Thapar
- **"Radiation Therapy Physics"** – by William R. Hendee, Geoffrey S. Ibbott, Eric G. H. Loew