

# GUJARAT TECHNOLOGICAL UNIVERSITY

## BIO MEDICAL ENGINEERING (31)

MEDICAL INFORMATICS

**SUBJECT CODE:** 2743102

SEMESTER: IV

**Type of course:** Major Elective

**Prerequisite:** Basic knowledge of knowledge of human biology or biomechanics

**Rationale:** The student understands the various aspects of informatics applied in health industry so that quality of health care is improved.

### Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P		Theory Marks		Practical Marks				
			ESE (E)	PA (M)	PA (V)		PA (M)			
					ESE	OEP	PA	RP		
3	2#	0	4	70	30	30	0	10	10	150

### Content:

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1	MEDICAL INFORMATICS 9 Historical highlights and Evolution, Hospital Information System – its characteristics and functional online and offline modules, Health Informatics, Medical Informatics and its six levels of interfaces - Hardware and software requirements, Virtual Hospital, e – health services - Body Area Networks - Health Grid	<b>10</b>	<b>18</b>
2	MEDICAL DATA AND STANDARDS 9 Electronic Patient Record (EPR) - Integrated clinical data - Biosignal and Medical image formats - Medical data storage and retrieval techniques – Steganography, - Medical Standards – HL7 – DICOM - IEEE 1073 - IRMA - LOINC - ICD10 - Medical standard organizations	<b>10</b>	<b>22</b>
3	SOFT COMPUTING 9 Fuzzy logic – its applications in Medicine, Physiological System Modeling and Simulation, Virtual Reality and Multimedia Applications in Medicine, Biometrics - Biometric Devices - Physiological Characteristic Devices - Behavioral Characteristic Devices - Feature extraction and Decision making - Social issues	<b>10</b>	<b>20</b>
4	JAVA PROGRAMMING 9 Design and Development of Hospital Information Systems – Developing front-end, back-end and Client – Server interface programs in Java Environment – SQL	<b>10</b>	<b>20</b>
5	INTERNET AND WEB 9 Medical Networks - Java script programming - Web Design and programming - Design of Web	<b>8</b>	<b>20</b>

	portal services in medicine		
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**Reference Books:**

1. Ramachandra Lele, Computers in Medicine Progress in Medical Informatics, Tata McGraw Hill Publishing Company, New Delhi, 2005
2. Herbert Schildt, The Complete Reference – JAVA, Tata McGraw Hill Publishing Company, New Delhi, 2005
3. Mohan Bansal M S, Medical Informatics, Tata McGraw Hill Publishing Company, New Delhi, 2005
4. H M Dietel, Internet and World Wide Web, AB Goldberg publishers, New Delhi, 2007
5. Ranjan Parekh, Principles of Multimedia, Tata McGraw Hill Publishing Company, New Delhi, 2006
6. Tay Vaughan, Multimedia – Making it Work, Tata McGraw Hill Publishing Company, New Delhi, 2006
7. Raif Steinmetz, Multimedia – Computing, Communications and Applications, Pearson Education, New Delhi, 2007
8. Deitel, “Java How to Program”, Pearson Education / PHI, 2006.
9. A S Godbole A Kahate, “Web Technologies, TCP/IP to Internet Application Architectures”, TMH 2007

**Course Outcome:**

By the end of this course students will be expected to learn:

- 1.

**Review Presentation (RP):** The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website.