VINAYAKA MISSION'S RESEARCH FOUNDATION
(Deemed to be University under section 3 of the UGC Act 1956)

Faculty of Engineering and Technology

REGULATIONS 2025

Programme:

B.E. - BIOMEDICAL ENGINEERING

Full Time (4 Years)

CHOICE BASED CREDIT SYSTEM (CBCS)

CURRICULUM

(Semester I to VIII)

CHAIRPERSON
Dr. D. VINOD KUMAR, B.E., M.E., Ph.D.
Professor & Head - Biomedical Engineering
Vinayaka Mission's Kirupanandha Variyar Engineering College
Periya Seeragapadi, Salem - 636 308.

DEPARTMENT OF BIOMEDICAL ENGINEERING

VISION

- To provide a unique multidisciplinary engineering environment in Biomedical Engineering that focuses on producing graduates who apply scientific knowledge and Engineering design principles to contribute the society by developing biomedical technology need for national health care system.

MISSION

- To create an environment in which students thrive to the best in rational design and implementation of medical device and application.
- To understand local medical problem and developing strategies to tackle these problem to improve human lives.
- To enhance the challenges of health care problems.

PROGRAMME OUTCOMES

Engineering Graduates will be able to:

PO1: Engineering Knowledge: Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)

PO3: Design/Development of Solutions: Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)

PO4: Conduct Investigations of Complex Problems: Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).

PO5: Engineering Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)

PO6: The Engineer and The World: Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).

PO7: Ethics: Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)

PO8: Individual and Collaborative Team work: Function effectively as an individual, and as a

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member or leader in diverse/multi-disciplinary teams.

PO9: Communication: Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences.

PO10: Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.

PO11: Life-Long Learning: Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

KNOWLEDGE AND ATTITUDE PROFILE (WK)

WK1: A systematic, theory-based understanding of the natural sciences applicable to the discipline and awareness of relevant social sciences.

WK2: Conceptually-based mathematics, numerical analysis, data analysis, statistics and formal aspects of computer and information science to support detailed analysis and modelling applicable to the discipline.

WK3: A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline.

WK4: Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline.

WK5: Knowledge, including efficient resource use, environmental impacts, whole-life cost, re-use of resources, net zero carbon, and similar concepts, that supports engineering design and operations in a practice area.

WK6: Knowledge of engineering practice (technology) in the practice areas in the engineering discipline.

WK7: Knowledge of the role of engineering in society and identified issues in engineering practice in the discipline, such as the professional responsibility of an engineer to public safety and sustainable development.

WK8: Engagement with selected knowledge in the current research literature of the discipline, awareness of the power of critical thinking and creative approaches to evaluate emerging issues.

WK9: Ethics, inclusive behavior and conduct. Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes.

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PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO-1: Analyze, Plan and Design the equipment in multidomains of biomedical engineering.

PSO-2: Hone their professional's expertise in quest for improved career opportunities through sustained learning.

PSO-3: Work with ethical principles and sound managerial skills in the promotion of biomedical engineering infrastructure keeping in mind, patient health, instrument safety and sustainability of the society.

PROGRAM EDUCATIONAL OUTCOMES (PEOs)

PEO-1: Graduates will demonstrate their skills in solving challenges ranging from design, development, problem solving to production support in health care sectors.

PEO-2: Graduates will exhibit leadership, make decisions with social and ethical responsibilities, communicate effectively in multidisciplinary engineering environment.

PEO-3: Graduates will recognize the need for sustaining and expanding their technical competence and engage in learning opportunities throughout the careers.

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DEPARTMENT OF BIOMEDICAL ENGINEERING

CURRICULUM FOR REGULATION-2025

Credit Requirement for the Course Categories

Structure of Undergraduate Engineering Program – Full Time

Sl. No.	Category of Courses	Types of Courses		Suggested Breakup of Credits (min-max)
1.	A. Foundation Courses (48)	Humanities and Social Sciences including Management Courses		9
2.		Basic Science Courses		18
3.		Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc.		21
4.	B. Professional (62)	Core Courses		62
5.	C. Elective Courses (33)	Professional Electives / Specialization Electives		12 – 15
		Industry Electives: Industry Designed / Industry Supported / Industry Integrated / Industry Sponsored Courses		3 – 9
		Vocational Skill Development Courses		2
		Open Electives	Innovation and Entrepreneurship	3 – 9
			Interdisciplinary Open Electives	3 – 9
			University Multidisciplinary Open Electives	1
6.	D. IKS (2)	Indian Knowledge Systems		2
7.	E. DT (1)	Design Thinking		1
8.	E. Courses for Presentation of technical Skills related to the specialization (14)	Project Work		8
		Mini Project		3
		Internship*		3
		Training*		3
9.	**F. Mandatory Courses (5) (To be completed from 1st Semester to 7th Semester)	Research Methodology		1
		Indian Constitution		1
		Environmental Sciences		1
		Idea Lab		1
		Yoga and Meditation / NCC / NSS / RRC / YRC / Student Clubs / Unnat Bharat Abhiyan / Swachh Bharat / Sports and Games		1
			Minimum Credits to be earned	**165**

*** Note : In Category E, Out of 14 Credits minimum Three credits should be earned among any of the following courses – Internship or Training**

**** The credits earned in category 'F' Courses will not be counted in CGPA calculation.**

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CURRICULUM FOR REGULATION-2025

Structure of Undergraduate Engineering Program – Lateral Entry

Sl. No.	Category of Courses	Types of Courses		Suggested Breakup of Credits (min-max)
1.	**A. Foundation Courses (9)**	Humanities and Social Sciences including Management Courses		3
		Basic Science Courses / Engineering Science courses		6
2.	**B. Professional (62)**	Core Courses		62
3.	**C. Elective Courses (33)**	Professional Electives / Specialization Electives		12 – 15
		Industry Electives: Industry Designed / Industry Supported / Industry Integrated / Industry Sponsored Courses		3 – 9
		Vocational Skill Development Courses		2
		Open Electives	Innovation and Entrepreneurship	3 – 9
			Interdisciplinary Open Electives	3 – 9
			University Multidisciplinary Open Electives	1
4.	**D. IKS (2)**	Indian Knowledge Systems		2
5.	**E. DT (1)**	Design Thinking		1
6.	**E. Courses for Presentation of technical Skills related to the specialization (14)**	Project Work		8
		Mini Project		3
		Internship*		3
		Training*		3
7.	****F. Mandatory Courses (5)** (To be completed from 3rd Semester to 7th Semester)	Research Methodology		1
		Indian Constitution		1
		Environmental Sciences		1
		Idea Lab		1
		Yoga and Meditation / NCC / NSS / RRC / YRC / Student Clubs / Unnat Bharat Abhiyan / Swachh Bharat / Sports and Games		1
Minimum Credits to be earned				**126**

*** Note : In Category E, Out of 14 Credits minimum Three credits should be earned among any of the following courses – Internship or Training**

**** The credits earned in category 'F' Courses will not be counted in CGPA calculation.**

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CURRICULUM

B.E - BIOMEDICAL ENGINEERING

SEMESTER
I TO VIII

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B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII									
A. FOUNDATION COURSES (48-Credits)									
Humanities and Social Sciences Courses – Credits (9)									
SL. NO.	**COURSE CODE**	**COURSE**	**OFFERING DEPT.**	**CATEGORY**	**L**	**T**	**P**	**C**	**PREREQUISITE**
1.	34125H01	TECHNICAL ENGLISH COMMUNICATION	ENG	FC-HS	2	0	0	2	NIL
2.	34125H04	ENGLISH LANGUAGE LEARNING USING GENERATIVE AI (THEORY AND PRACTICE)	ENG	FC-HS	1	0	2	2	NIL
3.	34125H81	ENGLISH LANGUAGE LAB	ENG	FC-HS	0	0	2	1	NIL
4.	34125H82	PROFESSIONAL COMMUNICATION AND PERSONALITY DEVELOPMENT	ENG	FC-HS	0	0	2	1	NIL
5.	34125H02	UNIVERSAL HUMAN VALUES - UNDERSTANDING HARMONY II	ENG	FC-HS	2	1	0	3	NIL
6.	34125H03	BUSINESS ENGLISH	ENG	FC-HS	2	0	0	2	NIL
7.	34125H05	PROFESSIONAL ENGLISH COMMUNICATION	ENG	FC-HS	2	0	0	2	NIL
Basic Science Courses – Credits (18)									
1.	34125B01	ALGEBRA AND CALCULUS	MATH	FC-BS	2	1	0	3	NIL
2.	34125B13	DIFFERENTIAL EQUATIONS AND TRANSFORMS	MATH	FC-BS	2	1	0	3	ALGEBRA AND CALCULUS
3.	34125B22	PROBABILITY AND STATISTICS	MATH	FC-BS	2	1	0	3	NIL
4.	34125B03	PHYSICAL SCIENCES	PHY & CHEM	FC-BS	4	0	0	4	NIL
5.	35325B01	ESSENTIALS OF BIOMEDICAL ENGINEERING	BME	FC-BS	3	0	0	3	NIL
6.	34125B05	APPLIED PHYSICS FOR BIOMEDICAL ENGINEERING	PHY	FC-BS	3	0	0	3	NIL
7.	34125B08	MEDICAL PHYSICS	PHY	FC-BS	3	0	0	3	PHYSICAL SCIENCES
8.	34125B81	PHYSICAL SCIENCES LAB	PHY & CHEM	FC-BS	0	0	4	2	NIL
Engineering Science Courses including Workshop, Drawing, Basics of Electrical / Mechanical / Computer etc., – Credits (21)									
1.	34625E01	BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING	EEE & ECE	FC-ES	4	0	0	4	NIL
2.	34425E81	ENGINEERING GRAPHICS AND DESIGN	MECH	FC-ES	0	0	6	3	NIL
3.	35025E01	ARTIFICIAL INTELLIGENCE IN SCIENTIFIC RESEARCH AND EDUCATION	CSE	FC-ES	3	0	0	3	NIL
4.	35025E02	PROBLEM SOLVING AND PROGRAMMING USING C (THEORY AND PRACTICALS)	CSE	FC-ES	3	0	2	4	NIL
5.	35025E03	PYTHON PROGRAMMING (THEORY AND PRACTICALS)	CSE	FC-ES	3	0	2	4	NIL
6.	34625E81	BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING LAB	EEE & ECE	FC-ES	0	0	4	2	NIL
7.	34425E83	WORKSHOP PRACTICES	MECH	FC-ES	0	0	4	2	NIL
8.	34425E03	ENGINEERING MECHANICS FOR BIOMEDICAL ENGINEERS	MECH	FC-ES	2	1	0	3	NIL
9.	34625E02	ELECTRICAL TECHNOLOGY FOR HEALTHCARE (THEORY AND PRACTICALS)	EEE	FC-ES	2	0	2	3	NIL

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B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII

B. PROFESSIONAL COURSES (62 – Credits)

Core Courses – Credits (62)

SL. NO.	COURSE CODE	COURSE	OFFERING DEPT.	CATEGORY	L	T	P	C	PREREQUISITE
1.	35325C10	HUMAN ANATOMY AND PHYSIOLOGY (THEORY AND PRACTICALS)	BME	CC	3	0	2	4	NIL
2.	35325C01	BIOCHEMICAL FOUNDATIONS FOR BIOMEDICAL SCIENCES (THEORY AND PRACTICALS)	BME	CC	3	0	2	4	NIL
3.	35325C02	BIOELECTRONIC DEVICES AND CIRCUITS (THEORY AND PRACTICALS)	BME	CC	3	0	2	4	NIL
4.	35325C03	BIOMEDICAL CIRCUITS AND NETWORKING SYSTEMS (THEORY AND PRACTICALS)	BME	CC	2	1	2	4	NIL
5.	35325C05	BIOMEDICAL SENSORS AND MEASUREMENT TECHNOLOGIES (THEORY AND PRACTICALS)	BME	CC	3	0	2	4	NIL
6.	35325C08	FUNDAMENTALS OF PATHOLOGY AND MICROBIOLOGY IN HEALTHCARE (THEORY AND PRACTICALS)	BME	CC	3	0	2	4	NIL
7.	35325C11	INTEGRATED CIRCUIT SYSTEMS FOR BIOINSTRUMENTATION (THEORY AND PRACTICALS)	BME	CC	3	0	2	4	BIOELECTRONIC DEVICES AND CIRCUITS
8.	35325C12	MEDICAL EQUIPMENT AND INSTRUMENTATION (THEORY AND PRACTICALS)	BME	CC	3	0	2	4	BIOMEDICAL SENSORS AND MEASUREMENT TECHNOLOGIES
9.	35325C13	PHYSIOLOGICAL SYSTEMS AND MODELING	BME	CC	2	1	0	3	NIL
10.	35325C07	BIO-MICROPROCESSOR SYSTEMS AND MICROCONTROLLER APPLICATIONS (THEORY AND PRACTICALS)	BME	CC	3	0	2	4	INTEGRATED CIRCUIT SYSTEMS FOR BIOINSTRUMENTATION
11.	35325C15	THERAPEUTIC AND DIAGNOSTIC MEDICAL EQUIPMENT	BME	CC	3	0	0	3	MEDICAL EQUIPMENT AND INSTRUMENTATION
12.	35325C06	BIOMEDICAL SIGNAL ACQUISITION AND PROCESSING	BME	CC	3	0	0	3	NIL
13.	35325C04	BIOMEDICAL IMAGE PROCESSING TECHNIQUES	BME	CC	3	0	0	3	NIL
14.	35325C14	TECHNOLOGY AND INNOVATION IN RADIOLOGY EQUIPMENT	BME	CC	3	0	0	3	NIL
15.	35325C09	HOSPITAL ADMINISTRATION AND MANAGEMENT FOR QUALITY HEALTHCARE SERVICES	BME	CC	3	0	0	3	NIL
16.	35325C82	HOSPITAL PRACTICES FOR BIOMEDICAL ENGINEERS	BME	CC	0	0	4	2	NIL
17.	35325C84	THERAPEUTIC AND DIAGNOSTIC MEDICAL EQUIPMENT LABORATORY	BME	CC	0	0	4	2	NIL
18.	35325C81	BIOMEDICAL SIGNAL ACQUISITION AND PROCESSING LABORATORY	BME	CC	0	0	4	2	NIL
19.	35325C83	MEDICAL IMAGE PROCESSING AND ANALYSIS LABORATORY	BME	CC	0	0	4	2	NIL

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B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII

C. ELECTIVE COURSES - Credits (34)

Professional Elective Courses Credits (12-15)

SL. NO.	COURSE CODE	COURSE	OFFERING DEPT.	CATEGORY	L	T	P	C	PREREQUISITE
1.	35325P04	CLINICAL ETHICS AND MEDICAL STANDARDS	BME	EC-PS	3	0	0	3	NIL
2.	35325P05	EMERGING TECHNOLOGIES IN MEDICAL DEVICE DESIGN	BME	EC-PS	3	0	0	3	NIL
3.	35325P08	INDIAN TRADITIONAL MEDICAL SYSTEMS	BME	EC-PS	3	0	0	3	NIL
4.	35325P20	QUALITY ASSURANCE AND REGULATORY ASPECTS IN MEDICINE	BME	EC-PS	3	0	0	3	NIL
5.	35325P18	OPTICS AND LASER TECHNOLOGY IN MEDICINE	BME	EC-PS	3	0	0	3	NIL
6.	35325P17	NUCLEAR MEDICINE TECHNIQUES AND DIAGNOSTICS	BME	EC-PS	3	0	0	3	NIL
7.	35325P01	ADVANCED BIOANALYTICAL AND THERAPEUTIC TECHNIQUES	BME	EC-PS	3	0	0	3	NIL
8.	35325P16	NANOTECHNOLOGY FOR MEDICAL DIAGNOSTICS AND THERAPY	BME	EC-PS	3	0	0	3	NIL
9.	35325P21	SMART HEALTHCARE SYSTEMS AND ITS MANAGEMENT	BME	EC-PS	3	0	0	3	NIL
10.	35325P12	MEDICAL SIMULATION TECHNIQUES IN LIFE SUPPORT DEVICES	BME	EC-PS	3	0	0	3	NIL
11.	35325P09	INTERNET OF MEDICAL THINGS	BME	EC-PS	3	0	0	3	NIL
12.	35325P19	OPTOELECTRONIC INNOVATIONS IN BIOMEDICAL ENGINEERING	BME	EC-PS	3	0	0	3	NIL
13.	35325P13	MEDICAL TELEMETRY SYSTEMS AND TECHNOLOGIES	BME	EC-PS	3	0	0	3	NIL
14.	35325P11	MEDICAL ROBOTICS AND AUTOMATION IN REHABILITATION AND SURGERY	BME	EC-PS	3	0	0	3	NIL
15.	35325P06	HEALTH CARE DATA ANALYTICS	BME	EC-PS	3	0	0	3	NIL
16.	35325P14	MEDICAL TEXTILE TECHNOLOGY AND APPLICATIONS	BME	EC-PS	3	0	0	3	NIL
17.	35325P02	AUGMENTED AND VIRTUAL REALITY IN HEALTHCARE	BME	EC-PS	3	0	0	3	NIL
18.	35325P03	CLINICAL APPLICATIONS OF MEDICAL ULTRASOUND	BME	EC-PS	3	0	0	3	NIL
19.	35325P10	MEDICAL RADIATION SAFETY ENGINEERING	BME	EC-PS	3	0	0	3	NIL
20.	35325P07	HOSPITAL ENGINEERING AND INFRASTRUCTURE DESIGN	BME	EC-PS	3	0	0	3	NIL

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B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII

C. ELECTIVE COURSES - SPECIALISATION

Professional Elective Courses relevant to chosen Specialization / Branch Credits (12-15)

SL. NO.	COURSE CODE	COURSE	OFFERING DEPT.	CATEGORY	L	T	P	C	PREREQUISITE
SPECIALISATION – HOSPITAL MANAGEMENT									
1.	35325HM10	PRINCIPLES OF HOSPITAL ADMINISTRATION	BME	EC-SE	3	0	0	3	NIL
2.	35325HM05	HEALTHCARE QUALITY AND PATIENT SAFETY	BME	EC-SE	3	0	0	3	NIL
3.	35325HM06	HOSPITAL OPERATIONS AND SUPPORT SERVICES MANAGEMENT	BME	EC-SE	3	0	0	3	NIL
4.	35325HM03	FINANCIAL MANAGEMENT IN HEALTHCARE	BME	EC-SE	3	0	0	3	NIL
5.	35325HM07	HUMAN RESOURCE MANAGEMENT IN HOSPITALS	BME	EC-SE	3	0	0	3	NIL
6.	35325HM08	LEGAL AND ETHICAL ISSUES IN HOSPITAL MANAGEMENT	BME	EC-SE	3	0	0	3	NIL
7.	35325HM04	HEALTHCARE INFORMATION SYSTEMS AND HOSPITAL IT MANAGEMENT	BME	EC-SE	3	0	0	3	NIL
8.	35325HM11	STRATEGIC PLANNING AND MARKETING IN HEALTHCARE	BME	EC-SE	3	0	0	3	NIL
9.	35325HM09	MATERIALS AND INVENTORY MANAGEMENT IN HOSPITALS	BME	EC-SE	3	0	0	3	NIL
10.	35325HM01	DISASTER PREPAREDNESS AND EMERGENCY MANAGEMENT IN HEALTHCARE	BME	EC-SE	3	0	0	3	NIL
11.	35325HM02	ECONOMICS OF HEALTHCARE TECHNOLOGY	BME	EC-SE	3	0	0	3	NIL
12.	35325HM81	HEALTHCARE SYSTEMS PLANNING AND DESIGN LABORATORY	BME	EC-SE	0	0	4	2	NIL

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B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII

C. ELECTIVE COURSES - SPECIALISATION

Professional Elective Courses relevant to chosen Specialization / Branch Credits (12-15)

SL. NO.	COURSE CODE	COURSE	OFFERING DEPT.	CATEGORY	L	T	P	C	PREREQUISITE
SPECIALISATION – IMPLANTS & REHABILITATION ENGINEERING									
1.	35325IRE04	ASSISTIVE MEDICAL DEVICES AND TECHNOLOGIES	BME	EC-SE	3	0	0	3	NIL
2.	35325IRE02	APPLIED BIOMECHANICS IN HUMAN MOVEMENT ANALYSIS	BME	EC-SE	3	0	0	3	NIL
3.	35325IRE01	ADVANCED BIOMATERIALS FOR IMPLANTS AND TISSUE ENGINEERING	BME	EC-SE	3	0	0	3	NIL
4.	35325IRE03	ARTIFICIAL ORGANS AND IMPLANTABLE BIOMEDICAL DEVICES	BME	EC-SE	3	0	0	3	NIL
5.	35325IRE11	SPORTS ENGINEERING AND TECHNOLOGY	BME	EC-SE	3	0	0	3	NIL
6.	35325IRE05	MEMS AND NANOTECHNOLOGY IN IMPLANTABLE MEDICAL SYSTEMS	BME	EC-SE	3	0	0	3	NIL
7.	35325IRE10	SMART WEARABLE AND IMPLANTABLE HEALTH MONITORING SYSTEMS	BME	EC-SE	3	0	0	3	NIL
8.	35325IRE08	REHABILITATION ENGINEERING AND ASSISTIVE TECHNOLOGY SYSTEMS	BME	EC-SE	3	0	0	3	NIL
9.	35325IRE09	REHABILITATION ERGONOMICS AND ADAPTIVE DESIGN	BME	EC-SE	3	0	0	3	NIL
10.	35325IRE06	NEUROPROSTHETICS AND BRAIN MACHINE INTERFACES	BME	EC-SE	3	0	0	3	NIL
11.	35325IRE07	REGULATORY, ETHICAL AND CLINICAL ASPECTS OF IMPLANTABLE DEVICES	BME	EC-SE	3	0	0	3	NIL
12.	35325IRE81	HUMAN ASSISTIVE DEVICES AND SIMULATION LABORATORY	BME	EC-SE	0	0	4	2	NIL

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B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII

C. ELECTIVE COURSES - SPECIALISATION

Professional Elective Courses relevant to chosen Specialization / Branch Credits (12-15)

SL. NO.	COURSE CODE	COURSE	OFFERING DEPT.	CATEGORY	L	T	P	C	PREREQUISITE
SPECIALISATION – CLINICAL ENGINEERING									
1.	35325CE08	MEDICAL DEVICE COMPLIANCE AND SAFETY STANDARDS	BME	EC-SE	3	0	0	3	NIL
2.	35325CE05	CRITICAL CARE TECHNOLOGY AND LIFE SUPPORT SYSTEMS	BME	EC-SE	3	0	0	3	NIL
3.	35325CE02	CLINICAL DEPLOYMENT OF BIOMEDICAL INSTRUMENTATION	BME	EC-SE	3	0	0	3	NIL
4.	35325CE07	HEALTHCARE INNOVATION AND TECHNOLOGY ENTREPRENEURSHIP	BME	EC-SE	3	0	0	3	NIL
5.	35325CE10	SMART WEARABLE SYSTEMS FOR CLINICAL MONITORING	BME	EC-SE	3	0	0	3	NIL
6.	35325CE04	CLINICAL ETHICS AND HUMAN-CENTERED HEALTHCARE	BME	EC-SE	3	0	0	3	NIL
7.	35325CE01	ASSISTIVE TECHNOLOGY FOR HOME BASED CLINICAL CARE	BME	EC-SE	3	0	0	3	NIL
8.	35325CE09	MEDICAL DIAGNOSTIC AND IMAGING TECHNOLOGIES	BME	EC-SE	3	0	0	3	NIL
9.	35325CE06	EMBEDDED SYSTEMS AND SIMULATION IN MEDICAL DEVICES	BME	EC-SE	3	0	0	3	NIL
10.	35325CE03	CLINICAL EQUIPMENT MAINTENANCE AND CALIBRATION TECHNIQUES	BME	EC-SE	3	0	0	3	NIL
11.	35325CE11	TECHNOLOGY INTEGRATION IN PATIENT CENTRIC CLINICAL SYSTEMS	BME	EC-SE	3	0	0	3	NIL
12.	35325CE81	HANDS ON TRAINING IN BIOMEDICAL EQUIPMENT	BME	EC-SE	0	0	4	2	NIL

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B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII

C. ELECTIVE COURSES - SPECIALISATION

Professional Elective Courses relevant to chosen Specialization / Branch Credits (12-15)

SL. NO.	COURSE CODE	COURSE	OFFERING DEPT.	CATEGORY	L	T	P	C	PREREQUISITE
SPECIALISATION – AI TECHNIQUES FOR MEDICAL IMAGING									
1.	35325ATM10	PRINCIPLES OF MEDICAL IMAGING MODALITIES	BME	EC-SE	3	0	0	3	NIL
2.	35325ATM01	ADVANCED MEDICAL IMAGE PROCESSING AND INTERPRETATION	BME	EC-SE	3	0	0	3	NIL
3.	35325ATM08	MEDICAL IMAGE COMPRESSION AND DATA OPTIMIZATION	BME	EC-SE	3	0	0	3	NIL
4.	35325ATM03	AI POWERED MACHINE AND DEEP LEARNING IN MEDICAL IMAGING	BME	EC-SE	3	0	0	3	NIL
5.	35325ATM11	SOFT COMPUTING AND FUZZY LOGIC IN BIOMEDICAL IMAGING	BME	EC-SE	3	0	0	3	NIL
6.	35325ATM09	NEURAL ENGINEERING AND COGNITIVE IMAGE UNDERSTANDING	BME	EC-SE	3	0	0	3	NIL
7.	35325ATM05	BRAIN COMPUTER INTERFACES FOR DIAGNOSTIC IMAGING SYSTEMS	BME	EC-SE	3	0	0	3	NIL
8.	35325ATM04	BIOMETRIC IMAGING SYSTEMS AND HEALTHCARE SECURITY	BME	EC-SE	3	0	0	3	NIL
9.	35325ATM02	AI AND DATA ANALYTICS IN BIOMEDICAL INNOVATION	BME	EC-SE	3	0	0	3	NIL
10.	35325ATM06	ETHICAL AND LEGAL PERSPECTIVES IN AI BASED IMAGING SYSTEMS	BME	EC-SE	3	0	0	3	NIL
11.	35325ATM07	HUMAN CENTERED AI FOR RADIOLOGY AND DIAGNOSIS	BME	EC-SE	3	0	0	3	NIL
12.	35325ATM81	MEDICAL IMAGING SYSTEMS LABORATORY	BME	EC-SE	0	0	4	2	NIL

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B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII									
C. ELECTIVE COURSES - Credits (34)									
Industry Offered/Industry Designed Courses- Credits - (3-9)									
SL. NO.	**COURSE CODDE**	**COURSE**	**OFFERING INDUSTRY**	**CATEGORY**	**L**	**T**	**P**	**C**	**PREREQUISITE**
1.	34125I04	BUSINESS INTELLIGENCE AND ITS APPLICATIONS	INFOSYS	EC-IE	3	0	0	3	NIL
2.	34125I03	BUILDING ENTERPRISE APPLICATIONS	INFOSYS	EC-IE	3	0	0	3	NIL
3.	34125I20	LEARNING IT ESSENTIALS BY DOING	INFOSYS	EC-IE	3	0	0	3	NIL
4.	34125I27	TROUBLESHOOTING AND MAINTENANCE OF MEDICAL DEVICES	APPLD	EC-IE	3	0	0	3	NIL
5.	34125I01	3D PRINTING TECHNIQUES FOR MEDICAL DEVICE FABRICATION	APPLD	EC-IE	3	0	0	3	NIL
6.	34125I17	INTENSIVE CARE UINT AND CRITICAL CARE EQUIPMENT	APPLD	EC-IE	3	0	0	3	NIL
7.	34125I02	ARTIFICAL INTELLIGENCE IN BIOMEDICINE	APPLD	EC-IE	3	0	0	3	NIL
8.	34125I05	CARDIOLOGY BASED EQUIPMENT	APPLD	EC-IE	3	0	0	3	NIL

B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII									
C. ELECTIVE COURSES - Credits (34)									
Vocational Skill Development Courses - Credit (2)									
SL. NO.	**COURSE CODDE**	**COURSE**	**OFFERING DEPT.**	**CATEGORY**	**L**	**T**	**P**	**C**	**PREREQUISITE**
1.	35325V86	OPERATIONAL MAINTENANCE AND FAULT DIAGNOSTICS IN HOSPITAL EQUIPMENT	BME	EC-VSD	0	0	4	2	NIL
2.	35325V81	BIOMEDICAL DEVICE CALIBRATION AND PERFORMANCE VALIDATION	BME	EC-VSD	0	0	4	2	
3.	35325V82	DIAGNOSTIC IMAGING EQUIPMENT HANDLING AND QUALITY ASSURANCE	BME	EC-VSD	0	0	4	2	
4.	35325V84	HOSPITAL ELECTRICAL SAFETY AND BIOMEDICAL WORKSHOP PRACTICES	BME	EC-VSD	0	0	4	2	NIL
5.	35325V85	MEDICAL EQUIPMENT NETWORKING AND DATA INTEGRATION	BME	EC-VSD	0	0	4	2	NIL
6.	35325V83	HOMECARE AND ASSISTIVE BIOMEDICAL DEVICES - ASSEMBLY AND SERVICING	BME	EC-VSD	0	0	4	2	

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B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII									
OPEN ELECTIVE COURSES									
Open Elective Courses – Innovation & Entrepreneurship - Credits (3-9)									
SL. NO.	**COURSE CODDE**	**COURSE**	**OFFERING DEPT.**	**CATE GORY**	**L**	**T**	**P**	**C**	**PREREQ UISITE**
1.	34125O06	DISASTER MITIGATION AND MANAGEMENT	MANAG	OE-IE	3	0	0	3	NIL
2.	34125O08	INTELLECTUAL PROPERTY RIGHTS	MANAG	OE-IE	3	0	0	3	NIL
3.	34125O09	PRODUCT DESIGN & DEVELOPMENT	MANAG	OE-IE	3	0	0	3	NIL
4.	34125O07	ENTREPRENEURSHIP AND NEW VENTURE CREATION	MANAG Ignite 5.0 course by Wadhwani foundation	OE-IE	3	0	0	3	NIL

OPEN ELECTIVE OFFERING BY OTHER DOMAINS TO BIOMEDICAL

B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII									
C. ELECTIVE COURSES									
Interdepartmental Open Electives including Management Courses - Credits (3-9)									
SL. NO.	**COURSE CODDE**	**COURSE**	**OFFERING DEPT.**	**CATE GORY**	**L**	**T**	**P**	**C**	**PREREQ UISITE**
1.	38125EA01	BIOFERTILIZER TECHNOLOGY	BTE	OE-EA	3	0	0	3	NIL
2.	38125EA02	FOOD SCIENCE AND INDUSTRY 4.0	BTE	OE-EA	3	0	0	3	NIL
3.	38125EA03	INTRODUCTION TO BIOFUELS	BTE	OE-EA	3	0	0	3	NIL
4.	34225EA01	INDUSTRIAL PLANT DESIGN & ENGINEERING	CIVIL	OE-EA	3	0	0	3	NIL
5.	34225EA02	SUSTAINABLE WASTE MANAGEMENT PRACTICES	CIVIL	OE-EA	3	0	0	3	NIL
6.	34225EA03	DISASTER MANAGEMENT AND MITIGATION STRATEGIES	CIVIL	OE-EA	3	0	0	3	NIL
7.	35025EA01	CYBER SECURITY	CSE	OE-EA	3	0	0	3	NIL
8.	35025EA02	FUNDAMENTALS OF MACHINE LEARNING	CSE	OE-EA	3	0	0	3	NIL
9.	35025EA03	DATA SCIENCE FOR PROFESSIONALS	CSE	OE-EA	3	0	0	3	NIL
10.	34725EA01	DIGITAL IMAGE PROCESSING & PATTERN GENERATION	ECE	OE-EA	3	0	0	3	NIL

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Interdepartmental Open Electives including Management Courses - Credits (3-9)									
11.	34725EA02	PRINCIPLES OF RADAR AND SATELLITE COMMUNICATION	ECE	OE-EA	3	0	0	3	NIL
12.	34725EA03	EVOLUTION OF MOBILE COMMUNICATION 1G TO 5G	ECE	OE-EA	3	0	0	3	NIL
13.	34625EA01	ENERGY CONSERVATION AND MANGEMENT	EEE	OE-EA	3	0	0	3	NIL
14.	34625EA02	IOT SYSTEMS: AN INTRODUCTION TO SENSORS AND TRANSDUCERS	EEE	OE-EA	3	0	0	3	NIL
15.	34625EA03	SMART CITIES: ELECTRICAL SYSTEMS AND TECHNOLOGIES	EEE	OE-EA	3	0	0	3	NIL
16.	34425EA01	3D PRINTING AND ITS APPLICATIONS	MECH	OE-EA	3	0	0	3	NIL
17.	34425EA02	ENERGY HARVESTING AND RENEWABLE ENERGY SYSTEMS	MECH	OE-EA	3	0	0	3	NIL
18.	34425EA03	INDUSTRIAL ROBOTICS	MECH	OE-EA	3	0	0	3	NIL
19.	36925EA01	BIOPHARMACEUTICS	PE	OE-EA	3	0	0	3	NIL
20.	36925EA02	FUNCTIONAL FOODS & NUTRACEUTICALS	PE	OE-EA	3	0	0	3	NIL
21.	36925EA03	BIOMOLECULES	PE	OE-EA	3	0	0	3	NIL
22.	34125EA01	ENGINEERING MANAGEMENT AND ETHICS	MANAG	OE-EA	3	0	0	3	NIL
23.	34125EA02	OPERATION AND QUALITY MANAGEMENT	MANAG	OE-EA	3	0	0	3	NIL
24.	34125EA03	TOTAL QUALITY MANAGEMENT	MANAG	OE-EA	3	0	0	3	NIL

OPEN ELECTIVE OFFERING BY BIOMEDICAL ENGINEERING TO OTHER DEPARTMENTS

B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII

C. ELECTIVE COURSES

SL. NO.	COURSE CODDE	COURSE	OFFERING DEPT.	CATE GORY	L	T	P	C	PREREQ UISITE
1.	35325EA01	FUNDAMENTALS OF BIOMEDICAL ENGINEERING	BME	OE-EA	3	0	0	3	NIL
2.	35325EA02	TELEHEALTH TECHNOLOGY	BME	OE-EA	3	0	0	3	NIL
3.	35325EA03	BODY AREA NETWORKS	BME	OE-EA	3	0	0	3	NIL

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B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII									
UNIVERSITY MULTIDISCIPLINARY OPEN ELECTIVES									
University Multidisciplinary Open Electives - Credit (1)									
SL. NO.	**COURSE CODDE**	**COURSE**	**OFFERING FACULTY**	**CATE GORY**	**L**	**T**	**P**	**C**	**PREREQ UISITE**
1.	40625U01	DENTAL HYGIENE & QUALITY OF LIFE	DENTISTRY	EC-UOE	1	0	0	1	NIL
2.	40625U02	NUTRITION FOR WELLNESS & SPECIFIC DISEASES	NURSING	EC-UOE	1	0	0	1	NIL
3.	40625U03	FUNDAMENTALS OF HOMOEOPATHY	HOMOEOPATHY	EC-UOE	1	0	0	1	NIL
4.	40625U04	ADVERTISING	ARTS & SCIENCE	EC-UOE	1	0	0	1	NIL
5.	40625U05	TEAMWORK & COLLABORATION	ARTS & SCIENCE	EC-UOE	1	0	0	1	NIL
6.	40625U06	EMOTIONAL INTELLIGENCE	ARTS & SCIENCE	EC-UOE	1	0	0	1	NIL
7.	40625U07	MEDIA MANAGEMENT	ARTS & SCIENCE	EC-UOE	1	0	0	1	NIL
8.	40625U08	EXERCISE ESSENTIALS FOR PHYSICAL FITNESS	PHYSIOTHERAPY	EC-UOE	1	0	0	1	NIL
9.	40625U09	ESSENTIAL SKILLS FOR MEDICAL EMERGENCIES	MEDICINE	EC-UOE	1	0	0	1	NIL
10.	40625U10	MEDICINE PLANTS IN DISEASE MANAGEMENT	PHARMACY	EC-UOE	1	0	0	1	NIL
11.	40625U11	BASIC LIFE SUPPORT	ALLIED HEALTH SCIENCES	EC-UOE	1	0	0	1	NIL
12.	40625U12	MALLARKHAMBAM	PHYSICAL EDUCATION	EC-UOE	1	0	0	1	NIL
13.	40625U13	SILAMBAM	PHYSICAL EDUCATION	EC-UOE	1	0	0	1	NIL
14.	40625U14	BASIC FITNESS TRAINING	PHYSICAL EDUCATION	EC-UOE	1	0	0	1	NIL
15.	40625U15	RECREATIONAL GAMES	PHYSICAL EDUCATION	EC-UOE	1	0	0	1	NIL
16.	40625U16	INTRODUCTION TO LAW	LAW	EC-UOE	1	0	0	1	NIL

University Multidisciplinary Open Electives - Credit (1)									
17.	40625U17	FUNDAMENTALS OF LAW IN TECHNOLOGY AND CYBER SPACE	LAW	EC-UOE	1	0	0	1	NIL
18.	40625U18	FOUNDATION COURSE IN YOGA	REHABILITATION AND BEHAVIORAL SCIENCES	EC-UOE	1	0	0	1	NIL
19.	40625U19	INTRODUCTION TO PSYCHOLOGY	REHABILITATION AND BEHAVIORAL SCIENCES	EC-UOE	1	0	0	1	NIL
20.	40625U20	INTRODUCTION TO PUBLIC POLICY AND GOVERNANCE	LIBERAL ARTS	EC-UOE	1	0	0	1	NIL
21.	40625U21	INDIAN ECONOMY AND DEVELOPMENT CHALLENGES	LIBERAL ARTS	EC-UOE	1	0	0	1	NIL
22.		Any SWAYAM / MOOC / NPTEL Courses which are not related to the discipline of study of the student can be chosen as an Open Elective in Consultation with the respective Faculty Advisor of the Institution.							

B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII

D. INDIAN KNOWLEDGE SYSTEM

Indian Knowledge System - Credits (2)									
SL. NO.	**COURSE CODDE**	**COURSE**	**OFFERING DEPT.**	**CATEGORY**	**L**	**T**	**P**	**C**	**PREREQUISITE**
1.	35325K01	INDIAN KNOWLEDGE SYSTEM	BME	IKS	2	0	0	2	NIL

B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII

E. DESIGN THINKING

Design Thinking - Credit (1)									
SL. NO.	**COURSE CODDE**	**COURSE**	**OFFERING DEPT.**	**CATEGORY**	**L**	**T**	**P**	**C**	**PREREQUISITE**
1.	35325D01	DESIGN THINKING AND ADVANCED PROBLEM SOLVING	BME	DT	0	0	2	1	NIL

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B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII

F. COURSES FOR PRESENTATION OF TECHNICAL SKILLS RELATED TO THE SPECIALIZATION

Project work, Seminar and Internship in Industry or elsewhere Credits - (14)

SL. NO.	COURSE CODDE	COURSE	OFFERING DEPT.	CATEGORY	L	T	P	C	PREREQUISITE
1.	35325R01	PROJECT WORK	BME	PI-P	0	0	16	8	NIL
2.	35325M01	MINI PROJECT	BME	PI-M	0	0	6	3	NIL
3.	35325T01	INTERNSHIP	BME	PI-I	3 WEEKS			3	NIL
4.	35325T02	TRAINING	BME	PI-IT	3 WEEKS			3	NIL

B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII

G. MANDATORY COURSES

(NOT INCLUDED FOR CGPA CALCULATIONS)

SL. NO.	COURSE CODDE	COURSE	OFFERING DEPT.	CATEGORY	L	T	P	C	PREREQUISITE
1.	35325Z82	RESEARCH METHODOLOGY	BME	MC	0	0	2	1	NIL
2.	34125Z81	INDIAN CONSTITUTION	LAW	MC	0	0	2	1	NIL
3.	34125Z01	ENVIRONMENTAL SCIENCES	CHEM	MC	0	0	2	1	NIL
4.	35325Z01	IDEA LAB	BME	MC	0	0	2	1	NIL
5.	34125Z82	YOGA AND MEDITATION	PHED	MC	0	0	2	1	NIL
6.	34125Z84	NCC	GEN	MC	0	0	2	1	NIL
7.	34125Z85	NSS	GEN	MC	0	0	2	1	NIL
8.	34125Z86	RRC	GEN	MC	0	0	2	1	NIL
9.	34125Z90	YRC	GEN	MC	0	0	2	1	NIL
10.	34125Z87	STUDENT CLUBS	GEN	MC	0	0	2	1	NIL
11.	34125Z89	UNNAT BHARAT ABHIYAN	GEN	MC	0	0	2	1	NIL
12.	34125Z88	SWACHH BHARAT	GEN	MC	0	0	2	1	NIL
13.	34125Z83	SPORTS AND GAMES	GEN	MC	0	0	2	1	NIL

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B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII

HONOURS DEGREE PROGRAMME

Honours Degree Programme Credits (18 – 20)

SL. NO.	COURSE CODE	COURSE	OFFERING DEPT.	CATEGORY	L	T	P	C	PREREQUISITE
MEDICAL DEVICE DESIGN AND DEVELOPMENT									
1.	35325A07	PRINCIPLES OF MEDICAL DEVICE DESIGN AND INNOVATION	BME	HON	3	0	0	3	NIL
2.	35325A09	SMART BIOSENSORS AND BIOMEDICAL ACTUATION SYSTEMS	BME	HON	3	0	0	3	NIL
3.	35325A05	EMBEDDED SYSTEMS FOR MEDICAL APPLICATIONS	BME	HON	3	0	0	3	NIL
4.	35325A06	INTERNET OF MEDICAL THINGS (IOMT) AND CONNECTED HEALTHCARE	BME	HON	3	0	0	3	NIL
5.	35325A10	WEARABLE HEALTH DEVICES AND SMART TEXTILE TECHNOLOGY	BME	HON	3	0	0	3	NIL
6.	35325A08	REGULATORY SCIENCE AND STANDARDS FOR MEDICAL DEVICES	BME	HON	3	0	0	3	NIL
7.	35325A03	DESIGN FOR RELIABILITY AND SAFETY IN MEDICAL DEVICES	BME	HON	3	0	0	3	NIL
8.	35325A02	CLINICAL TRIALS AND EVALUATION OF MEDICAL DEVICES	BME	HON	3	0	0	3	NIL
9.	35325A04	DIGITAL HEALTH TECHNOLOGIES AND MEDICAL SOFTWARE DEVELOPMENT	BME	HON	3	0	0	3	NIL
10.	35325A01	CAPSTONE PROJECT IN MEDICAL DEVICE DEVELOPMENT	BME	HON	3	0	0	3	NIL

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B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII

MINOR DEGREE PROGRAMME

Minor Degree Programme Credits (18 – 20)

SL. NO.	COURSE CODE	COURSE	OFFERING DEPT.	CATEGORY	L	T	P	C	PREREQUISITE
ARTIFICIAL INTELLIGENCE IN HEALTHCARE									
1.	35325G10	NEURAL NETWORKS AND DEEP LEARNING FOR BIOMEDICAL APPLICATIONS	BME	MIN	3	0	0	3	NIL
2.	35325G03	ARTIFICIAL INTELLIGENCE IN MEDICAL IMAGING AND DIAGNOSTICS	BME	MIN	3	0	0	3	NIL
3.	35325G04	BUSINESS AND CLINICAL APPLICATIONS OF MACHINE LEARNING IN HEALTHCARE	BME	MIN	3	0	0	3	NIL
4.	35325G06	ETHICS, GOVERNANCE AND RESPONSIBLE AI IN HEALTHCARE	BME	MIN	3	0	0	3	NIL
5.	35325G02	AI INTEGRATION IN ELECTRONIC HEALTH RECORDS AND CLINICAL DECISION SUPPORT	BME	MIN	3	0	0	3	NIL
6.	35325G08	MEDICAL ROBOTICS AND AUTOMATION IN HEALTHCARE DELIVERY	BME	MIN	3	0	0	3	NIL
7.	35325G09	NATURAL LANGUAGE PROCESSING FOR CLINICAL AND HEALTHCARE APPLICATIONS	BME	MIN	3	0	0	3	NIL
8.	35325G01	AI AND DIGITAL TECHNOLOGIES FOR PUBLIC HEALTH AND REMOTE CARE	BME	MIN	3	0	0	3	NIL
9.	35325G07	EXPLAINABLE AI AND HUMAN CENTRIC HEALTHCARE SYSTEMS	BME	MIN	3	0	0	3	NIL
10.	35325G05	CAPSTONE PROJECT IN AI FOR HEALTHCARE INNOVATION	BME	MIN	3	0	0	3	NIL

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B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII

MICROCREDENTIALS

Microcredentials Courses - Credits (3)

SL. NO.	COURSE CODE	COURSE	OFFERING DEPT.	CATEGORY	L	T	P	C	PREREQUISITE
1.	35325J84	DEMONSTARTION, APPLICATION AND DISMANTLING OF MEDICAL EQUIPMENT	BME	MCC	0	0	2	1	NIL
2.	35325J85	INDUSTRIAL EXPOSURES AND DEEP ANALYSIS OF MEDICAL EQUIPMENT AND MARKETS	BME	MCC	0	0	2	1	NIL
3.	35325J83	CRITICAL CARE BIOMEDICAL EQUIPMENT: DEMONSTRATION, ASSEMBLY AND MAINTENANCE	BME	MCC	0	0	2	1	NIL
4.	35325J82	CLINICAL DIAGNOSTIC EQUIPMENT: DEMONSTRATION AND FUNCTIONAL BREAKDOWN	BME	MCC	0	0	2	1	NIL
5.	35325J81	ASSISTIVE AND HOMECARE DEVICES: DESIGN INSIGHT, DEMONSTRATION AND DISMANTLING	BME	MCC	0	0	2	1	NIL

B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII

SKILL DEVELOPMENT

Skill Development Courses - Credits (4)

SL. NO.	COURSE CODE	COURSE	OFFERING DEPT.	CATEGORY	L	T	P	C	PREREQUISITE
1.	35325S85	RUDIMENTS OF MEDICAL EQUIPMENT	BME	SDC	0	0	4	2	NIL
2.	35325S83	BIOMEDICAL SENSORS AND INTERFACING SKILLS	BME	SDC	0	0	4	2	NIL
3.	35325S82	HOSPITAL ELECTRICAL AND SAFETY PRACTICES	BME	SDC	0	0	4	2	NIL
4.	35325S81	CALIBRATION AND PERFORMANCE EVALUATION OF MEDICAL DEVICES	BME	SDC	0	0	4	2	NIL
5.	35325S84	MEDICAL EQUIPMENT ASSEMBLY, WIRING AND TESTING SKILLS	BME	SDC	0	0	4	2	NIL

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B.E. - BIOMEDICAL ENGINEERING
WITH INTEL - NEC
(ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)

B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII									
INTEL - NEC - ARTIFICIAL INTELLIGENCE & MACHINE LEARNING – (Credits – 24)									
SL. NO.	**COURSE CODE**	**COURSE**	**OFFERING DEPT.**	**CATEGORY**	**L**	**T**	**P**	**C**	**PREREQUISITE**
1.	I34725E01	PYTHON PROGRAMMING AND RASPBERY PI FUNDAMENTALS (THEORY & PRACTICALS)	INTEL - NEC	FC-ES	3	0	2	4	NIL
2.	I35025P29	FOUNDATION OF ARTIFICIAL INTELLIGENCE (THEORY & PRACTICALS)	INTEL - NEC	EC-PS	3	0	2	4	NIL
3.	I35025P37	MACHINE INTELLIGENCE: UNLEASHING THE POWER OF LEARNING SYSTEMS (THEORY & PRACTICALS)	INTEL - NEC	EC-PS	3	0	2	4	NIL
4.	I35025P23	DEEP LEARNING TECHNIQUES (THEORY & PRACTICALS)	INTEL - NEC	EC-PS	3	0	2	4	NIL
5.	I35025I21	HIGH PERFORMANCE COMPUTING (THEORY & PRACTICALS)	INTEL - NEC	EC-IE	3	0	2	4	NIL
6.	I35025I04	APPLIED AI AND IOT (THEORY & PRACTICALS)	INTEL - NEC	EC-IE	3	0	2	4	NIL

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B.E. - BIOMEDICAL ENGINEERING
WITH INTEL - NEC
(INTERNET OF THINGS)

B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII									
NTEL - NEC - INTERNET OF THINGS – (Credits – 24)									
SL. NO.	**COURSE CODE**	**COURSE**	**OFFERING DEPT.**	**CATEGORY**	**L**	**T**	**P**	**C**	**PREREQUISITE**
1.	I34725E01	PYTHON PROGRAMMING AND RASPBERY PI FUNDAMENTALS (THEORY & PRACTICALS)	INTEL - NEC	FC-ES	3	0	2	4	NIL
2.	I34725P04	BUILDING INTERNET OF THINGS (THEORY & PRACTICALS)	INTEL - NEC	EC-PS	3	0	2	4	NIL
3.	I34725P05	COMMUNICATION PROTOCOLS FOR IOT (THEORY & PRACTICALS)	INTEL - NEC	EC-PS	3	0	2	4	NIL
4.	I34725P07	EMBEDDED SYSTEM DESIGN (THEORY & PRACTICALS)	INTEL - NEC	EC-PS	3	0	2	4	NIL
5.	I34725I02	EMBEDDED IOT (THEORY & PRACTICALS)	INTEL - NEC	EC-IE	3	0	2	4	NIL
6.	I34725I05	SENSOR CONCEPTS AND TECHNIQUES (THEORY & PRACTICALS)	INTEL - NEC	EC-IE	3	0	2	4	NIL

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B.E. - BIOMEDICAL ENGINEERING
WITH INTEL - NEC
(CYBER SECURITY)

B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII									
INTEL - NEC - CYBER SECURITY – (Credits – 24)									
SL. NO.	**COURSE CODE**	**COURSE**	**OFFERING DEPT.**	**CATEGORY**	**L**	**T**	**P**	**C**	**PREREQUISITE**
1.	I34725E01	PYTHON PROGRAMMING AND RASPBERY PI FUNDAMENTALS (THEORY & PRACTICALS)	INTEL - NEC	FC-ES	3	0	2	4	NIL
2.	I35025P16	CYBER SECURITY TOOLS (THEORY & PRACTICALS)	INTEL - NEC	EC-PS	3	0	2	4	NIL
3.	I35025P28	ETHICAL HACKING TECHNIQUES (THEORY & PRACTICALS)	INTEL - NEC	EC-PS	3	0	2	4	NIL
4.	I35025P12	CRYPTOGRAPHY TECHNIQUES (THEORY & PRACTICALS)	INTEL - NEC	EC-PS	3	0	2	4	NIL
5.	I35025I26	SECURE NETWORKING AND INFRASTRUCTURE (THEORY & PRACTICALS)	INTEL - NEC	EC-IE	3	0	2	4	NIL
6.	I35025I10	CYBER SECURITY IN PUBLIC CLOUD PLATFORMS (THEORY & PRACTICALS)	INTEL - NEC	EC-IE	3	0	2	4	NIL

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B.E. - BIOMEDICAL ENGINEERING
WITH HCL TECH
(DATA ENGINEERING AND VISUALIZATION)

B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII									
HCL TECH - DATA ENGINEERING AND VISUALIZATION – (Credits – 19)									
SL. NO.	**COURSE CODE**	**COURSE**	**OFFERING DEPT.**	**CATEGORY**	**L**	**T**	**P**	**C**	**PREREQUISITE**
1.	I35025E04	DESIGN THINKING AND ADVANCED PROBLEM SOLVING	HCL TECH	FC-ES	1	0	0	1	NIL
2.	I35025E01	EMERGING TRENDS IN IT INFRASTRUCTURE	HCL TECH	FC-ES	2	0	0	2	NIL
3.	I35025P17	DATA ENGINEERING AND PYTHON PROGRAMMING FUNDAMENTALS (THEORY & PRACTICALS)	HCL TECH	EC-PS	3	0	2	4	NIL
4.	I35025P02	ADVANCED PYTHON LIBRARIES, WORKING WITH SQL AND NOSQL (THEORY & PRACTICALS)	HCL TECH	EC-PS	3	0	2	4	NIL
5.	I35025P46	DATA WAREHOUSE AND MODELLING (THEORY & PRACTICALS)	HCL TECH	EC-PS	3	0	2	4	NIL
6.	I35025I12	DATA VISUALIZATION CONCEPTS AND WORKING WITH VISUALIZATION TOOLS (THEORY & PRACTICALS)	HCL TECH	EC-IE	3	0	2	4	NIL

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B.E. - BIOMEDICAL ENGINEERING WITH XTIC

B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII									
XTIC – (Credits – 21)									
SL. NO.	**COURSE CODE**	**COURSE**	**OFFERING DEPT.**	**CATEGORY**	**L**	**T**	**P**	**C**	**PREREQUISITE**
1.	I35025I25	PROGRAMMING FUNDAMENTALS FOR XR	XTIC	EC-IE	3	0	0	3	NIL
2.	I35025I11	DATA STRUCTURES AND ALGORITHMS FOR XR	XTIC	EC-IE	3	0	0	3	NIL
3.	I35025I06	COMPUTER VISION, IOT, ROBOTICS	XTIC	EC-IE	3	0	0	3	NIL
4.	I35025I18	FOUNDATION OF VIRTUAL REALITY	XTIC	EC-IE	3	0	0	3	NIL
5.	I35025I22	HUMAN COMPUTER INTERACTION FOR XR	XTIC	EC-IE	3	0	0	3	NIL
6.	I35025I02	AI AND MACHINE LEARNING FOR XR	XTIC	EC-IE	3	0	0	3	NIL
7.	I35025I05	CAPSTONE PROJECT: XR APPLICATIONS IN ENGINEERING & INDUSTRIAL TRAINING	XTIC	EC-IE	3	0	0	3	NIL

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B.E. - BIOMEDICAL ENGINEERING
WITH
Indian Biomedical Skill Consortium (IBSC)

B.E. – BIOMEDICAL ENGINEERING – SEMESTER I TO VIII									
INDIAN BIOMEDICAL SKILL CONSORTIUM (IBSC) – (Credits – 21)									
SL. NO.	**COURSE CODE**	**COURSE**	**OFFERING DEPT.**	**CATEGORY**	**L**	**T**	**P**	**C**	**PREREQUISITE**
1.	I35325P04	MEDICAL EQUIPMENT TROUBLESHOOTING – CRITICAL CARE	IBSC	EC-PS	3	0	0	3	NIL
2.	I35325P05	MEDICAL EQUIPMENT TROUBLESHOOTING – OPERATION THEATER	IBSC	EC-PS	3	0	0	3	NIL
3.	I35325P06	MEDICAL EQUIPMENT TROUBLESHOOTING – RADIOLOGY	IBSC	EC-PS	3	0	0	3	NIL
4.	I35325P01	CLINICAL LABORATORY EQUIPMENT	IBSC	EC-PS	3	0	0	3	NIL
5.	I35325P03	HEALTHCARE SAFETY AND STANDARDS	IBSC	EC-PS	3	0	0	3	NIL
6.	I35325I03	NABH & NABL & JCI ACCREDITATIONS	IBSC	EC-IE	3	0	0	3	NIL
7.	I35325I01	FACILITIES AND GENERAL MANAGEMENT	IBCS	EC-IE	3	0	0	3	NIL

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