



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)



Approved by AICTE, Recognized by UGC & Affiliated to Anna University
Accredited by NBA-AICTE, NAAC-UGC with 'A++' Grade
Saravanampatti, Coimbatore-641035

CURRICULA AND SYLLABI
REGULATION 2023
CHOICE BASED CREDIT SYSTEM

DEPARTMENT OF BIOMEDICAL ENGINEERING

B.E. – BIOMEDICAL ENGINEERING



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

Coimbatore – 35



DEPARTMENT OF BIOMEDICAL ENGINEERING

VISION

To provide world class education with Centre of Excellence in the field of Biomedical Engineering to cater the need of Medical Industries, research and technology development for the benefit of society.

MISSION

- To offer quality education of international acclaim by imbibing critical and creative analysis in designing Biomedical Engineering solutions
- To provide opportunities and conducive environment to the faculty members to enhance their skills and expertise in teaching, research and consultancy activities
- To translate scientific discovery in medical technology for better health care
- To foster the students to understand ethical, social and economic implication of their work for the improvement of society

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- PEO 1:** Graduate will demonstrate their acquired knowledge in technical competence and professional skills to solve wide range of challenges in Biomedical Engineering and advanced contemporary areas.
- PEO 2:** Graduate will communicate with multidisciplinary teams and engage in research, contribute to the society.
- PEO 3:** Graduate will pursuit knowledge in the field of Biomedical Engineering to contribute to the profession and employability.
- PEO 4:** Graduate will design and develop the products using modern tools for the advancement of Biomedical Engineering and generate the employment through entrepreneurship.
- PEO 5:** Graduate will apply their professional knowledge in the human, social, ethical and environmental context.

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. |

PROGRAMME OUTCOMES (POs)

At the end of the program, graduate 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 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)

PROGRAMME SPECIFIC OBJECTIVES

At the end of this program, graduate will be able to:

PSO 1 : Analyze, design and develop the systems to supplement and/ or assist the physiology of the human body.

PSO 2: Develop the mathematical model to understand the inter-relation among various Physiological systems



R 2023 – SUGGESTED CURRICULUM AND SYLLABI

DEPARTMENT OF BIOMEDICAL ENGINEERING

B.E. BIOMEDICAL ENGINEERING

| Description / Semester | AICTE | SNSCT – Suggested | Sem 1 | Sem 2 | Sem 3 | Sem 4 | Sem 5 | Sem 6 | Sem 7 | Sem 8 |
|---|--------------|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Humanity, Social Science and Mandatory (HSMC) | 12 | 11 | 3 | 4 | - | 2 | - | - | 2 | - |
| Basic Science (BSC) | 25 | 26 | 8 | 8 | 5 | 5 | - | - | - | - |
| Engineering Sciences (ESC) | 24 | 20.5 | 8 | 4 | 4.5 | 2 | - | - | 2 | - |
| Programme Core (PCC) | 48 | 57.5 | - | 7 | 11.5 | 12 | 13 | 11 | 3 | - |
| Programme Elective (PEC) | 18 | 15 | - | - | - | - | 3 | 3 | 3 | 6 |
| Open Elective (OEC) | 18 | 9 | - | - | - | - | 3 | 3 | 3 | - |
| Project/Seminar/Internship (EEC) | 15 | 30 | 3 | 1 | 3 | 1 | 5 | 3 | 2 | 12 |
| Mandatory Courses (MC) | (Non-Credit) | | | | | | | | | |
| TOTAL | 160 | 169 | 22 | 24 | 24 | 22 | 24 | 20 | 15 | 18 |

| SEMESTER I | | | | | | | | | | |
|--|-------------|--|----------------|---|---|------------------|-----------|---------|----------|-----------------|
| S.No. | Course Code | Course | L | T | P | Contact hrs/week | Credit | Int/Ext | Category | PRE- REQUISITES |
| Theory Courses | | | | | | | | | | |
| 1 | 23MAT101 | Matrices and Calculus | 3 | 1 | 0 | 4 | 4 | 40/60 | BSC | |
| 2 | 23PYT102 | Physics for Engineers | 3 | 0 | 0 | 3 | 3 | 40/60 | BSC | |
| 3 | 23GET102 | Basics of Civil and Mechanical | 3 | 0 | 0 | 3 | 3 | 40/60 | ESC | |
| 4 | 23ITT101 | Programming in C and Data Structures | 3 | 0 | 0 | 3 | 3 | 40/60 | ESC | |
| 5 | 23GET103 | Heritage of Tamils | 1 | 0 | 0 | 1 | 1 | 40/60 | HSMC | |
| Theory Integrated Practical Courses | | | | | | | | | | |
| 6 | 23GEB101 | Design Thinking and Innovation | 1 | 0 | 4 | 5 | 3 | 50/50 | EEC | |
| Practical Courses | | | | | | | | | | |
| 7 | 23PYP101 | Physics Laboratory | 0 | 0 | 2 | 2 | 1 | 60/40 | BSC | |
| 8 | 23ENP101 | Professional Communication | 0 | 0 | 4 | 4 | 2 | 60/40 | HSMC | |
| 9 | 23ITP101 | C Programming and Data Structures Laboratory | 0 | 0 | 4 | 4 | 2 | 60/40 | ESC | |
| Noncredit Mandatory Course | | | | | | | | | | |
| 10 | 23CHT103 | Environmental Science and Sustainability | 2 | 0 | 0 | 2 | 0 | 50/50 | BSC | |
| 11 | 23HST101 | Induction Program (3 Weeks) | 0 | 0 | 0 | 0 | 0 | - | - | |
| Total | | | 16/1/14 | | | 31 | 22 | | | |

| SEMESTER II | | | | | | | | | | |
|--|-------------|---|----------------|---|---|------------------|-----------|---------|----------|-----------------|
| S.No. | Course Code | Course | L | T | P | Contact hrs/week | Credit | Int/Ext | Category | PRE- REQUISITES |
| Theory Courses | | | | | | | | | | |
| 1 | 23MAT102 | Complex Analysis and Laplace Transforms | 3 | 1 | 0 | 4 | 4 | 40/60 | BSC | 23MAT101 |
| 2 | 23CHT101 | Engineering Chemistry | 3 | 0 | 0 | 3 | 3 | 40/60 | BSC | |
| 3 | 23MEB102 | Engineering Graphics | 1 | 0 | 2 | 3 | 2 | 40/60 | ESC | |
| 4 | 23ENT101 | Communicative English | 3 | 0 | 0 | 3 | 3 | 40/60 | HSMC | 23ENP101 |
| 5 | 23BMT101 | Human Anatomy and Physiology | 3 | 0 | 0 | 3 | 3 | 40/60 | PCC | |
| 6 | 23GET104 | Tamils and Technology | 1 | 0 | 0 | 1 | 1 | 40/60 | HSMC | |
| Theory Integrated Practical Courses | | | | | | | | | | |
| 7 | 23BMB101 | Electron Devices and Circuits | 3 | 0 | 2 | 5 | 4 | 50/50 | PCC | 23PYT102 |
| Practical Courses | | | | | | | | | | |
| 8 | 23CHP101 | Chemistry Laboratory | 0 | 0 | 2 | 2 | 1 | 60/40 | BSC | |
| 9 | 23GEP101 | Workshop Practices | 0 | 0 | 4 | 4 | 2 | 60/40 | ESC | |
| 10 | 23BMP101 | Internship – I (2 Weeks) | 0 | 0 | 0 | - | 1 | 100/0 | EEC | |
| Noncredit Mandatory Course | | | | | | | | | | |
| 11 | 23HST103 | Indian Constitution | 2 | 0 | 0 | 2 | 0 | 100/0 | MC | |
| Total | | | 19/1/10 | | | 30 | 24 | | | |

| SEMESTER III | | | | | | | | | | |
|--|-------------|---|----------------|---|---|------------------|-----------|---------|----------|-----------------|
| S.No. | Course Code | Course | L | T | P | Contact hrs/week | Credit | Int/Ext | Category | PRE- REQUISITES |
| Theory Courses | | | | | | | | | | |
| 1 | 23MAT201 | Partial Differential Equations and Transforms | 3 | 0 | 0 | 3 | 3 | 40/60 | BSC | 23MAT102 |
| 2 | 23BMT201 | Circuit Analysis | 3 | 0 | 0 | 3 | 3 | 40/60 | PCC | |
| 3 | 23BMT202 | Biomedical Science | 3 | 0 | 0 | 3 | 3 | 40/60 | PCC | 23BMT101 |
| 4 | 23CST205 | Object Oriented Programming using Java | 3 | 0 | 0 | 3 | 3 | 40/60 | ESC | 23ITT101 |
| 5 | 23GET275 | VQAR-I | 2 | 0 | 0 | 2 | 2 | 40/60 | BSC | |
| Theory Integrated Practical Courses | | | | | | | | | | |
| 6 | 23BMB201 | Analog and Digital Integrated Circuits | 3 | 0 | 2 | 5 | 4 | 50/50 | PCC | 23BMB101 |
| Practical Courses | | | | | | | | | | |
| 7 | 23CSP205 | Object Oriented Programming using Java Laboratory | 0 | 0 | 3 | 3 | 1.5 | 60/40 | ESC | |
| 8 | 23BMP201 | Biomedical Science Laboratory | 0 | 0 | 3 | 3 | 1.5 | 60/40 | PCC | |
| 9 | 23GEP275 | Personal Branding | 0 | 0 | 4 | 4 | 2 | 60/40 | EEC | |
| 10 | 23BMP202 | Mini Project - I | 0 | 0 | 2 | 2 | 1 | 100/0 | EEC | |
| Total | | | 18/0/12 | | | 31 | 24 | | | |

| SEMESTER IV | | | | | | | | | | |
|--|-------------|---|----------------|---|---|------------------|-----------|---------|----------|-----------------|
| S.No. | Course Code | Course | L | T | P | Contact hrs/week | Credit | Int/Ext | Category | PRE- REQUISITES |
| Theory Courses | | | | | | | | | | |
| 1 | 23MAT206 | Probability and statistics | 3 | 0 | 0 | 3 | 3 | 40/60 | BSC | |
| 2 | 23BMT203 | Biomedical Transducers and Sensors | 3 | 0 | 0 | 3 | 3 | 40/60 | PCC | |
| 3 | 23BMT204 | Biomedical Instrumentation | 3 | 0 | 0 | 3 | 3 | 40/60 | PCC | 23BMT101 |
| 4 | 23BMT205 | Bio Control Systems | 3 | 0 | 0 | 3 | 3 | 40/60 | PCC | 23BMT101 |
| 5 | 23GET276 | VQAR-II | 2 | 0 | 0 | 2 | 2 | 40/60 | BSC | 23GET275 |
| Theory Integrated Practical Courses | | | | | | | | | | |
| 6 | | Language Elective | 1 | 0 | 2 | 3 | 2 | 50/50 | HSMC | |
| Practical Courses | | | | | | | | | | |
| 7 | 23ITP102 | Python Programming | 0 | 0 | 4 | 4 | 2 | 50/50 | ESC | |
| 8 | 23BMP203 | Bio Virtual Instrumentation Laboratory | 0 | 0 | 3 | 3 | 1.5 | 60/40 | PCC | |
| 9 | 23BMP204 | Biomedical Sensors Instrumentation Laboratory | 0 | 0 | 3 | 3 | 1.5 | 60/40 | PCC | |
| 10 | 23BMP205 | Internship-II (2 Weeks) | 0 | 0 | 0 | - | 1 | 100/0 | EEC | |
| Total | | | 16/0/12 | | | 27 | 22 | | | |

| SEMESTER V | | | | | | | | | | |
|--|-------------|--|----------------|---|---|------------------|-----------|---------|----------|-----------------|
| S.No. | Course Code | Course | L | T | P | Contact hrs/week | Credit | Int/Ext | Category | PRE- REQUISITES |
| Theory Courses | | | | | | | | | | |
| 1 | 23BMT301 | Diagnostic and Therapeutic Equipment | 3 | 0 | 0 | 3 | 3 | 40/60 | PCC | 23BMT204 |
| 2 | 23BMT302 | Biomedical Signal Processing | 3 | 0 | 0 | 3 | 3 | 40/60 | PCC | |
| 3 | | Professional Elective - I | 3 | 0 | 0 | 3 | 3 | 40/60 | PEC | |
| 4 | | Open Elective - I | 3 | 0 | 0 | 3 | 3 | 40/60 | OEC | |
| Theory Integrated Practical Courses | | | | | | | | | | |
| 5 | 23BMB301 | Artificial Intelligence and Machine Learning in Healthcare | 2 | 0 | 2 | 4 | 3 | 50/50 | PCC | 23ITP201 |
| 6 | | Career Course -I | 2 | 0 | 4 | 6 | 4 | 50/50 | EEC | |
| Practical Courses | | | | | | | | | | |
| 7 | 23BMP301 | Diagnostic and Therapeutic Equipment Laboratory | 0 | 0 | 3 | 4 | 2 | 60/40 | PCC | |
| 8 | 23BMP302 | Biomedical Signal Processing Laboratory | 0 | 0 | 3 | 4 | 2 | 60/40 | PCC | |
| 9 | 23BMP303 | Mini Project – II | 0 | 0 | 2 | 2 | 1 | 100/0 | EEC | |
| Total | | | 16/0/12 | | | 32 | 24 | | | |

| SEMESTER VI | | | | | | | | | | |
|--|-------------|---|---------------|---|---|------------------|-----------|---------|----------|-----------------|
| S.No. | Course Code | Course | L | T | P | Contact hrs/week | Credit | Int/Ext | Category | PRE- REQUISITES |
| Theory Courses | | | | | | | | | | |
| 1 | 23BMT303 | Radiological Equipment | 3 | 0 | 0 | 3 | 3 | 40/60 | PCC | 23BMT204 |
| 2 | | Professional Elective - II | 3 | 0 | 0 | 3 | 3 | 40/60 | PEC | |
| 3 | | Open Elective - II | 3 | 0 | 0 | 3 | 3 | 40/60 | OEC | |
| Theory Integrated Practical Courses | | | | | | | | | | |
| 4 | 23BMB302 | Bio Medical Image Processing | 3 | 0 | 2 | 5 | 4 | 50/50 | PCC | 23BMT302 |
| 5 | 23BMB303 | Internet of Medical Things | 3 | 0 | 2 | 5 | 4 | 50/50 | PCC | |
| 6 | | Career Course -II | 1 | 0 | 2 | 3 | 2 | 50/50 | EEC | |
| Practical Courses | | | | | | | | | | |
| 9 | 23BMP304 | Internship-III (2 Weeks) | 0 | 0 | 0 | - | 1 | 100/0 | EEC | |
| Mandatory Course | | | | | | | | | | |
| 10 | 23HST105 | Essence of Indian Traditional Knowledge | 2 | 0 | 0 | 2 | 0 | 100/0 | MC | |
| Total | | | 18/0/6 | | | 24 | 20 | | | |

| SEMESTER VII | | | | | | | | | | |
|--------------------------|--------------|-----------------------------|---------------|---|---|------------------|-----------|---------|----------|-----------------|
| S.No. | Course Code | Course | L | T | P | Contact hrs/week | Credit | Int/Ext | Category | PRE- REQUISITES |
| Theory Courses | | | | | | | | | | |
| 1 | 23BMT401 | Healthcare Analytics | 3 | 0 | 0 | 3 | 3 | 40/60 | PCC | 23BMB301 |
| 2 | 23BMT402 | Medical Optics | 2 | 0 | 0 | 2 | 2 | 40/60 | ESC | 23BMT301 |
| 3 | 23GET401 | Universal Human Values | 2 | 0 | 0 | 2 | 2 | 40/60 | HSMC | |
| 4 | | Professional Elective - III | 3 | 0 | 0 | 3 | 3 | 40/60 | PEC | |
| 5 | | Open Elective - III | 3 | 0 | 0 | 3 | 3 | 40/60 | OEC | |
| Practical courses | | | | | | | | | | |
| 6 | 23BMP401 | Project - I | 0 | 0 | 4 | 4 | 2 | 60/40 | EEC | |
| | Total | | 13/0/4 | | | 17 | 15 | | | |

| SEMESTER VIII | | | | | | | | | | |
|--------------------------|--------------|----------------------------|---------------|---|----|------------------|-----------|---------|----------|-----------------|
| S.No. | Course Code | Course | L | T | P | Contact hrs/week | Credit | Int/Ext | Category | PRE- REQUISITES |
| Theory Courses | | | | | | | | | | |
| 1 | | Professional Elective - IV | 3 | 0 | 0 | 3 | 3 | 40/60 | PEC | |
| 2 | | Professional Elective - V | 3 | 0 | 0 | 3 | 3 | 40/60 | PEC | |
| Practical courses | | | | | | | | | | |
| 3 | 23BMP402 | Project - II | 0 | 0 | 24 | 24 | 12 | 60/40 | EEC | |
| | Total | | 6/0/24 | | | 30 | 18 | | | |

TOTAL NO. OF CREDITS: 169

Professional Elective Courses (PEC)

Professional Elective – I

| S.No | Course Code | COURSES OFFERED | L | T | P | C | PRE-REQUISITES |
|------|-------------|---|---|---|---|---|----------------|
| 1. | 23BME301 | Principles of Management | 3 | 0 | 0 | 3 | |
| 2. | 23BME302 | Wearable Devices | 3 | 0 | 0 | 3 | |
| 3. | 23BME303 | Clinical Instrumentation | 3 | 0 | 0 | 3 | |
| 4. | 23BME304 | Rehabilitation and Assistive Technology | 3 | 0 | 0 | 3 | |
| 5. | 23BME305 | Biomaterials and Artificial Organs | 3 | 0 | 0 | 3 | |

Professional Elective – II

| S.No | Course Code | COURSES OFFERED | L | T | P | C | PRE-REQUISITES |
|------|-------------|--------------------------------------|---|---|---|---|----------------|
| 1. | 23BME306 | Total Quality Management | 3 | 0 | 0 | 3 | |
| 2. | 23BME307 | Body Area Networks | 3 | 0 | 0 | 3 | |
| 3. | 23BME308 | Medical Informatics | 3 | 0 | 0 | 3 | |
| 4. | 23BME309 | Biomechanics | 3 | 0 | 0 | 3 | |
| 5. | 23BME310 | Microprocessors and Microcontrollers | 3 | 0 | 0 | 3 | |

Professional Elective – III

| S.No | Course Code | COURSES OFFERED | L | T | P | C | PRE-REQUISITES |
|------|-------------|---|---|---|---|---|----------------|
| 1. | 23BME401 | Human Resource Management | 3 | 0 | 0 | 3 | |
| 2. | 23BME402 | Virtual Reality and Augmented Reality in Healthcare | 3 | 0 | 0 | 3 | |
| 3. | 23BME403 | Speech and Audio Signal Processing | 3 | 0 | 0 | 3 | |
| 4. | 23BME404 | Physiological Modelling | 3 | 0 | 0 | 3 | |
| 5. | 23BME405 | Embedded Systems | 3 | 0 | 0 | 3 | |

Professional Elective – IV

| S.No | Course Code | COURSES OFFERED | L | T | P | C | PRE-REQUISITES |
|------|-------------|--|---|---|---|---|----------------|
| 1. | 23BME406 | Engineering Economics and Financial Accounting | 3 | 0 | 0 | 3 | |
| 2. | 23BME407 | Telehealth Technology | 3 | 0 | 0 | 3 | |
| 3. | 23BME408 | Medical Imaging Systems | 3 | 0 | 0 | 3 | |
| 4. | 23BME409 | Computer Vision in Healthcare | 3 | 0 | 0 | 3 | |
| 5. | 23BME410 | Internet of Things | 3 | 0 | 0 | 3 | |

Professional Elective – V

| S.No | Course Code | COURSES OFFERED | L | T | P | C | PRE-REQUISITES |
|------|-------------|---|---|---|---|---|----------------|
| 1. | 23BME411 | Hospital Design, Planning and Management | 3 | 0 | 0 | 3 | |
| 2. | 23BME412 | Medical Device Regulation and Safety | 3 | 0 | 0 | 3 | |
| 3. | 23BME413 | Brain Computer Interface and Applications | 3 | 0 | 0 | 3 | |
| 4. | 23BME414 | Ergonomics and Human Factor Engineering | 3 | 0 | 0 | 3 | |
| 5. | 23BME415 | VLSI Design | 3 | 0 | 0 | 3 | |

Total (SEM 5 + SEM 6 + SEM 7 + SEM 8 = 3 + 3 + 3 + 6 = 15 credits)

OPEN ELECTIVE COURSES (OEC)

| S.No | Course Code | COURSES OFFERED | L | T | P | C | PRE-REQUISITES |
|------|-------------|---------------------------------------|---|---|---|---|----------------|
| 1. | 23BMO301 | Healthcare Systems Engineering | 3 | 0 | 0 | 3 | |
| 2. | 23BMO302 | Lasers and Optical Fibers in Medicine | 3 | 0 | 0 | 3 | |
| 3. | 23BMO303 | Wearable Systems for Healthcare | 3 | 0 | 0 | 3 | |
| 4. | 23BMO304 | Fundamentals of Healthcare Analytics | 3 | 0 | 0 | 3 | |
| 5. | 23BMO401 | Telehealth Technology | 3 | 0 | 0 | 3 | |
| 6. | 23BMO402 | Medical Waste Management | 3 | 0 | 0 | 3 | |

Total (SEM 5 + SEM 6 + SEM 7 = 3 + 3 + 3 = 9 credits)

HUMANITIES, SOCIAL SCIENCES AND MANAGEMENT COURSES (HSMC)

| S.No | Course Code | COURSES OFFERED | L | T | P | C | Sem |
|------|-------------|----------------------------|---|---|---|---|-----|
| 1. | 23GET103 | Heritage of Tamils | 1 | 0 | 0 | 1 | I |
| 2. | 23ENP101 | Professional Communication | 0 | 0 | 4 | 2 | I |
| 3. | 23ENT101 | Communicative English | 3 | 0 | 0 | 3 | II |
| 4. | 23GET104 | Tamils and Technology | 1 | 0 | 0 | 1 | II |
| 5. | 23GET401 | Universal Human Values | 2 | 0 | 0 | 2 | VII |

LANGUAGE ELECTIVE

| S.No | Course Code | Courses Offered | L | T | P | C |
|------|-------------|-----------------|---|---|---|---|
| 1 | 23GEB202 | HINDI | 1 | 0 | 2 | 2 |
| 2 | 23GEB203 | JAPANESE | 1 | 0 | 2 | 2 |
| 3 | 23GEB204 | GERMAN | 1 | 0 | 2 | 2 |
| 4 | 23GEB205 | FRENCH | 1 | 0 | 2 | 2 |

BASIC SCIENCE COURSES (BSC)

| S.No | Course Code | COURSES OFFERED | L | T | P | C | Sem |
|--------------|-------------|---|-----------|----------|----------|-----------|-----|
| 1. | 23MAT101 | Matrices and Calculus | 3 | 1 | 0 | 4 | I |
| 2. | 23PYT102 | Physics for Engineers | 3 | 0 | 0 | 3 | I |
| 3. | 23PYP101 | Physics Laboratory | 0 | 0 | 2 | 1 | I |
| 4. | 23CHT103 | Environmental Science and Sustainability | 2 | 0 | 0 | 0 | I |
| 5. | 23MAT102 | Complex Analysis and Laplace Transforms | 3 | 1 | 0 | 4 | II |
| 6. | 23CHT101 | Engineering Chemistry | 3 | 0 | 0 | 3 | II |
| 7. | 23CHP101 | Chemistry Laboratory | 0 | 0 | 2 | 1 | II |
| 8. | 23MAT201 | Partial Differential Equations and Transforms | 3 | 0 | 0 | 3 | III |
| 9. | 23GET275 | VQAR-I | 2 | 0 | 0 | 2 | III |
| 10. | 23MAT206 | Probability and statistics | 3 | 0 | 0 | 3 | IV |
| 11. | 23GET276 | VQAR-II | 2 | 0 | 0 | 2 | IV |
| TOTAL | | | 24 | 2 | 4 | 26 | |

ENGINEERING SCIENCE COURSES (ESC)

| S.No | Course Code | COURSES OFFERED | L | T | P | C | Sem |
|--------------|-------------|---|-----------|----------|-----------|-------------|-----|
| 1. | 23GET102 | Basics of Civil and Mechanical | 3 | 0 | 0 | 3 | I |
| 2. | 23ITT101 | Programming in C and Data Structures | 3 | 0 | 0 | 3 | I |
| 3. | 23ITP101 | C Programming and Data Structures Laboratory | 0 | 0 | 4 | 2 | I |
| 4. | 23MEB102 | Engineering Graphics | 1 | 0 | 2 | 2 | II |
| 5. | 23GEP101 | Workshop Practices | 0 | 0 | 4 | 2 | II |
| 6. | 23CST205 | Object Oriented Programming using Java | 3 | 0 | 0 | 3 | III |
| 7. | 23CSP205 | Object Oriented Programming using Java Laboratory | 0 | 0 | 3 | 1.5 | III |
| 8. | 23ITP102 | Python Programming | 0 | 0 | 4 | 2 | IV |
| 9. | 23BMT402 | Medical Optics | 2 | 0 | 0 | 2 | VII |
| TOTAL | | | 12 | 0 | 17 | 20.5 | |

PROFESSIONAL CORE COURSES (PCC)

| S.No | Course Code | COURSES OFFERED | L | T | P | C | Sem |
|------|-------------|--|---|---|---|-----|-----|
| 1. | 23BMT101 | Human Anatomy and Physiology | 3 | 0 | 0 | 3 | II |
| 2. | 23BMB101 | Electron Devices and Circuits | 3 | 0 | 2 | 4 | II |
| 3. | 23BMT201 | Circuit Analysis | 3 | 0 | 0 | 3 | III |
| 4. | 23BMT202 | Biomedical Science | 3 | 0 | 0 | 3 | III |
| 5. | 23BMB201 | Analog and Digital Integrated Circuits | 3 | 0 | 2 | 4 | III |
| 6. | 23BMP201 | Biomedical Science Laboratory | 0 | 0 | 3 | 1.5 | III |
| 7. | 23BMT203 | Biomedical Transducers and Sensors | 3 | 0 | 0 | 3 | IV |
| 8. | 23BMT204 | Biomedical Instrumentation | 3 | 0 | 0 | 3 | IV |
| 9. | 23BMT205 | Bio Control Systems | 3 | 0 | 0 | 3 | IV |
| 10. | 23BMP203 | Bio Virtual Instrumentation Laboratory | 0 | 0 | 3 | 1.5 | IV |
| 11. | 23BMP204 | Biomedical Sensors Instrumentation Laboratory | 0 | 0 | 3 | 1.5 | IV |
| 12. | 23BMT301 | Diagnostic and Therapeutic Equipment | 3 | 0 | 0 | 3 | V |
| 13. | 23BMT302 | Biomedical Signal Processing | 3 | 0 | 0 | 3 | V |
| 14. | 23BMB301 | Artificial Intelligence and Machine Learning in Healthcare | 2 | 0 | 2 | 3 | V |
| 15. | 23BMP301 | Diagnostic and Therapeutic Equipment Laboratory | 0 | 0 | 3 | 2 | V |
| 16. | 23BMP302 | Biomedical Signal Processing Laboratory | 0 | 0 | 3 | 2 | V |
| 17. | 23BMT303 | Radiological Equipment | 3 | 0 | 0 | 3 | VI |

| S.No | Course Code | COURSES OFFERED | L | T | P | C | Sem |
|----------------------|-------------|------------------------------|----|---|----|------|-----|
| 18. | 23BMB302 | Bio Medical Image Processing | 3 | 0 | 2 | 4 | VI |
| 19. | 23BMB303 | Internet of Medical Things | 3 | 0 | 2 | 4 | VI |
| 20. | 23BMT401 | Healthcare Analytics | 3 | 0 | 0 | 3 | VII |
| TOTAL CREDITS | | | 44 | 0 | 25 | 57.5 | |

EMPLOYABILITY ENHANCEMENT COURSES (EEC)

| S.No | Course Code | COURSES OFFERED | L | T | P | C | SEM |
|--------------|--------------------|--------------------------------|----------|----------|----------|-----------|------|
| 1. | 23GEB101 | Design Thinking and Innovation | 1 | 0 | 4 | 3 | I |
| 2. | 23BMP202 | Mini Project - I | 0 | 0 | 2 | 1 | III |
| 3. | 23BMP303 | Mini Project – II | 0 | 0 | 2 | 1 | V |
| 4. | 23GEP275 | Personal Branding | 0 | 0 | 4 | 2 | III |
| 5. | 23BMP101 | Internship – I (2 Weeks) | 0 | 0 | 0 | 1 | II |
| 6. | 23BMP205 | Internship-II (2 Weeks) | 0 | 0 | 0 | 1 | IV |
| 7. | 23BMP304 | Internship-III (2 Weeks) | 0 | 0 | 0 | 1 | VI |
| 8. | Track 1 Track 2 | Career Course – I | 2 | 0 | 4 | 4 | V |
| 9. | Track 3 Track 4 | Career Course – II | 1 | 0 | 2 | 2 | VI |
| 10. | 23BMP401 | Project - I | 0 | 0 | 4 | 2 | VII |
| 11. | 23BMP402 | Project - II | 0 | 0 | 24 | 12 | VIII |
| TOTAL | | | 4 | 0 | 0 | 30 | |

CAREER COURSES

| S.No | Course Code | Courses Offered | Sem | L | T | P | J | C |
|--|-------------|--|-------------|---|---|---|---|---|
| Track 1 Job (6 Credits) | 23GEB375 | Personnel Psychology and Technical Interviewing | V Semester | 2 | 0 | 4 | 0 | 4 |
| | 23GEB379 | Employable Skill Development | VI Semester | 1 | 0 | 2 | 0 | 2 |
| Track 2 Entrepreneurship (6 Credits) | 23GEB376 | Entrepreneurship and Business Canvas Model | V Semester | 2 | 0 | 4 | 0 | 4 |
| | 23GEB382 | Economics, Finance and Accounting and Intellectual Property Rights | VI Semester | 1 | 0 | 2 | 0 | 2 |
| Track 3 Higher Education (6 Credits) | 23GEB377 | Advanced Verbal Quantitative Aptitude and Reasoning and Networking | V Semester | 2 | 0 | 4 | 0 | 4 |
| | 23GEB380 | Higher Studies in Abroad and India | VI Semester | 1 | 0 | 2 | 0 | 2 |
| Track 4 Govt. /RRB/ Bank (6 credits) | 23GEB378 | Foundation Course on Competitive Exams | V Semester | 2 | 0 | 4 | 0 | 4 |
| | 23GEB381 | Personnel Psychology for Govt. Jobs | VI Semester | 1 | 0 | 2 | 0 | 2 |

MANDATORY COURSES (MC)

| Course Code | Course Title | L | T | P | J | C | Sem |
|-------------|---|---|---|---|---|---|-----|
| 23HST101 | Induction Program (3 Weeks) | 0 | 0 | 0 | 0 | 0 | |
| 23CHT103 | Environmental Sciences and sustainability | 2 | 0 | 0 | 0 | 0 | |
| 23HST103 | Indian Constitution | 2 | 0 | 0 | 0 | 0 | |
| 23HST105 | Essence of Indian Traditional Knowledge | 2 | 0 | 0 | 0 | 0 | |

ONE CREDIT COURSES

| S.No | Course Code | COURSE TITLE | L | T | P | J | C |
|------|-------------|--|---|---|---|---|---|
| 1. | 23BMC01 | Patenting in Biomedical Engineering | - | - | - | - | 1 |
| 2. | 23BMC02 | Healthcare IT: Challenges and Opportunity | - | - | - | - | 1 |
| 3. | 23BMC03 | Medical Device Innovation | - | - | - | - | 1 |
| 4. | 23BMC04 | Data Science in Healthcare | - | - | - | - | 1 |
| 5. | 23BMC05 | Business Models for Innovative Care for older people | - | - | - | - | 1 |
| 6. | 23BMC06 | Healthcare Marketplace | - | - | - | - | 1 |