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# DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

## BIOMEDICAL ENGINEERING

Date: 23.06.2022

## Minutes of Board of Studies Meeting

Board of Studies (BoS) meeting of B.Tech., Biomedical Engineering (BME) programme was conducted on 23.06.2022 in blended mode from 3.00 PM to 5.30 PM. Physical meeting venue-Biomedical Instrumentation Lab, 3rd floor, H Block, VFSTR and virtual meeting link-https://us02web.zoom.us/j/ 6400485257?pwd= jN9EMqLRU orw6gc Z3T5gmA-QP1BvNQ).

**Agenda of the BoS Meeting:**

1. To Discuss and finalize the curriculum structure and detailed syllabus of B.Tech., Biomedical Engineering Programme for the regulation 2022.
2. To approve the R22 curriculum and syllabus of B.Tech., Biomedical Engineering Programme and recommend to the Academic council.
3. Any other points with the permission of Chairperson.

The following members were present either thorough offline or online.

| S. No. | Name and designation of the Member | Position | Signature |
|---|---|---|---|
| 1. | Dr. T. Pitchaiah, Prof and Head, ECE, VFSTR | Chairperson | |
| 2. | Dr. M. Ramasubba Reddy, Prof, Applied Engineering | External Member (Academic) | Online |
| 3. | Dr. M. Malini, Professor, BME, VFSTR | External Member (Academic) | Online |
| 4. | Dr. B. Seetha Ramanjaneyulu, Professor | Internal Member | |
| 5. | Dr. M.S.S. Rukmini, Professor | Internal Member | |
| 6. | Dr. Sk. Jakeer Hussain, Professor | Internal Member | |

| | | | |
|---|---|---|---|
| 7. | Dr. M. Sarada, Professor | Internal Member | |
| 8. | Dr. V. Vijaya Raghavan, Assoc Professor | Internal Member | |
| 9. | Mr. M. Taj, Assist Professor | Internal Member | |
| 10. | Dr. Y. Ravi Sekhar, Professor | Nominee (Dean-R&D) | |
| 11. | Mr. Sanjeeth Kumar, Assist Professor | Nominee (Dean-School Electronics) | |
| 12. | Dr. S. Amarnath, M.D | Invitee (Industry) | Online |
| 13. | Dr.G. Sitaramanjaneya Reddy, Professor | Member Secretary | |

The following members have taken leave of absence:

1. Dr. N. Usha Rani, Professor
2. Dr. P. Venkatappa Reddy, Assoc Professor

Chairperson Dr. T. Pitchaiah, Professor and Head, Department of ECE, VFSTR opened the meeting by welcoming and introducing the external members, invitees to the internal members. Chairperson presented about the *NEP 2020 Compliant Regulation - R22* which emphasis on creating *learning centric* (continuous learning and continuous assessment model), offering B.Tech., B.Tech. with Honours/ Research Honours/ Minor/ Add-on Diploma, *Dual degree* (B.Tech. + M.Tech./MBA, or M.Tech. + Ph.D.), providing multiple entry and multiple exits.

**The following points were discussed in the BoS meeting:**

1. Regulation R22.
2. Curriculum structure with credits, credits distribution.
3. 2 Modules instead of 5 units.
4. Assessment methods (Formative & Summative).
5. Grading Schemes.
6. Electives and streams/pools.
7. Minor / Honor courses.

**1. Dr. M. Rama Subba Reddy, Dept. of Applied Engineering, IIT Madras**

- Include examples of basic physiological signals in relevant units.

- Recommended and suggested that the basic knowledge of core biomedical subject knowledge, as well as applications, be included in each module.
- Open elective courses offered by the BME programme should be the general version of core subjects.
- Suggested that advanced courses in the medical field that are connected to the real world, such as the internet of medical things, virtual reality, and computing techniques, be included as department electives.
- Recommended to offer the Medical instrumentation as minor course.
- Honors courses should be related to the most recent advanced and in-depth biomedical engineering courses.
- Virtual reality and virtual instrumentation can be used for experimental setups to replicate real-world scenarios.
- Recommended to Introduce hospital training program for practical exposer to students.

**2. Dr. M. Malini, Dept. of Biomedical Engineering, Osmania University.**

- BME being a highly interdisciplinary field, core electronics and medical courses as these become absolutely necessary.
- Most modern handheld devices and gadgets have a security feature that allows access to them, and the majority of security and identity authorization techniques are based on communication courses. It is suggested that analogue and digital communication be included in the syllabus as professional core subjects rather than department electives.
- Include fundamental knowledge of the core biomedical subject as well as applications in each module.
- I believe it is critical to include Medical Equipment Maintenance and Troubleshooting or service oriented courses, and I propose that one or two courses be added as department electives.
- I am very much appreciating the rationale for incorporating computer engineering courses into the BME stream, I suggest to include only those computer engineering courses that have applications in the medical field.
- Medical applications for DS, Python programming, and soft computing should be explored.

- It is strongly advised to include Medical Informatics, Assist Devices, and Implant Technology, which will assist students in gaining admission to master's programmes at foreign universities.
- To replicate real-world scenarios of connecting medical devices in virtual mode, which can be used for experimental setups, include virtual instrumentation courses.

**3. Dr. S. Amarnath, M.D, Amar Orthopaedic Hospital, Guntur**

- It would also be necessary to include an on-site short-term training programme, preferably in a hospital, prior to beginning an internship to gain a better understanding of the role of a biomedical engineer.
- Reduce classroom instruction and increase students' hands-on experience with medical equipment.
- The assessment process for physical education courses should be clearly defined.

**4. <u>Suggestions from internal members</u>**

- Textbooks and reference books should be updated to the most recent editions.
- Skills and activates are predefined for each course
- Lab practices and experiments are correlated in each course.

The above suggestions and comments evolved in the discussion of the R-22 BME course curriculum. Based on the suggestions, necessary modification will be incorporated. Approval of modifications will be taken from the External BoS Members through e-mail communication, which will be presented to academic council through approval of BoS chair.

**The following resolutions made after the discussion:**

1. BoS members approved the revised regulations, curriculum structure, syllabus of B.Tech., Biomedical Engineering programme and it follows based on the NEP 2020. Curriculum structure is provided in Appendix-I.
2. Major restructuring has taken place in the curriculum which is oriented towards continuous learning and assessment based on Module structure.
3. Major reformation has taken place in the curriculum by offering Honours/Specialization degree or Minor degree thorough 20 more credits with additional courses.
4. Major restructuring has taken place in the curriculum with related courses added which is oriented towards practice based learning in laboratories and offering honors/specialization degree or minor degree through 20 more credits with additional courses, introduced COMSOL

multi-physics simulation software and fabrication are oriented interdisciplinary projects, field projects, industrial related projects.

5. The curriculum is encompassing the courses that enable employability or entrepreneurship or skill development, provided in Appendix- II.
6. The significant changes are made in the content of all courses and hence the courses are considered as new courses provided in Appendix- III.
7. Total average percentage of syllabus revised was 33% compared to previous curriculum

Based on the suggestions given by the members, the Chairperson of BoS told that, those fruitful suggestions would be incorporated appropriately in the curriculum and syllabi of the regulation R22 and this will be recommended to the Academic Council of VFSTR for the approval. There being no further points for discussion, the Chairperson thanks all the external, internal, invited members and announced that the meeting was adjourned.

**Member Secretary** **Chairperson**

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# DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

## BIOMEDICAL ENGINEERING

### APPENDIX I

### B. Tech Biomedical Engineering: Curriculum Structure

**I Year I Semester**

| S. No. | Course Title | L | T | P | C | Course Category |
|---|---|---|---|---|---|---|
| 1 | Elementary Mathematics | 3 | 2 | 0 | 4 | Basic Science |
| 2 | Applied Physics | 2 | 0 | 2 | 3 | Basic Science |
| 3 | Basic of Electrical & Electronics Engineering | 2 | 0 | 2 | 3 | Basic Engineering |
| 4 | IT Workshop and Tools | 0 | 2 | 4 | 3 | Basic Engineering |
| 5 | Programming in C | 2 | 0 | 4 | 4 | Basic Engineering |
| 6 | English Proficiency & Communication Skills | 0 | 0 | 2 | 1 | Humanities |
| 7 | Physical Fitness, Sports & Games – I | 0 | 0 | 3 | 1 | Binary Grade |
| 8 | Constitution of India | 1 | 0 | 0 | 1 | Binary Grade |
| | **Total** | 10 | 4 | 17 | 20 | |
| | | 31 Hrs | | | | |

| Course Code | Course Title | L | T | P | C | Course Category |
|---|---|---|---|---|---|---|
| | Orientation Session | 1 | 4 | 0 | 3 | Binary Grade |

**I Year II Semester**

| S. No. | Course Title | L | T | P | C | Course Category |
|---|---|---|---|---|---|---|
| 1 | Matrices and Differential Equations | 3 | 2 | 0 | 4 | Basic Science |
| 2 | Engineering Graphics | 2 | 0 | 2 | 3 | Basic Engineering |
| 3 | Basics Coding Competency | 0 | 1 | 3 | 2 | Basic Engineering |
| 4 | Technical English Communication | 2 | 0 | 2 | 3 | Humanities |
| 5 | Clinical Biochemistry | 2 | 0 | 2 | 3 | Professional core |
| 6 | Fundamentals of Anatomy and Physiology | 2 | 1 | 2 | 4 | Professional core |
| 7 | Physical Fitness, Sports & Games – II | 0 | 0 | 3 | 1 | Binary Grade |
| 8 | Orientation Session | 0 | 0 | 6 | 3 | Binary Grade |
| | **Total** | 10 | 4 | 21 | 23 | |
| | | 35 Hrs | | | | |

## II Year I Semester Structure

| S. No. | Course Title | L | T | P | C | Course Category |
|---|---|---|---|---|---|---|
| 1. | Environmental Studies | 1 | 1 | 0 | 1 | Basic Science |
| 2. | Data Structures | 2 | 2 | 2 | 4 | Basic Engineering |
| 3. | Analog Electronic Circuits | 2 | 2 | 2 | 4 | Professional core |
| 4. | Basic Clinical Sciences | 2 | 2 | 0 | 3 | Professional core |
| 5. | Electrical Circuit Theory | 2 | 2 | 0 | 3 | Professional core |
| 6. | Biomedical Instrumentation | 2 | 2 | 2 | 4 | Professional core |
| 7. | Hospital Management | 2 | 2 | 0 | 3 | Professional core |
| 8. | Life Skills | 0 | 0 | 2 | 1 | Binary Grade |
| | **Total** | 13 | 13 | 8 | 23 | |
| | NCC/NSS/SAC/ E-cell/ Student Mentoring/ Social activities/ Publication with good impact factor (Only 2 students can claim 1 paper /patent). These credits maybe earned on or before the end of IV semester | 0 | 0 | 0 | 1 | Floating credits Binary grade |
| | **Total** | 13 | 13 | 8 | 24 | |
| | Contact Hours | 34 Hrs | | | | |

## II Year II Semester Structure

| S. No. | Course Title | L | T | P | C | Course Category |
|---|---|---|---|---|---|---|
| 1. | Biostatistics | 3 | 0 | 2 | 4 | Basic Science |
| 2. | Advanced Coding Competency | 0 | 0 | 2 | 1 | Basic Engineering |
| 3. | Analog and Digital ICs | 2 | 2 | 2 | 4 | Professional core |
| 4. | Diagnostic and Therapeutic Equipments | 2 | 0 | 2 | 3 | Professional core |
| 5. | Biomedical Signals and Systems | 2 | 1 | 2 | 4 | Professional core |
| 6. | Professional Communication | 0 | 0 | 2 | 1 | Humanities |
| 7. | Open Elective – 1 | 2 | 2 | - | 3 | Open Elective |
| 8. | Life Skills -II | 0 | 0 | 2 | 1 | Binary Grade |
| | **Total** | 11 | 5 | 14 | 21 | |
| | Minor / Honors – 1 | 3 | 0 | 2 | 4 | |
| | **Total** | 14 | 5 | 16 | 25 | |
| | Contact Hours | 35 Hours | | | | |
| | | | | | | |

**III Year I Semester Structure**

| S. No. | Course Title | L | T | P | C | Course Category |
|---|---|---|---|---|---|---|
| 1. | Analog and Digital Communication | 2 | 0 | 2 | 3 | Professional core |
| 2. | Microprocessors and Microcontrollers | 2 | 2 | 2 | 4 | Professional core |
| 3. | Biomaterials and Artificial Organs | 2 | 0 | 2 | 3 | Professional core |
| 4. | Biosensors and Transducers | 2 | 0 | 2 | 3 | Professional core |
| 5. | On-site training | 0 | 0 | 4 | 2 | Professional core |
| 6. | *Open Elective – 2* | 2 | 2 | 0 | 3 | *Open Elective* |
| 7. | Inter-Departmental Project –Phase I | 0 | 0 | 2 | 0 | Project |
| 8. | Soft Skills Lab | 0 | 0 | 2 | 1 | Humanities |
| | **Total** | 10 | 4 | 16 | 19 | |
| | NCC/NSS/SAC/ E-cell/ Student Mentoring/ Social activities/ Publication with good impact factor (Only 2 students can claim 1 paper /patent). These credits maybe earned on or before the end of IV semester | 0 | 0 | 0 | 1 | Floating credits<br>Binary grade |
| | *Minor / Honors – 2* | 3 | 0 | 2 | 4 | |
| | **Total** | 13 | 4 | 18 | 24 | |
| | Contact Hours | 35 Hrs | | | | |

**III Year II Semester Structure**

| S. No. | Course Title | L | T | P | C | Course Category |
|---|---|---|---|---|---|---|
| 1. | Quantitative aptitude & Logical reasoning | 1 | 2 | 0 | 2 | Humanities |
| 2. | Biomedical signal processing | 2 | 2 | 2 | 4 | Professional core |
| 3. | Medical Imaging Modalities | 2 | 2 | 0 | 3 | Professional core |
| 4. | Department Elective – 1 | 2 | 2 | 0 | 3 | Dept. Elective |
| 5. | Department Elective –2 | 2 | 2 | 0 | 3 | Dept. Elective |
| 6. | Open Elective – 3 | 2 | 2 | 0 | 3 | Open Elective |
| 7. | Industry interface course (Modular course) | 1 | 0 | 0 | 1 | Binary Grade |
| 8. | Inter-Departmental Project-Phase II | 0 | 0 | 2 | 2 | Professional core |
| | **Total** | 12 | 12 | 4 | 21 | |
| | Minor / Honors – 3 | 3 | 0 | 2 | 4 | |
| | **Total** | 15 | 12 | 6 | 25 | |
| | Contact Hours | 33 Hours | | | | |

**IV Year I Semester Structure**

| S. No. | Course Title | L | T | P | C | Course Category |
|---|---|---|---|---|---|---|
| 1 | Biomechanics | 2 | 2 | 2 | 4 | Professional core |
| 2 | Medical Image Processing | 2 | 2 | 2 | 4 | Professional core |
| 3 | Department Elective – 3 | 2 | 2 | 0 | 3 | Dept. Elective |
| 4 | Department Elective – 4 | 2 | 2 | 0 | 3 | Dept. Elective |
| 5 | Department Elective – 5 | 2 | 2 | 0 | 3 | Dept. Elective |
| 6 | Department Elective – 6 | 2 | 2 | 0 | 3 | Dept. Elective |
| | **Total** | 12 | 12 | 4 | 20 | |
| | Minor / Honors – 4 | 3 | 0 | 2 | 4 | |
| | **Total** | 15 | 12 | 6 | 24 | |
| | Contact Hours | 33 Hours | | | | |

**IV Year II Semester Structure**

| S. No. | Course Title | L | T | P | C | Course Category |
|---|---|---|---|---|---|---|
| 1. | Internship / Project Work | **0** | **2** | **22** | **12** | Project |
| 2. | Total | 24 | | | 12 | |
| 3. | Minor / Honors – 5 (for project) | 0 | 2 | 6 | 4 | Theory course may be also offered |
| | Contact Hours | 32 Hours | | | | |

**L=Lecture; T= Tutorial; P= Practical; C=Credits**

## List of Department Elective Courses

| S.No | Course Title | L | T | P | C |
|---|---|---|---|---|---|
| 1 | Medical Informatics | 2 | 2 | 0 | 3 |
| 2 | Assist devices and Implant Technology | 2 | 0 | 2 | 3 |
| 3 | Physiological Control Systems | 2 | 2 | 0 | 3 |
| 4 | Biofluids and Dynamics | 2 | 2 | 0 | 3 |
| 5 | Embedded system and IoT in health care | 2 | 0 | 2 | 3 |
| 6 | Rehabilitation Engineering | 2 | 2 | 0 | 3 |
| 7 | Fiber Optics and Lasers in Medicine | 2 | 0 | 2 | 3 |
| 8 | Telemedicine | 2 | 2 | 0 | 3 |
| 9 | Soft computing techniques | 2 | 0 | 2 | 3 |
| 10 | Medical Physics | 2 | 2 | 0 | 3 |
| 11 | Medical Equipment Maintenance and Troubleshooting | 2 | 0 | 2 | 3 |
| 12 | Robotics and Automation in Medicine | 2 | 0 | 2 | 3 |
| 13 | Machine Vision in Medical Technology | 2 | 0 | 2 | 3 |
| 14 | Virtual Bio-Instrumentation | 2 | 0 | 2 | 3 |
| 15 | Virtual Reality | 2 | 2 | 0 | 3 |
| 16 | VLSI for bioengineers | 2 | 0 | 2 | 3 |

## List of Open Elective Courses

| S.No | Course Title | L | T | P | C |
|---|---|---|---|---|---|
| 1 | Basic Clinical Sciences | 2 | 2 | 0 | 3 |
| 2 | Biomedical Instrumentation | 2 | 0 | 2 | 3 |
| 3 | Diagnostic and Therapeutic Equipments | 2 | 0 | 2 | 3 |
| 4 | Medical Imaging Modalities | 2 | 2 | 0 | 3 |
| 5 | Biomaterials | 2 | 0 | 2 | 3 |
| 6 | Biomechanics | 2 | 0 | 2 | 3 |

## List of Honour Courses

| S.No | Course Title | L | T | P | C |
|---|---|---|---|---|---|
| 1 | Assist devices and Implant Technology | 3 | 0 | 2 | 4 |
| 2 | Biofluids and Dynamics | 3 | 2 | 0 | 4 |
| 3 | Machine Vision in Medical Technology | 3 | 0 | 2 | 4 |
| 4 | Soft Computing Techniques | 3 | 2 | 0 | 4 |
| 5 | Medical Physics | 3 | 2 | 0 | 4 |
| 6 | Robotics and Automation in Medicine | 3 | 0 | 2 | 4 |
| 7 | Virtual Reality | 3 | 0 | 2 | 4 |

**Minor - Medical Instrumentation**

| S.No | Course Title | L | T | P | C |
|---|---|---|---|---|---|
| 1 | Clinical Instrumentation | 3 | 2 | 0 | 4 |
| 2 | Diagnostic and Therapeutic Equipments | 3 | 0 | 2 | 4 |
| 3 | Biomedical Signal Processing | 3 | 0 | 2 | 4 |
| 4 | Medical Imaging Modalities | 3 | 2 | 0 | 4 |
| 5 | Medical Image Processing | 3 | 0 | 2 | 4 |

**Chairperson**

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# DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

## BIOMEDICAL ENGINEERING

### APPENDIX II

**List of Courses that Enables Employability or Entrepreneurship or Skill Development**

| S. No. | Year and Semester | Course Title | Employability / Entrepreneurship / Skill development |
|---|---|---|---|
| 1. | I Year I Semester | Elementary Mathematics | Skill development |
| 2. | I Year I Semester | Applied Physics | Skill development |
| 3. | I Year I Semester | Basic of Electrical & Electronics *Engineering* | Skill development |
| 4. | I Year I Semester | IT Workshop and Tools | Employability |
| 5. | I Year I Semester | Programming in C | Skill development |
| 6. | I Year II Semester | Matrices and Differential Equations | Skill development |
| 7. | I Year II Semester | Clinical Biochemistry | Skill development |
| 8. | I Year II Semester | Engineering Graphics | Skill development |
| 9. | I Year II Semester | Basics Coding Competency | Skill development |
| 10. | I Year II Semester | Fundamentals of Anatomy and Physiology | Skill development |
| 11. | II Year I Semester | Basic Clinical Sciences | Skill development |
| 12. | II Year I Semester | Biomedical Instrumentation | Employability |
| 13. | II Year I Semester | Data Structures | Employability |
| 14. | II Year I Semester | Hospital Management | Employability |
| 15. | II Year I Semester | Electrical Circuit Theory | Skill development |
| 16. | II Year I Semester | Analog Electronic Circuits | Skill development |
| 17. | II Year II Semester | Biostatistics | Skill development |
| 18. | II Year II Semester | Advanced Coding Competency | Employability |
| 19. | II Year II Semester | Biomedical Signals and Systems | Skill development |
| 20. | II Year II Semester | Analog and Digital ICs | Skill development |
| 21. | II Year II Semester | Diagnostic and Therapeutic Equipments | Entrepreneurship |

| | | | |
|---|---|---|---|
| 22. | III Year I Semester | Analog and Digital Communication | Entrepreneurship |
| 23. | III Year I Semester | Microprocessors and Microcontrollers | Skill development |
| 24. | III Year I Semester | Biosensors and Transducers | Entrepreneurship |
| 25. | III Year I Semester | On-site training | Skill development |
| 26. | III Year I Semester | Biomaterials and Artificial Organs | Skill development |
| 27. | III Year II Semester | Quantitative aptitude & Logical reasoning | Employability |
| 28. | III Year II Semester | Biomedical signal processing | Employability |
| 29. | III Year II Semester | Medical Imaging Modalities | Employability |
| 30. | III Year II Semester | Inter-Departmental Project/Course | Skill development |
| 31. | VI Year I Semester | Medical Image Processing | Employability |
| 32. | VI Year I Semester | Biomechanics | Entrepreneurship |
| 33. | VI Year II Semester | Internship / Project Work | Skill development |
| 34. | | Medical Informatics | Employability |
| 35. | | Assist devices and Implant Technology | Employability |
| 36. | | Physiological Control Systems | Employability |
| 37. | | Biofluids and Dynamics | Employability |
| 38. | | Embedded system and IoT in health care | Employability |
| 39. | | Rehabilitation Engineering | Employability |
| 40. | | Fiber Optics and Lasers in Medicine | Employability |
| 41. | | Telemedicine | Skill development |
| 42. | | Soft computing techniques | Skill development |
| 43. | | Medical Physics | Skill development |
| 44. | | Medical Equipment Maintenance and Troubleshooting | Skill development |
| 45. | | Robotics and Automation in Medicine | Employability |
| 46. | | Machine Vision in Medical Technology | Skill development |
| 47. | | Virtual Bio-Instrumentation | Employability |
| 48. | | Virtual Reality | Employability |

**Chairperson**

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# DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
# BIOMEDICAL ENGINEERING

## APPENDIX III

### List of New Courses in the R22 Curriculum

| S. No. | Year and Semester | Course Title |
|---|---|---|
| 1. | I Year I Semester | Elementary Mathematics |
| 2. | I Year I Semester | Applied Physics |
| 3. | I Year I Semester | Basic of Electrical & Electronics Engineering |
| 4. | I Year I Semester | IT Workshop and Tools |
| 5. | I Year I Semester | Programming in C |
| 6. | I Year II Semester | Matrices and Differential Equations |
| 7. | I Year II Semester | Clinical Biochemistry |
| 8. | I Year II Semester | Engineering Graphics |
| 9. | I Year II Semester | Basics Coding Competency |
| 10. | I Year II Semester | Fundamentals of Anatomy and Physiology |
| 11. | II Year I Semester | Basic Clinical Sciences |
| 12. | II Year I Semester | Biomedical Instrumentation |
| 13. | II Year I Semester | Data Structures |
| 14. | II Year I Semester | Hospital Management |
| 15. | II Year I Semester | Electrical Circuit Theory |
| 16. | II Year I Semester | Analog Electronic Circuits |
| 17. | II Year II Semester | Biostatistics |
| 18. | II Year II Semester | Advanced Coding Competency |
| 19. | II Year II Semester | Biomedical Signals and Systems |
| 20. | II Year II Semester | Analog and Digital ICs |
| 21. | II Year II Semester | Diagnostic and Therapeutic Equipments |
| 22. | III Year I Semester | Analog and Digital Communication |
| 23. | III Year I Semester | Microprocessors and Microcontrollers |

| | | |
|---|---|---|
| 24. | III Year I Semester | Biosensors and Transducers |
| 25. | III Year I Semester | On-site training |
| 26. | III Year I Semester | Biomaterials and Artificial Organs |
| 27. | III Year II Semester | Quantitative aptitude & Logical reasoning |
| 28. | III Year II Semester | Biomedical signal processing |
| 29. | III Year II Semester | Medical Imaging Modalities |
| 30. | III Year II Semester | Inter-Departmental Project/Course |
| 31. | VI Year I Semester | Medical Image Processing |
| 32. | VI Year I Semester | Biomechanics |
| 33. | VI Year II Semester | Internship / Project Work |
| 34. | | Medical Informatics |
| 35. | | Assist devices and Implant Technology |
| 36. | | Physiological Control Systems |
| 37. | | Biofluids and Dynamics |
| 38. | | Embedded system and IoT in health care |
| 39. | | Rehabilitation Engineering |
| 40. | | Fiber Optics and Lasers in Medicine |
| 41. | | Telemedicine |
| 42. | | Soft computing techniques |
| 43. | | Medical Physics |
| 44. | | Medical Equipment Maintenance and Troubleshooting |
| 45. | | Robotics and Automation in Medicine |
| 46. | | Machine Vision in Medical Technology |
| 47. | | Virtual Bio-Instrumentation |
| 48. | | Virtual Reality |

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