

# **ERODE SENGUNTHAR ENGINEERING COLLEGE**

(An Autonomous Institution, Affiliated to Anna University, Chennai)

PERUNDURAI, ERODE - 638 057



**Department of Biomedical Engineering**  
**1<sup>st</sup> BOARD OF STUDIES MEETING**

**15<sup>th</sup> July 2019 @ 10.00 a.m.**

**Venue: Conference Hall**

**ERODE SENGUNTHAR ENGINEERING COLLEGE, PERUNDURAI - 638057**

(An Autonomous Institution - Affiliated to Anna University, Chennai)



## DEPARTMENT OF BIOMEDICAL ENGINEERING

**First Board of Studies Meeting**

Date &amp; Time: 15.07.2019 &amp; 10.00 a.m.

**AGENDA**

The 01<sup>st</sup> Board of Studies Meeting is convened to get the approval for the Curriculum for the Semesters I – VIII and Syllabi for the Semesters I – IV and Approval for Continuation of Syllabus Under AU 2017 & AU 2013 Regulations.

BoS / BME 1.1	<b>Welcome address</b> and opening remarks by Chairman, Board of Studies in the Department of Biomedical Engineering
BoS / BME 1.2	To consider and approve the <b>Regulations of B.E. (Biomedical Engineering) Programme.</b>
BoS / BME 1.3	To consider and approve the <b>Curriculum: I – VIII Semesters for B.E. BME Programme to be offered under R-2019 with effect from the Academic Year 2019 – 2020 Onwards.</b>
BoS / BME 1.4	To consider and approve the <b>Syllabi: I – IV Semesters for B.E. BME Programme to be offered under R-2019 with effect from the Academic Year 2019 – 2020 Onwards.</b>
BoS / BME 1.5	<b>Approval for Continuation of Syllabus Under AU 2017 Regulations:</b> Approval of continuation of AU 2017 Regulation syllabus for III – VIII semesters of current 2nd & 3rd year B.E. (Biomedical Engineering) students, as per Anna University Syllabus.
BoS / BME 1.6	To Consider and Approve the <b>Vision, Mission, PEO's and PSO's statements of the Biomedical Engineering Programme.</b>
BoS / BME 1.7	<b>Approval for Continuation of Syllabus Under AU 2013 Regulations:</b> Approval of continuation of AU 2013 Regulation syllabus for III – VIII semesters of current 2nd & 3rd year B.E. (Biomedical Engineering) students, as per Anna University Syllabus.
BoS / BME 1.8	Any other Matter

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**DEPARTMENT OF BIOMEDICAL ENGINEERING**

The Board of studies meeting of Electronics and Instrumentation Engineering for the B.E. (Biomedical Engineering) degree program from the academic year 2019 – 20 onwards was convened and held on 15<sup>th</sup> July 2019 in the IIT Remote Centre of Administrative Block, Erode Sengunthar Engineering College, Perundurai. The Minutes of the Meeting was

**ITEM 01 WELCOMING OF BOARD OF STUDY MEMBERS**

The Chairman of Biomedical Engineering Board of Studies welcomed all members of Board of Studies. She presented the department introduction and briefed the agenda to be discussed followed by introduction of all members present.

**ITEM 02 TO CONSIDER AND APPROVE THE REGULATIONS OF B.E. ( BIOMEDICAL ENGINEERING) PROGRAMME**

The Chairman of Biomedical Engineering Board of Studies presented the Regulations 2019 of B.E. Biomedical Engineering programme. The Board of Studies reviewed the regulations and suggested following modifications.

- Dr.M. Ramma Subba Reddy suggested to reduce the total no. of credits in the range of 160 – 170 for UG Curriculum.
- Dr. J. Krishnan insisted to provide the benefits of doing additional credits by the students in the Regulation of B.E. Biomedical programme.
- The Board of Studies resolved to approve the regulations of B.E. Biomedical Engineering programme brought forward by the Chairman incorporating the above changes.

**ITEM 03**

**TO CONSIDER AND APPROVE THE CURRICULUM OF I TO VIII SEMESTERS FOR THE B.E. (BIOMEDICAL ENGINEERING) PROGRAMMES TO BE OFFERED UNDER R-2019 WITH EFFECT FROM THE ACADEMIC YEAR 2019 – 2020 ONWARDS.**

The Chairman of BME Board of Studies presented the Curriculum 2019 of I to VIII for the B.E. Biomedical Engineering. The Board of Studies reviewed the Curriculum and suggested following modifications.

- Dr. M. Rammasubba reddy , Professor suggested to remove the Matrices and Calculus in the first semester and to prescribe Linear Algebra.
- Dr. M. Rammasubba reddy , Professor suggested to change 'Physics for Engineers' as 'Engineering Physics'.
- Dr. M. Rammasubba reddy , Professor suggested to assign Language Elective - I as Technical Communication.
- Dr. Rammasubba reddy , Professor suggested to change the paper 'Fundamentals of Biochemistry' as Biochemistry.
- In the second semester, instead of Engineering Physics - II , it is suggested to have Medical Physics.
- In the second semester, instead of Circuit Theory , it is recommended to have Semiconductor Devices and circuits.
- In the second semester, 'Python Programming' paper can be changed as 'Programming Lanugages using Python'.
- In the second semester, 'Language Elective - II' can be changed as 'Technical Writing'
- Device and circuits Laboratory can be prescribed in the II semester.
- One credit industrial training can be added in the II semester.
- All the laboratory classes can be reduced to 2 hrs.in all semesters.
- Instead of the paper 'Linear Algebra and Numerical Methods', 'Numerical methods' is recommended.
- A paper named 'Signals and Systems' , it is better to have 'Biomedical signals and systems'.
- Instead of 'Semiconductor Devices and Circuits', it is recommended to have 'Linear Integrated Circuits'.
- Instead of 'Devices and Circuits Laboratory', it is recommended to have 'Linear Integrated Circuits Laboratory'.

- In the IV semester, Bio sensors and Transducer theory paper can be replaced as Biosensors and measurements.
- In the IV semester, instead of Bio Physics , it is recommended to have Micro processor and micro controller.
- it is recommended to add Micro processor and controller laboratory in the IV semester.
- it is recommended to add industrial training with one credit.
- In the V semester, Bio control systems theory paper's credit has to be reduced to 3.
- In the V semester, instead of Rehabilitation Engg. paper, it is highly recommended by the experts' team to Biomechanics.
- In the V semester itself, it is recommended to have Diagnostic and Therapeutic Equipment theory paper from VI semester.
- In the V semester itself, it is recommended to have Diagnostic and Therapeutic Equipment laboratory paper from VI semester.
- Radiological equipment paper can be added in VI semester itself.
- Instead of Hospital Management paper in the VI semester, it is recommended to have Rehabilitation Engineering.
- Instead of Diagnostic and Therapeutic Equipment laboratory ,in the VI semester, it is recommended to have Rehabilitation Engineering laboratory.
- One credit industrial training can be added in the VI semester.
- Research methodology paper has to be removed in the Semester VII.
- it is recommended to prescribe the papers like Bio MEMS, Bio informatics and Hospital Management.
- Instead of Open Elective - III, Professional Elective - V can be added in the VII semester.
- Bio informatics laboratory can be included in the VII semester.
- Subjects named Digital image processing (theory and laboratory) papers can be removed from VII semester.
- Professional Elective- V can be replaced with Open Elective-III.
- Total credits can be reduced from 175 to 170.

The Board of Studies resolved to approve the Curriculum of 2019 of I to VIII for the B.E. Biomedical Engineering programme brought forward by the Chairman incorporating the above changes.

**ITEM 04**

**TO CONSIDER AND APPROVE THE SYLLABI OF I TO IV SEMESTERS FOR THE B.E. (BIOMEDICAL ENGINEERING) PROGRAMMES TO BE OFFERED UNDER R-2019 WITH EFFECT FROM THE ACADEMIC YEAR 2019 – 2020 ONWARDS.**

The Chairman of BME Board of Studies presented the syllabi of I to IV for the B.E. Biomedical Engineering. The Board of Studies reviewed the syllabus and suggested following modifications.

- Dr. M. Rammasubba reddy , Professor suggested to remove the Matrices and Calculus in the first semester and to prescribe Linear Algebra.
- Dr. M. Rammasubba reddy , Professor suggested to change 'Physics for Engineers' as 'Engineering Physics'.
- Dr. M. Rammasubba reddy , Professor suggested to assign Language Elective - I as Technical Communication.
- Dr. Rammasubba reddy, Professor suggested to change the paper 'Fundamentals of Biochemistry' as Biochemistry.
- In the second semester, instead of Engineering Physics - II , it is suggested to have Medical Physics.
- In the second semester, instead of Circuit Theory , it is recommended to have Semiconductor Devices and circuits.
- In the second semester, 'Python Programming' paper can be changed as 'Programming Lanugages using Python'.
- In the second semester, 'Language Elective - II' can be changed as 'Technical Writing'
- Device and circuits Laboratory can be prescribed in the II semester.
- One credit industrial training can be added in the II semester.
- All the laboratory classes can be reduced to 2 hrs.in all semesters.
- Instead of the paper 'Linear Algebra and Numerical Methods', 'Numerical methods' is recommended.
- A paper named 'Signals and Systems', it is better to have 'Biomedical signals and systems'.
- Instead of 'Semiconductor Devices and Circuits', it is recommended to have 'Linear Integrated Circuits'.
- Instead of 'Devices and Circuits Laboratory', it is recommended to have 'Linear Integrated Circuits Laboratory'.
- In the IV semester, Bio sensors and Transducer theory paper can be replaced as Biosensors and

measurements.

- In the IV semester, instead of Bio Physics , it is recommended to have Micro processor and micro controller.
- It is recommended to add Micro processor and controller laboratory in the IV semester.
- It is recommended to add industrial training with one credit.

The Board of Studies resolved to approve the syllabi of I to VIII semesters for the B.E. (Biomedical Engineering) Programme brought forward by the Chairman incorporating the above changes.

**ITEM 05 AS PER THE INSTRUCTIONS FROM DIRECTOR / ANNA UNIVERSITY ACADEMIC COURSES, FOR III TO VIII SEMESTERS OF CURRENT 2<sup>nd</sup> & 3<sup>rd</sup> YEAR STUDENTS OF B.E. (BIOMEDICAL ENGINEERING), THE SAME SYLLABUS UNDER ANNA UNIVERSITY 2017 REGULATIONS WILL BE FOLLOWED.**

The chairman informed that, as per the instructions from Director / Anna university Academic courses, for III to VIII semesters of current 2<sup>nd</sup> & 3<sup>rd</sup> year students of B.E. (Biomedical Engineering), the same syllabus under Anna university 2017 regulations will be followed.

**ITEM 06 TO CONSIDER AND APPROVE THE VISION, MISSION, PEO AND PSO STATEMENTS OF THE BIOMEDICAL ENGINEERING PROGRAMME.**

The Chairman of Biomedical Engineering Board of Studies welcomed all members of Board of Studies. She presented the department Vision, Mission, PEOs and PSO to be discussed followed by introduction of all members present.

### **Department Vision**

To provide technical education and establish a leading platform in the field of Biomedical Engineering, driven by student excellence, innovative programs, impactful research and industry-oriented teaching and training, ensuring quality healthcare delivery and education there by contributing to the prosperity of the nation.

### **Department Mission**

- DM1:** To catalyze interactions between biologists, physical scientists and engineers to benefit medicine and human health.
- DM2:** To impart students with skills for research, design and development of biomedical devices and allied integrated systems for betterment of human society.
- DM3:** To achieve academic distinction in applying engineering principles, science and medicine methods to confront health science challenges and research.
- DM4:** To enable students to be sensitive to the ethical issues pertinent to the biomedical engineering profession.

### **Program Educational Objectives**

- PEO I: Preparation:** To apply and acquire quantitative, qualitative, analytic and critical thinking skills to solve engineering problems for successful career
- PEO II: Core Competence and Professionalism:** To instill contemporary knowledge, professional excellence and competencies in biomedical engineering and its diverse specializations along with related fields.
- PEO III: Breadth:** To provide multidisciplinary knowledge with management principles to identify and create professional opportunities in the field of biomedical research and innovation.
- PEO IV: Learning Environment:** To prepare graduates to work effectively as individuals and as team members in multidisciplinary projects through lifelong learning by upholding ethical standards to meet professional and societal needs.

### **Program Specific Outcomes**

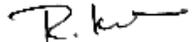
- PSO I: Healthcare Integration:** Apply interdisciplinary skills to integrate advanced technologies in medical imaging, signal processing and biosensors for effective diagnosis, monitoring and treatment.
- PSO II: Biomedical Innovation:** Design and develop biomedical devices that resolves the current societal healthcare problems by applying the concepts of Life sciences, Engineering and Technology.
- PSO III: Innovations through ICT** – To adapt to emerging information and communication technologies (ICT) to innovate ideas and solutions for current societal and scientific issues thereby developing indigenous medical instruments that are on par with the existing technology.

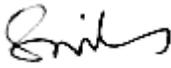
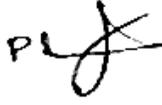
The Board of Studies members reviewed and approved the Vision, Mission, Programme Educational Objectives (PEOs), and Programme Specific Outcomes (PSOs) of the B.E. Biomedical Engineering programme as presented by the Chairman.

**ITEM 07 AS PER THE INSTRUCTIONS FROM DIRECTOR / ANNA UNIVERSITY ACADEMIC COURSES, FOR VII & VIII SEMESTERS OF CURRENT 4<sup>th</sup> YEAR STUDENTS OF B.E. (BIOMEDICAL ENGINEERING), THE SAME SYLLABUS UNDER ANNA UNIVERSITY 2013 REGULATIONS WILL BE FOLLOWED.**

The chairman informed that, as per the instructions from Director / Anna university Academic courses, for VII to VIII semesters of current 4<sup>th</sup> year students of B.E. (Biomedical Engineering), the same syllabus under Anna university 2013 regulations will be followed.

**Verified and approved by**

S.No.	Members	Signature
1	<b>Dr. S.Poorani</b> , Professor, Department of Biomedical Engineering, Erode Sengunthar Engineering College, Perundurai.	
2	<b>Dr. V. Venkatachalam</b> Principal, Erode Sengunthar Engineering College, Perundurai.	
3	<b>Dr. R. Kalaivani</b> , Professor & Head, Department of Electronics and Communication Engineering, Erode Sengunthar Engineering College, Perundurai.	
4	<b>Dr. M. Ramasubba Reddy</b> , Professor, Department of Applied Mechanics, Indian Institute of Technology, Chennai	

5	<b>Dr.J. Krishnan</b> , Professor, Department of Instrumentation Engineering, Annamalai University, Chidambaram, Cuddalore District.	
6	<b>Dr.P.Manimegalai</b> , Associate Professor, Department of Biomedical Engineering, School of Engineering and Technology, Karunya Institute of Technology and Sciences, Coimbatore.	
7	<b>Mr. V. Angappa</b> , Managing Director, Mega Tech Scientific Instruments, 70, Rajunaidu Street, Sivanandha Colony, Coimbatore.	
8	<b>Dr.V.Premchandran</b> , Associate Professor, Department of Biomedical Engineering Engineering, Erode Sengunthar Engineering College, Perundurai.	
9	<b>Mr.R.Dhanapal</b> , Assistant Professor, Department of Biomedical Engineering Erode Sengunthar Engineering College, Perundurai.	
10	<b>Mr.K.Balasubramanian</b> , Assistant Professor, Department of Biomedical Engineering Engineering, Erode Sengunthar Engineering College, Perundurai.	
11	<b>Mr.R.Shankar</b> , Assistant Professor, Department of Biomedical Engineering Erode Sengunthar Engineering College, Perundurai.	
12	<b>Ms.M.Nithya</b> , Assistant Professor, Department of Biomedical Engineering Erode Sengunthar Engineering College, Perundurai.	