SETHU INSTITUTE OF TECHNOLOGY,
PULLOOR, KARIAPATTI – 626115
6th MEETING OF BOARD OF STUDIES IN
DEPARTMENT OF BIOMEDICAL ENGINEERING
HELD ON 23.08.2021

MINUTES OF MEETING

The Sixth Meeting of Board of Studies in the Department of Biomedical Engineering held on 23.08.2021 at 11.30 a.m. through online mode using Google Meet.

The following members were present:

S. No	Name	Designation	Status
1.	Dr.R.Arangasamy	Dean, Professor & HOD/BME	Chairman
2.	Dr.S.P. Angeline Kirubha	Assistant Professor (Selection Grade) Department of Biomedical Engg., SRM Institute of Science and Technology, Chennai.	Academic Expert Member (External)
3.	Dr. A. Umarani	Professor, Department of EIE, KLN College of Engineering, Pottapalayam, Sivaganga Dist.	Academic Expert Member (External)
4.	Mr. S. Kumar	Sr.Manager, Biomedical Application, T&M, TMI Systems, Bangalore	Industry Nominee
5.	Dr. K. Hemalatha	Professor & Dean (Academics)	Member
6.	Dr.N.Kins Burk Sunil	Assistant Professor (Sr. Gr.)	Member
7.	K.Kalanithi	Assistant Professor (Sr. Gr.)	Member
8.	Dr.E.Maheswaran	Assistant Professor (Sr. Gr.)	Member
9.	M. Manimaran	Assistant Professor	Member
10.	R.Nageshwari	Assistant Professor	Member
11.	R.Vasantharani	Assistant Professor	Member
12.	S.S.Aarthi @ Priyadharshini	Assistant Professor	Member

The Agenda for the meeting is

1. To consider and recommend the revised Department Vision, Mission, PEOs, POs and PSOs of the programme.
2. To present the analysis of the Stakeholders feedback regarding curriculum and syllabi
3. To present Mapping of Curriculum and syllabi with Programme Specific Criteria
4. To present the classification of courses having focus on employability/ entrepreneurship/ skill development
5. To consider and approve for the list of examiners from other colleges who could be invited for conducting practical examination/Project Viva, Question Paper Setting, Paper evaluation, Exam invigilation duties.

6. To consider and approve the value added courses imparting transferable and life skills (beyond curriculum and with 30 or more contact hours)
7. To approve the list of New Courses under Regulation 2019 and approve the suggestions for improving the R2019 curriculum structure.
8. Percentage of change in the Curriculum and for each course in Regulation 2019.

The Chairman welcomed the members and presented as per the agenda given above for the Curriculum under Regulation 2019 and Syllabi from fifth to eighth semester courses and elective courses which is to be followed from 2019-20 batch under Autonomous Regulation for B.E. Biomedical Engineering.

1. **Consider and recommend the proposed Department Vision, Mission, PEOs, POs and PSOs**

   The Vision, Mission, PEOs, POs and PSOs of the B.E Biomedical Engineering Programme are discussed.

   1.1   The BOS resolved to approve the Vision, Mission, PEOs, POs and PSOs.

2. **Analysis of Stakeholders feedback regarding curriculum and syllabi**

   The stakeholders' feedback was obtained regarding curricula and syllabi in various formats and sources. The stakeholder's feedbacks and their suggestions are presented and discussed thoroughly. Based on their suggestions and following resolutions are made.

   2.1   The BOS resolved to include a new course Calibration and Testing of Medical Equipments as a one credit course.

3. **Mapping of Curriculum and syllabi with Programme Specific Criteria**

   Mapping of curriculum components with PEOs, POs and Programme Specific Criteria is presented and discussed.

   3.1   The BoS resolved to approve and recommend the mapping of curriculum components with PEOs, POs and Program specific criteria.

4. **Classification of courses having focus on Employability/ Entrepreneurship/ Skill development.**

   The categorization of courses in curriculum R2019 based on the employability/ entrepreneurship/ skill development is presented and discussed in detail.

   4.1   The BoS resolved to approve the classification of R2019 courses which focus on employability/ entrepreneurship/ skill development.

5. **Approval for the list of examiners from other colleges who could be invited for conducting practical examination/Project Viva, Question Paper Setting, Paper evaluation, Exam invigilation duties.**

   The list of examiners is identified from other colleges for conducting practical examination/Project Viva, Question Paper Setting, Paper evaluation, and Exam invigilation duties.

   5.1   The BoS resolved to approve the list of examiners proposed by the Chairperson.

6. **Approval of value added courses imparting transferable and life skills**

   The chairman has presented the list of value added courses beyond curriculum and with 30 or more contact hours.

6.1 The BoS recommended to introduce the following value added courses
- Materialise Mimics - Image processing software for 3D design and modeling.
- Arduino based design of Basic Medical Equipments.
- Biomedical Laboratory Diagnostics
- Biomedical Computing
- Embedded C programming
- PCB Design and Testing
- Robotics

7. **To approve the list of New Courses under Regulation 2019 for B.E Biomedical Engineering and approve the suggestions for improving the R2019 curriculum**

The List of Courses included under Regulation 2019 is presented and discussed.

7.1 The BOS resolved to introduce the following elective courses in the curriculum:
- 19UBM903 Principles of Tissue Engineering
- 19UBM910 Medical Technology
- 19UBM912 Genetic Engineering
- 19UBM920 Brain Computer Interface and virtual reality
- 19UBM924 Body Area Networks and Mobile Healthcare
- 19UBM925 Regenerative Medicine and Ergonomics
- 19UBM928 VLSI System Design
- 19UBM929 Medical Waste management
- 19UBM930 Digital System Design
- 19UBM931 Bio-Signal Processing
- 19UBM932 Principles of Machine Learning
- 19UBM934 Electro Magnetic Interference and Compatibility
- 19UBM935 Smart Healthcare Engineering and Artificial Intelligence

7.2 The BOS resolved to introduce the following one credit courses in the curriculum:
- 19UBM862 Python Programming
- 19UBM868 Occupational Emergency Care
- 19UBM869 Intellectual Property Rights
- 19UBM870 Entrepreneurship in Biomedical Engineering
- 19UBM871 Troubleshooting and Quality Control in Medical Equipments
- 19UBM872 Regulation Perspective of Medical Research
- 19UBM873 Introduction to Fuzzy Logic and Genetic Algorithms
- 19UBM874 Numerical methods for Biomedical Engineers
- 19UBM875 Introduction to International Medical Data Banks
- 19UBM876 Role of Biomedical Engineers in Disaster Management
- 19UBM878 Calibration and Testing of Medical Equipments

7.3 The BOS resolved to modify the following core courses in the curriculum:

> A core course 'Pattern Recognition and Neural Networks' is shifted to professional elective.
> A core course 'Human Assist Devices' is shifted to professional elective.

7.4 The proposed syllabi for Fifth to Eighth semester professional core courses, Professional elective courses and open elective courses offered by the department are presented and discussed. The BOS resolved to approve the syllabi for all the above said courses.

8. **Percentage of change in the overall curriculum and Syllabi for third and fourth year courses in Regulation 2019.**

8.1 The Percentage of change in the curriculum for Regulation 2019 is proposed and discussed. The BOS resolved to approve the changes listed below (comparison from R-2015):

Course Category	No. of courses in the curriculum	No. of courses modified/newly introduced	Percentage of change
Humanities and Social Sciences (HS)	7	2	28.6 %
Basic Science courses (BS)	9	2	22.2 %
Engineering Science courses (ES)	8	3	37.5 %
Professional Core courses (PC)	28	4	14.3 %
Professional Elective (PE)	35	15	42.9 %
Open Elective (OE)	5	1	20 %
Project work (P)	5	3	60 %
Mandatory Courses (MC)	5	3	60 %
One Credit Courses	18	10	55.6 %
Inter Disciplinary Courses	2	-	-
TOTAL	122	42	34.1 %

8.2 The percentage change in the proposed syllabi for V semester professional core courses offered by the department are presented and discussed. The BOS resolved to approve the changes listed below:

Course code	Name of the Course	% Change in Syllabus
19UBM501	Microprocessors and Microcontrollers	28 %
19UBM502	Diagnostic and Therapeutic Equipments - II	10 %
19UBM503	Bio Control System	23 %
13UBM504	Principles of Digital Signal Processing	20 %
19UBM507	Creative Thinking and Innovation	100 %
19UBM508	Microprocessors and microcontrollers Laboratory	10 %
19UBM509	Diagnostic and Therapeutic Equipments Laboratory	10 %
19UBM510	Signal Processing Laboratory	10 %
	Consolidated Changes	26.4 %

8.3 The percentage change in the proposed syllabi for VI semester professional core courses offered by the department are presented and discussed. The BOS resolved to approve the changes listed below:

Course code	Name of the Course	% Change in Syllabus
19UBM601	Medical Imaging Equipments	3 %
19UBM602	Biomechanics	2 %
19UBM607	Product Development Project	--
	Consolidated Changes	1.7 %

8.4 The percentage change in the proposed syllabi for VII semester professional core courses offered by the department are presented and discussed. The BOS resolved to approve the changes listed below:

Course code	Name of the Course	% Change in Syllabus
19UBM702	Hospital Management	40 %
19UBM703	Image Processing Techniques	16 %
19UBM707	Summer Internship	100 %
19UBM708	Hospital Training	--
19UBM709	Image Processing Laboratory	35 %
	Consolidated Changes	38.2 %

8.5 The percentage change in the proposed syllabi for VIII semester professional core courses offered by the department are presented and discussed. The BOS resolved to approve the changes listed below:

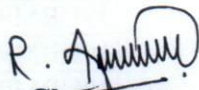| Course code	Name of the Course	% Change in Syllabus
19UBM801	Project work	--
	Consolidated Changes	--

8.6 The percentage change in the proposed syllabi for professional elective courses offered by the department are presented and discussed. The BOS resolved to approve the changes listed below:

Course code	Name of the Course	% Change in Syllabus
19UBM901	Bio-MEMS and Nano Electronics	2 %
19UBM902	Clinical Engineering	3 %
19UBM903	Principles of Tissue Engineering	100 %
19UBM904	Biomaterials and Artificial Organs	10 %
19UBM905	Pattern Recognition and Neural Networks	--
19UBM906	Forensic Science	15 %
19UBM907	Drug Delivery Systems	10 %
19UBM908	Nuclear Medicine	3 %
19UBM909	Medical Radiation Safety Engineering	10 %
19UBM910	Medical Technology	100 %
19UBM911	Medical Optics	6 %
19UBM912	Genetic Engineering	100 %
19UBM913	Communication Engineering	18 %
19UBM914	Biometric Systems	23 %
19UBM915	Medical Informatics	34 %
19UBM916	Telemedicine	10 %
19UBM917	Rehabilitation Engineering and Robotics	50 %

19UBM918	Virtual Bio-Instrumentation	8 %
19UBM919	Medical Embedded Systems	84 %
19UBM920	Brain Computer Interface and virtual reality	100 %
19UBM921	Neuroscience	33 %
19UBM922	Cancer Biology	14 %
19UBM923	Human Assist Devices	40 %
19UBM924	Body Area Networks and Mobile Healthcare	100 %
19UBM925	Regenerative Medicine and Ergonomics	100 %
19UBM926	Physiological Modeling	34 %
19UBM927	Big Data and IOT in Medical Applications	1 %
19UBM928	VLSI System Design	100 %
19UBM929	Medical Waste management	100 %
19UBM930	Digital System Design	100 %
19UBM931	Bio-Signal Processing	100 %
19UBM932	Principles of Machine Learning	100 %
19UBM933	Bio Statistics	10 %
19UBM934	Electro Magnetic Interference and Compatibility	100 %
19UBM935	Smart Healthcare Engineering and Artificial Intelligence	100 %
	Consolidated Changes	49.4 %

8.7   The percentage change in the proposed syllabi for open elective courses offered by the department are presented and discussed. The BOS resolved to approve the changes listed below:

Course code	Name of the Course	% Change in Syllabus
19UBM971	Biomedical Instrumentation Systems	50 %
19UBM972	Computer Applications in Medicine	1 %
19UBM973	Forensic Science in Health Care	33 %
19UBM974	Radiotherapy and Nuclear Medicine	20 %
19UBM975	Occupational Safety and Health in Public Health Emergencies	100 %
	Consolidated Changes	40.8 %

R. A[signature]

Chairman
Board of Studies

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Bio Medical Engineering
Sethu Institute of Technology
Kariapatti - 626 115.