



**SETHU INSTITUTE OF TECHNOLOGY,
PULLOOR, KARIAPATTI – 626115**
5th MEETING OF BOARD OF STUDIES IN
DEPARTMENT OF BIOMEDICAL ENGINEERING
HELD ON 19.09.2020



MINUTES OF MEETING

The Fifth Meeting of Board of Studies in the Department of Biomedical Engineering held on 19.09.2020 at 02.30 p.m. through online mode using Microsoft Teams platform. The following members were present:

S. No	Name	Designation	Status
1.	Dr.R.Arangasamy	Dean, Professor & HOD/BME	Chairman
2.	Dr.G.Uma	Professor, Department of Instrumentation and Control Engineering, National Institute of Technology, Tiruchirappalli.	Anna University Nominee
3.	Dr.S.P. Angeline Kirubha	Assistant Professor (Selection Grade) Department of Biomedical Engg., SRM Institute of Science and Technology, Chennai.	Academic Expert Member (External)
4.	Dr. A. Umarani	Professor, Department of EIE, KLN College of Engineering, Pottapalayam, Sivaganga Dist.	Academic Expert Member (External)
5.	Mr. S. Kumar	Sr.Manager, Biomedical Application, T&M, TMI Systems, Bangalore	Industry Nominee
6.	Dr. K. Hemalatha	Professor & Dean (Academics)	Member
7.	Dr.N.Kins Burk Sunil	Assistant Professor (Sr. Gr.)	Member
8.	K.Kalanithi	Assistant Professor (Sr. Gr.)	Member
9.	Dr.E.Maheswaran	Assistant Professor (Sr. Gr.)	Member
10.	M. Manimaran	Assistant Professor	Member
11.	R.Nageshwari	Assistant Professor	Member
12.	R.Vasantharani	Assistant Professor	Member
13.	R.Sushmitha	Assistant Professor	Member
14.	C.Bilna	Assistant Professor	Member
15.	M.Monica	Assistant Professor	Member
16.	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 UG and PG Programmes.
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 for third and fourth semesters 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 Medical Instrumentation System Design and Calibration (19UBM930) in the Professional elective.

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. (List of courses enclosed in Annexure-I)

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

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 core courses in the curriculum:

- 19UBM408 - Sensors and Biomedical Instrumentation Laboratory
- 19UME701 - Project Management and Finance

- 7.2 The BOS resolved to introduce the following elective courses in the curriculum:

- 19UBM927 - Big Data and IoT in Medical Applications
- 19UBM928 - Medical Coding and Transcription
- 19UBM929 - Medical Waste management
- 19UBM930 - Medical Instrumentation System Design and Calibration
- 19UBM931 - Bio-Signal Processing
- 19UBM932 - Principles of Machine Learning

- 19UBM933 - Bio Statistics
- 19UBM934 - Digital System Design
- 19UBM935 - VLSI System Design for Biomedical Applications

7.3 The BOS resolved to introduce the following one credit courses in the curriculum:

- 19UBM875 - Introduction to International Medical Data Banks
- 19UBM876 - Role of Biomedical Engineers in Disaster Management

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

- Human Physiology experiments are added with 'Biochemistry Laboratory' and renamed as 'Biochemistry Human Physiology Laboratory' (19UBM308).
- A core course 'Pattern Recognition and Neural Networks' is shifted to professional elective and the experiments regarding 'Pattern Recognition' are removed from the laboratory course 'Image Processing and Pattern Recognition Laboratory' and renamed as 'Image Processing Laboratory' (19UBM709).

7.5 The proposed syllabi for Third and Fourth semester professional core courses offered by the department are presented and discussed. The BOS resolved to approve the syllabi for third and fourth semester professional core courses.

7.6 The BOS resolved to introduce the following Mandatory courses in the curriculum for various undergraduate programmes:

Semester	Course code	Name of the Course	Applicable Programmes
III	19UGM331	Biology for Engineers	Bio Medical Engineering Bio Technology
	19UGM332	Biology for Engineering Applications	Agriculture Engineering Civil Engineering Chemical Engineering Electronics and Communication Engg. Electrical and Electronics Engineering Information Technology
IV	19UGM432	Basics of Biology for Engineering Applications	Computer Science and Engineering Mechanical Engineering Computer Science and Business Systems

8. Percentage of change in the overall curriculum and Syllabi for third and fourth semester 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):

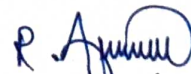
Course Category	No. of courses in the curriculum	No. of courses modified/newly introduced	Percentage of change
Humanities and Social Sciences (HS)	7	2	28.6 %
Basic Science courses (BS)	9	2	22.2 %
Engineering Science courses (ES)	8	3	37.5 %
Professional Core courses (PC)	28	4	14.3 %
Professional Elective (PE)	34	17	50 %
Open Elective (OE)	5	1	20 %
Project work (P)	5	3	60 %
Mandatory Courses (MC)	5	3	60 %
One Credit Courses	16	9	56.3 %
Inter Disciplinary Courses	2	-	-
TOTAL	119	44	34.9 %

8.2 The percentage change in the proposed syllabi for III 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
19UBM302	Human Anatomy and Physiology	20 %
19UBM303	Biochemistry	11 %
19UBM304	Biomedical Instrumentation	08 %
19UBM305	Semiconductor Devices and Circuits	04 %
19UBM306	Sensors and Measuring Techniques	36 %
19UBM307	Semiconductor Devices and Circuits Laboratory	35 %
19UBM308	Biochemistry and Human Physiology Laboratory	44 %
Consolidated Changes		22.57 %

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

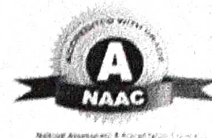
Course code	Name of the Course	% Change in Syllabus
19UBM402	Analog and Digital Integrated Circuits	16 %
19UBM403	Medical Physics	12 %
19UBM404	Principles of Signals and Systems	--
19UBM405	Pathology and Microbiology	16 %
19UBM406	Diagnostic and Therapeutic Equipments – I	10 %
19UBM407	Analog and Digital Integrated Circuits Laboratory	20 %
19UBM408	Sensors and Biomedical Instrumentation Laboratory	100 %
19UBM409	Pathology and Microbiology Laboratory	38 %
Consolidated Changes		26.5 %



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Minutes of Meeting - Annexure-I

**The Categorization of Courses in Curriculum R-2019
based on the Employability/ Entrepreneurship/ Skill development**

S.No.	Course Code	Course Name	Categorization of Courses		
			Skill development	Employability	Entrepreneurship
1.	19UBM303	Biochemistry	✓	✓	
2.	19UBM304	Biomedical Instrumentation	✓	✓	
3.	19UBM305	Semiconductor Devices and Circuits	✓	✓	
4.	19UBM306	Sensors and Measuring Techniques	✓	✓	
5.	19UBM307	Semiconductor Devices and Circuits Laboratory	✓	✓	
6.	19UBM308	Biochemistry and Human Physiology Laboratory	✓	✓	
7.	19UBM402	Analog and Digital Integrated Circuits	✓	✓	
8.	19UBM405	Pathology and Microbiology	✓	✓	
9.	19UBM406	Diagnostic and Therapeutic Equipments – I	✓	✓	
10.	19UBM408	Sensors and Biomedical Instrumentation Laboratory	✓	✓	
11.	19UBM409	Pathology and Microbiology Laboratory	✓	✓	
12.	19UBM407	Analog and Digital Integrated Circuits Lab	✓	✓	
13.	19UBM410	Technical Seminar	✓	✓	✓
14.	19UBM501	Microprocessors and Microcontrollers	✓	✓	
15.	19UBM502	Diagnostic and Therapeutic Equipments – II	✓	✓	
16.	19UBM503	Bio Control System	✓		
17.	19UBM504	Principles of Digital Signal Processing	✓		
18.	19UBM507	Creative Thinking and Innovation	✓	✓	✓
19.	19UBM508	Microprocessors and Microcontrollers Laboratory	✓	✓	
20.	19UBM509	Diagnostic and Therapeutic Equipments Laboratory	✓	✓	✓

S.No.	Course Code	Course Name	Categorization of Courses		
			Skill development	Employability	Entrepreneurship
21.	19UBM601	Medical Imaging Equipments	✓	✓	✓
22.	19UBM602	Biomechanics	✓	✓	
23.	19UBM607	Product Development Project	✓	✓	✓
24.	19UBM702	Hospital Management	✓	✓	✓
25.	19UBM703	Image Processing Techniques	✓		
26.	19UBM707	Summer Internship	✓	✓	✓
27.	19UBM708	Hospital Training	✓	✓	✓
28.	19UBM709	Image Processing Laboratory	✓		
29.	19UBM801	Project work	✓	✓	✓
30.	19UBM901	Bio-MEMS and Nano Electronics	✓		
31.	19UBM902	Clinical Engineering	✓	✓	✓
32.	19UBM903	Principles of Tissue Engineering	✓		
33.	19UBM904	Biomaterials and Artificial Organs	✓	✓	
34.	19UBM905	Pattern Recognition and Neural Networks	✓		
35.	19UBM906	Forensic Science	✓	✓	✓
36.	19UBM907	Drug Delivery Systems	✓	✓	
37.	19UBM909	Medical Radiation Safety Engineering	✓	✓	
38.	19UBM911	Medical Optics	✓	✓	
39.	19UBM912	Genetic Engineering	✓		
40.	19UBM914	Biometric Systems	✓	✓	
41.	19UBM915	Medical Informatics	✓	✓	
42.	19UBM916	Telemedicine	✓	✓	
43.	19UBM917	Rehabilitation Engineering and Robotics	✓	✓	✓
44.	19UBM918	Virtual Bio-Instrumentation	✓		
45.	19UBM919	Medical Embedded Systems	✓	✓	
46.	19UBM920	Brain Computer Interface and virtual reality	✓	✓	✓
47.	19UBM922	Cancer Biology	✓	✓	
48.	19UBM923	Human Assist Devices	✓	✓	✓
49.	19UBM924	Body Area Networks and Mobile Healthcare	✓	✓	✓
50.	19UBM925	Regenerative Medicine and Ergonomics	✓	✓	✓
51.	19UBM926	Physiological Modeling	✓		
52.	19UBM927	Big Data and IOT in Medical Applications	✓	✓	
53.	19UBM928	VLSI System Design	✓	✓	

S.No.	Course Code	Course Name	Categorization of Courses		
			Skill development	Employability	Entrepreneurship
54.	19UBM929	Medical Waste management	✓	✓	✓
55.	19UBM930	Digital System Design	✓		
56.	19UBM931	Bio-Signal Processing	✓		
57.	19UBM932	Principles of Machine Learning	✓	✓	
58.	19UBM933	Bio Statistics	✓	✓	
59.	19UBM934	Electro Magnetic Interference and Compatibility	✓		
60.	19UBM935	Smart Healthcare Engineering and Artificial Intelligence	✓	✓	✓


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