VIGNAN'S
Foundation for Science, Technology & Research
(Deemed to be University)
Estd. u/S 3 of UGC Act 1956

DEPARTMENT OF BIOMEDICAL ENGINEERING

Date: 06.05.2023

Minutes of Board of Studies Meeting

Board of Studies (BoS) meeting of B.Tech. Biomedical Engineering (BME) programme was conducted on 06.05.2023 in blended mode from 10.00AM to 12.00PM. Physical meeting venue Biomedical Instrumentation Lab, 3rd floor, H-Block, VFSTR and virtual meeting link https://us06web.zoom.us/j/8698085246?pwd=a0trWWRGVUZUcDFuVFRkZ0NuUVFTdz09).

Agenda of the BoS Meeting:

1. Briefing on R22 curriculum and modifications
2. Formative and Summative Assessment results (II BME SEM-1)
3. III & IV BME Pass percentage
4. Identification of tough Courses & Remedial actions
5. CO-PO-PSO-PEO
6. SWAYAM-NPTEL Courses identification and
7. 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	Designation	Signature
1.	Dr.G. Sitaramanjaneya Reddy, Prof and Head, BME, 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. N. Usha Rani, Professor & Dean SEEC	Internal Member	
5.	Dr. B. Seetha Ramanjaneyulu, Professor, ECE	Internal Member	
6.	Dr. P.Sambiah, Associate Professor, ECE	Nominee (Dean-R&D)	

7.	Ms. Prathiba Jonnala, Assistant Professor, BME	Member Secretary	
8.	Ms. K.Hima Bindu, Assistant Professor, BME	Internal Member	
9.	Mr. Sanjeeth Kumar, Assistant Professor	Internal Member	

All the mentioned members were present for the meeting.

Chairperson Dr.G. Sitaramanjaneya Reddy, Professor and Head, Department of BME, 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 and the Draft BoS approved R22 B-Tech Biomedical Engineering syllabus and the agenda points.

The following points were discussed in the BoS meeting:

1. R22 curriculum and modifications.
2. Curriculum structure with credits, credits distribution.
3. Assessment methods (Formative & Summative).
4. Formative and Summative Assessment results (II BME SEM-1)
5. III & IV BME Pass percentage.
6. Identification of tough Courses & Remedial actions.
7. CO-PO-PSO-PEO.
8. SWAYAM-NPTEL Courses identification.

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

- Recommended to change the syllabus of the new course "Python program for medical applications renamed as Medical **data analysis with Python programing**" which is going to be introduced as department elective and advised the members to cover wide range of concepts.
- Recommended and suggested that the syllabus emphasis should be more on biomedical related data and respective applications.
- Minor courses offered by the BME programme should be the general version of core subjects.
- Advised to combine the syllabus of Medical Imaging Modalities and Medical Image Processing and make it in to a single course for Minor.
- Honors courses should be related to the most recent, advanced, in-depth biomedical engineering courses, and should be research oriented also should cover the concepts beyond their curriculum.

- Appreciated the initiative of BME department, hospital training program for practical exposer to students.
- Approved the proposed list of SWAYAM-NPTEL courses

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

- Suggested to modify the proposed course syllabus of "Python program for medical applications renamed as **Medical data analysis with Python programing** " as department elective and recommended to include wide variety of concepts and libraries like Keras, Tensorflow, Pytorch etc.
- Recommended that the honors courses should be research-oriented, relevant to the most recent, sophisticated, in-depth biomedical engineering courses, and they should cover ideas that go above and beyond their curricula.
- Suggested to include fundamental knowledge of the core biomedical subject as well as applications in each module.
- It was advised to integrate the syllabuses of the two disciplines to create a single course rather than eliminating superfluous courses like Medical Image Processing and Medical Imaging Modalities.
- Suggested that the Biomedical Engineering program's minors should be reorganized, and a simplified syllabus is suggested to make things easier for the students. Additionally, extracurricular components should be added.
- Appreciated the progress of the BME students, the pass percentage, and CO-PO mapping ratio since 2015-2019, 2016-2020,2017-2021, and 2021-2022 batches.
- Approved the proposed list of SWAYAM-NPTEL courses

3. Suggestions from internal members

The syllabus of the new course "Python program for medical applications renamed as **Medical data analysis with Python programing**" which is going to be introduced as department elective is very primitive which can be completed in two weeks, for which internal members advised to include more components on data formats, data science, object oriented concepts.

- The internal committee suggested to rename the subject title similar to Data Science with Programming, Data Analytics with Python programming.
- Suggestion were given to incorporate packages like pandas, visualizations, numpy etc., in the syllabus of the proposed elective course.

- Minors of the Biomedical Engineering programme should be re-organized and lighter version of the syllabus is advisable so as to facilitate the students and components beyond the syllabus need to be included.
- Pre-requisites for all the minor courses to be included.
- 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:

BoS members approved the revised syllabus of the proposed department elective "Python program for medical applications renamed as **Medical data analysis with Python programing**", and accepted to include in course curriculum structure of B.Tech., Biomedical Engineering programme. Department elective, List of Honour Courses, List of Minor - Medical Instrumentation, and proposed SWAYAM – NPTEL online course Curriculum structure is provided in Appendix-I.

1. Major reformation has taken place in the curriculum in department electives, Honour degree, and Minor degree with additional course and project work included.
2. Minor degree course is restructured in the curriculum with related courses two courses added, which is oriented towards practice based learning in laboratories and Project work was included instead of 5th course to fulfill the total 20 credits.
3. Project work was included in the Honors degree course.
4. Pre-requisites for all the minor courses to be included.
5. Approved list of SWAYAM – NPTEL courses are included in Appendix-I

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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APPENDIX I
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
17	**Medical data analysis with Python programing**	**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
8	**Project work**	**0**	**2**	**6**	**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
6	**Project work**	**0**	**2**	**6**	**4**

SWAYAM – NPTEL ONLINE Courses

S.No	Course Title	Weeks	C
1	Neuroscience of Human Movements	12	3
2	Electronic modules for industrial applications using Op AMP	12	3
3	Computational Neuroscience	12	3
4	Pattern Recognition And Application	12	3
5	Real-Time Digital Signal Processing	12	3
6	Artificial Intelligence : Search Methods For Problem Solving	12	3
7	Transducers for Instrumentation	12	3
8	Electronic systems for cancer Diagnosis	12	3
9	Deep Learning for Computer Vision	12	3
10	Enclosure Design of Electronics Equipment	12	3
11	Medical Image Analysis	12	3
12	Deep Learning For Visual Computing	12	3
13	Advanced Neural Science for Engineers	12	3
14	Embedded System Design	12	3
15	Computer Vision and Image Processing - Fundamentals and Applications	12	3
16	Biophotonics	12	3

Chairperson