Vel Tech Rangarajan & Dr.Sagunthala R&D Institute of Technology
Department of Bio Medical Engineering (VTUR15 Curriculum)

Foundation Courses of VTUR15						
Sl. No.	**Course Code**	**Course Name**	**Class distribution per week**			**C**
			L	**T**	**P**	
1	1150EN102	Technical Communication	3	0	0	3
2	1150PH101	Engineering Physics	3	0	0	3
3	1150CH101	Engineering Chemistry	3	0	0	3
4	1150CH103	Environmental Studies	3	0	0	3
5	1150MA103	Engineering Mathematics-II	3	2	0	4
6	1150MA104	Transform and Partial Differential Equation	2	2	0	3
7	1150EC101	Basic Electronics Engineering	2	0	0	2
8	1150EE101	Basic Electrical Engineering	2	0	0	2
9	1150CE101	Basic Civil Engineering	2	0	0	2
10	1150ME101	Basic Mechanical Engineering	2	0	0	2
11	1150ME103	Engineering Materials	2	0	0	2
12	1150MG101	Project Management and Finance	3	0	0	3
13	1150GE101	Biology for Engineers	2	0	0	2
14	1150GE102	Design Thinking	3	0	0	3
Integrated Courses						
15	1150EN201	Technical English	2	0	2	3
16	1150MA201	Applied Statistics	2	0	2	3
17	1150MA202	Engineering Mathematics-I	2	2	2	4
18	1150CS201	Problem Solving using C	1	2	2	3
19	1150ME202	Engineering Graphics	1	2	4	4
20	1150GE205	Introduction to Engineering	1	0	4	3
Laboratory Courses						
21	1150PH302	Engineering Physics Laboratory	0	0	2	1
22	1150CH302	Engineering Chemistry Laboratory	0	0	2	1
23	1150EE302	Basic Electrical and Electronics Engineering Laboratory	0	0	2	1
Total Credits						**60**

S.No	Course Code	Program Core	Class distribution per week			C
			L	T	P	
1	1151BM101	Anatomy and Human Physiology	3	0	0	3
2	1151BM102	Biochemistry	3	0	0	3
3	1151BM103	Digital Electronics	3	0	0	3
4	1151BM104	Electric Circuit Theory	3	2	0	4
5	1151BM105	Analog Electronics and Integrated Circuits	3	0	0	3
6	1151BM106	Engineering Mechanics	2	2	0	3
7	1151BM107	Bio Sensors and Transducers	3	0	0	3
8	1151BM108	Signals and Systems	3	2	0	4
9	1151BM109	Microprocessor and Microcontroller	2	2	0	3
10	1151BM110	Digital Signal Processing	2	2	0	3
11	1151BM111	Bio Medical Instrumentation	3	0	0	3
12	1151BM112	Diagnostic and Therapeutic Equipments-I	3	0	0	3
13	1151BM113	Digital Electronics	3	0	0	3
14	1151BM114	Diagnostic and Therapeutic Equipments -II	3	0	0	3
15	1151BM115	Radiological Equipments	3	0	0	3
16	1151BM116	Diagnostic and Therapeutic Equipments -I	3	0	0	3
17	1151BM117	Diagnostic and Therapeutic Equipments -II	3	0	0	3
Program Core Integrated Courses						
18	1151BM201	Pathology and Microbiology	2	0	2	3
19	1151BM202	Artificial Neural Networks	3	0	2	4
20	1151BM203	Image Processing	3	0	2	4
Laboratory Courses						
21	1151BM301	Biochemistry and Physiology Laboratory	0	0	2	1
22	1151BM302	Analog Electronics and Integrated Circuit Laboratory	0	0	2	1
23	1151BM303	Microprocessor and Microcontroller Laboratory	0	0	2	1
24	1151BM304	Digital Signal Processing Laboratory	0	0	2	1
25	1151BM305	Biomedical Instrumentation Laboratory	0	0	2	1
Total Credits						**60**

S.No	Course Code	Program Electives	Class distribution per week			C
			L	T	P	
1	1152BM101	Hospital Management	3	0	0	3
2	1152BM102	Telehealth Technology	3	0	0	3
3	1152BM103	Medical Ethics	3	0	0	3
4	1152BM104	Body Area Networks	3	0	0	3
5	1152BM105	Introduction to Nanotechnology	3	0	0	3
6	1152BM106	Rehabilitation Engineering	3	0	0	3
7	1152BM107	Robotics in Medicine	3	0	0	3
8	1152BM108	Biomedical Informatics	3	0	0	3
9	1152BM109	Precision Healthcare Technology	3	0	0	3
Program Elective Integrated Courses						
10	1152BM201	Digital Imaging and Communication in Medicine	1	0	4	3
11	1152BM202	Bio Signal Processing Instrumentation	1	0	4	3
12	1152BM203	Brain Computer Interface	1	0	4	3
13	1152BM204	Biomedical Computational Modelling	1	0	4	3

S.No	Course Code	Allied Electives	Class distribution per week			C
			L	T	P	
1	1153BM201	Bio Signal Processing Instrumentation	2	0	2	3
2	1153BM202	Brain Computer Interface	2	0	2	3
3	1153BM101	Body Area Networks	3	0	0	3
4	1153BM102	Environmental Conservation	3	0	0	3
5	1153BM103	Telehealth Technology	3	0	0	3
6	1153BM104	Remote Health Technology	3	0	0	3
Institute Electives						
1	1154BM101	Brain Computer Interface	2	0	0	2
2	1154BM102	Plant Biodiversity, Bioprospecting and the Sustainable Development	1	0	0	1
3	1154BM103	Telehealth Technology	3	0	0	3
4	1154BM301	Biomedical Laboratory	0	0	2	1
5	1154BM104	Telehealth Technology	3	0	0	3

Program Educational Objectives

Our Graduates will be

1. Employed in Biomedical Engineering related fields or in other career fields in industry, government organizations or academe (Career accomplishment)
2. Able to continue to enhance their professional skills in their chosen profession by participating in professional organizations, completing additional college courses, or completing industry-sponsored short courses. (Professional accomplishment)
3. Active members to serve the society (Professional)
4. Solve critical problems in the domain of biomedical engineering (Professional)

Program Outcomes

Engineering Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions**: Design solutions for complex engineering problems and

   design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental

   considerations.
4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability**: Understand the impact of the professional engineering solution in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage

Program specific outcomes

1. Apply critical reasoning to identify, solve, design solution for problems in BCI biomedical engineering;
2. Design an effective interface between living and non living things