4. Graduate Profile and Construction of Program Learning Outcomes (PLO)

4.1 Graduate Profile

The designed Curriculum is aimed to provide graduate with good qualification. Graduation profile of BoBME ITS has been designed based on study of Biomedical Engineering Fields and Biomedical Engineers professional qualification issued by IEEE Engineering in Medicine and Biology Society (IEEE EMBS), IEEE EMBS Biomedical Engineer Licensure https://www.embs.org/pulse/articles/professional-licensure-biomedical-engineers/, IEEE Career Guide: Designing a career in Biomedical Engineering, IEEE EMBS, 2003. Other Professional Qualification document that supports our Graduate Profile design is a document of local Hospital in Batu Malang, East Java. In the document the hospital offered job vacancy for biomedical engineer graduated by ITS to join the vacancy.

Table 2. Graduate Profile

No	Graduate Profile (GP)	Graduate Profile Description
1	GP-1	Biomedical Engineer
2	GP-2	Clinician Engineer
3	GP-3	Assistant Researcher
4	GP-4	Academicians
5	GP-5	Rehabilitation Engineer

4.2 Construction of Program Learning Outcomes (PLO)

Table 3. Program Learning Outcome of Study Program accordance to SN Dikti

Number	Description of Program Learning Outcome (PLO)
ASPECT OF ATTITUDES	
S1	Devoted to God Almighty and be able to demonstrate religious attitude;
S2	Upholding human values in performing tasks based on religion, morals and ethics;
S3	Contribute to improving the life's quality of society, nation, state, and civilization based on Pancasila;
S4	Serve as a citizen of pride and patriotism, nationalism and a sense of responsibility to the state and nation;
S5	Respect for cultural diversity, views, religions, and beliefs, as well as the original findings or an opinion of other person;
S6	Cooperate and have social sensitivity and concern for the community and the environment;
S7	Obeying the law and discipline in the life of society and state
S8	Internalize the values, norms, and academic ethics;
S9	Demonstrate a responsible attitude on the job of his expertise independently;
S10	Internalize the spirit of independence, innovation, effort, and entrepreneurship;
S11	Strive hard to achieve the perfect result; and
S12	Implement teamwork in order to make the most of their potential.

ASPECT OF GENERAL SKILLS	
KU1	Ability to apply logical thinking, critical, systematic, and innovative in the context of the development or implementation of science and technology that observe and apply the humanities value corresponding to the field of Biomedical Engineering;
KU2	Ability to show the standalone performance, qualitative, scalable, and systematic;
KU3	Ability to assess the implications of the development or implementation of science and technology that observe and apply the value of the humanities in accordance with the field of Biomedical Engineering by the rules, procedures and scientific ethics in order to generate solutions, ideas, design or art criticism;
KU4	Ability to develop a scientific description of study's results mentioned above in the form of a thesis or final project report, and upload them to college's web;
KU5	Ability to make right decisions in the context of the settlement of problems in the field of Biomedical Engineering, based on the analysis of information and data;
KU6	Ability to maintain and develop a network with mentors, colleagues, peers both inside and outside the institution.
KU7	Able to be responsible for the achievement of the group's work and conduct supervision and evaluation of the completion of the work assigned to workers under his responsibility;
KU8	Able to perform self-evaluation process of the working groups under his responsibility, and are able to manage learning independently;
KU9	Able to documenting, storing, securing, and found data to ensure the validity and prevent plagiarism;
KU10	Able to develop themselves and compete at the national and international levels;
KU11	Able to implement the principles of sustainability (sustainability) in developing knowledge;
KU12	Able to implement information and communication technology in the context of the implementation of their work; and
KU13	Able to apply entrepreneurship and understand technology-based entrepreneurship.
ASPECT OF SPECIAL SKILLS	
KK1	being able to apply knowledge in the field of engineering and medical to solve engineering problems related to biomedical instrumentation, medical rehabilitation techniques, medical imaging and image processing, and medical informatics;
KK2	being able to identify the source of problems in biomedical instrumentation, medical rehabilitation techniques, medical imaging and image processing, and medical informatics through the process of investigation, analysis, data interpretation, and information based on engineering principles;
KK3	capable of performing research that includes the identification, formulation, and analysis of engineering problems in biomedical instrumentation, medical rehabilitation techniques, medical imaging and image processing, and medical informatics;

KK4	being able to formulate solutions for the problems of biomedical instrumentation, medical rehabilitation techniques, medical imaging and image processing, and medical informatics by utilizing the integration of the latest technology and taking into account the aspects of economic, public health and safety, culture, social, and environment;
KK5	capable of designing biomedical instrumentation, medical rehabilitation techniques, medical imaging and image processing, and medical informatics by integrating the concepts of intelligent system and considering the aspects in engineering and clinical fields;
KK6	capable of optimizing resources and utilizing tools of engineering design and analysis based on appropriate supporting technology for engineering activities on biomedical instrumentation, medical rehabilitation techniques, medical imaging and image processing, and medical informatics; and
KK7	being able to work together in a multidisciplinary manner that involves engineering and medical fields guided by high ethical standards.
ASPECT OF KNOWLEDGES	
P1	understand the current principles and issues in leadership, economic, social, humanity, and ecology in general;
P2	understand the concept of natural sciences and application principles of engineering mathematics on the analysis and design of biomedical instrumentation, medical rehabilitation techniques, medical imaging and image processing, and medical informatics;
P3	understand the basic theoretical concepts and ethics of conduct in biological and medical sciences which required in biomedical engineering disciplines;
P4	understand the theoretical concepts of engineering-science, engineering principles, and engineering design required for the analysis and design of biomedical instrumentation, medical rehabilitation techniques, medical imaging and image processing, and medical informatics;
P5	understand the principles and techniques of designing biomedical instrumentation, medical rehabilitation techniques, medical imaging and image processing, and medical informatics; and
P6	understand the knowledge of the newest and latest technological developments in the field of biomedical instrumentation, medical rehabilitation techniques, medical imaging and image processing, and medical informatics.