BMET -Program Manual

1 Introduction

Department of Medical Equipment Technology (MET) at CAMS Al-Majmaah offers Bachelor of Science (BS) degree program in Biomedical Equipment Technology. Biomedical Equipments Technology is an interdisciplinary field which not only integrates fundamental scientific knowledge with medicine and biology, but also stimulates the interaction of engineers from all of the traditional disciplines. From its early days focused on the development of medical devices, biomedical engineering has developed into an area of extreme breadth and diversity. Biomedical Equipment Technology Bachelor may work to develop biomedical instrument, write software to analyze medical data, or may choose careers in the medical device or biotech industry, might further continue on to pursue an academic or professional degree. Additionally, our graduates will have an understanding, appreciation and motivation for ethical responsibility at all levels (individual, organizational, societal) as well as an appreciation of the importance of lifelong learning.

2 Department Mission

Offer a premier biomedical Equipment Technology program that makes the graduates highly competent and enhances the quality of life in their society by leveraging scientific research, to achieve sustainable development.

3 Department Goals

- Preparing graduates with core concepts, relevant practice, skillsets, and values in the Biomedical Equipment Technology profession.
- Providing an appropriate environment for scientific research, community service and sustainable development.

4 Biomedical Equipment Technology Program

4.1 Introduction

Medical technology is becoming increasingly important in health care. Our educational program focuses on the development of new biomedical technology for life science research and advanced health care. In addition, to traditional areas of mechanical and electrical engineering; Students will have the opportunity to take advanced courses that include medical instrumentation, biosensors, image processing, signal processing, instrumentation devices, nano-devices and nano-sensors. It provides a strong foundation in Engineering science and Informatics that flows smoothly into

graduate studies in Biomedical Technology Sciences. This program gives the opportunity to students to see the interdependence of different biomedical engineering disciplines in the development of modern medical devices Individuals completing this program will be able to work as engineers in the rapidly expanding medical equipments, and systems industry. Others could pursue master program in biomedical fields, medical sciences or biomedical informatics. Using this background to enter any of these areas will assure a long-term appreciation of the interdisciplinary approach.

4.2 Program Educational Objectives

The BMET Program Educational Objectives (PEOs) provide the link between the program and the needs of stakeholders as well as a link between the program and the missions of the university and CAMS.

The BMET program education objectives are:

1. Providing solid fundamental knowledge in life sciences and engineering.

2. Preparing graduates with professional practices in medical equipment technology .

3. Engaging in life-long learning skills and continuous self-development in medical equipment technology.

4. Enhancing the environment and performance of research in biomedical equipment technology.

5. Contributing to achieving national goals toward sustainable development and community services.

4.3 Student outcomes

For Curriculum 2014:

Program Learning Outcomes*	
Knowledge and understanding	
1	knowledge of the impact of biomedical engineering technology solutions in societal and global context
2	an ability to select and apply knowledge of mathematics, science, engineering, and technology to biomedical engineering technology problems that require the application of principles and applied procedures or methodologies
Skills	

1	an ability to design systems components, or processes for broadly defined engineering technology problems appropriate to Biomedical Equipment Technology program educational objectives
2	an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to biomedical engineering technology activities
3	an ability to identify, analyze and solve biomedical engineering technology problems
4	an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes
5	an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature
Values, Autonomy, and Responsibility	
1	an ability to function effectively as a member or leader on a technical team;
2	an understanding of the need for and an ability to engage in self-directed continuing professional development;
3	an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity;
4	a commitment to quality, timeliness, and continuous improvement.

For Curriculum 2024:

Program Learning Outcomes*	
Knowledge and Understanding	
1	Demonstrate relevant knowledge of fundamental sciences
2	Exhibit an understanding of engineering sciences, theories, principles, and concepts related to the field of Biomedical technology.
3	Acknowledge the utilization of biomedical engineering technology and its regulations, on the economy, community health, and environment locally and globally
Skills	
1	Apply basic and engineering sciences, principles, and concepts in various contexts, related to biomedical technology
2	Utilize contemporary instruments and software proficiently for various applications within biomedical technology.
3	Execute standard tests, measurements, and experimentation to design and develop appropriate solutions
4	Effectively communicate technical and non-technical information through written, oral, and graphical mediums within broad contexts.
Values, Autonomy, and Responsibility	
1	Demonstrate effective communication and function effectively as a

	proactive member or a leader on work teams.
2	Demonstrate commitment to professional and ethical responsibilities, quality, and life-long improvement.

4.4 Graduation Requirements

In order to obtain a bachelor degree in Biomedical Equipment Technology, a student has to successfully complete all credit hours which consists of:

For Curriculum 2014:

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements	Required	00	00	0%
	Elective	06	12	8.57%
College Requirements	Required	01	02	1.43%
	Elective	02	04	2.86%
Program Requirements	Required	33	85	60.71%
	Elective	03	06	4.29%
Capstone Course/Project	Required	01	02	1.43%
Field Training/ Internship	Required	Two Semesters	N/A	N/A
Others	Required	09	29	20.71%
Total		55	140	100%

For Curriculum 2024:

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements	Required	2	4	3.0%
	Elective	4	8	6.0%
College Requirements	Required	3	6	4.5%
	Elective	0	0	0%
Program Requirements	Required	26	75	56.4%
	Elective	3	6	4.5%
Capstone Course/Project	Required	1	4	3.0%
Field Training	Required	1	2	1.5%
Internship	Required	Two Semesters	Not Applicable	Not Applicable
Others (First Foundation Year for Health Colleges)	Required	8	28	21.1%
Total		48	133	100%

4.5 Where does BMET graduates work?

- Hospitals and Clinics
- Specialized Medical Companies
- Scientific Research Centres such as Universities
- Computer, networking and software companies
- Information System Management Companies
- Health Insurance Companies

5 Department Laboratory

Medical Equipmennt Technology Department in the College of Applied Medical Sciences at Majmaah University provides eight laboratories for the practical part of the courses. They are as follows:

No	Laboratory Name	Code
1	Medical Electronic Lab	2A2
2	Biosignal Processing Lab	2A3
3	Electrical Skills Lab	2A4
4	Electrical Power Lab	2A5
5	Medical Imaging Lab	2A6
6	Medical Devices Lab	2A7
7	Advanced Medical Digital Electronic Lab	2A11
8	Medical Devices Workshop	2A10
9	Printed Circuit Boards Lab	2AS3