ALEPH UNIVERSITY

ONLINE

School of Basic Science and Engineering

Master of Science in Medical Devices, Regulatory Affairs and Health Information Technologies

PROGRAM DESCRIPTION

The Master of Science in Medical Devices, Regulatory Affairs, and Health Information Technologies at Aleph University is a comprehensive program designed to provide students with knowledge of a wide range of modern engineering principles to analyze and solve problems in biology, medicine, and engineering, ultimately aiming to deliver more effective and efficient healthcare. Students will acquire the tools and knowledge needed to make a significant impact in the field of biomedical engineering.

The program consists of 30 credit hours and is offered in three specializations, allowing students to focus on their area of interest:
Medical Informatics and Telemedicine, Clinical Engineering, and Medicine.

Program Objectives

• Apply expertise in engineering principles, mathematics, and sciences to solve challenges in biology and medicine.
• Design and conduct experiments in biomedical engineering.
• Work on the design and development of medical devices, such as prosthetics, pacemakers, imaging systems, or surgical instruments.
• Design a component, technology, or biomedical device to improve healthcare, considering all external factors that influence the field, such as political, ethical, and social issues maintaining ethical behavior.and social issues that maintain ethical behavior.

Career Opportunities

Obtaining a Master of Science in Medical Devices, Regulatory Affairs, and Health Information Technologies can open up a wide variety of job opportunities in different sectors. Here are some areas where you could find opportunities:

Medical Devices Industry:
- Design and development of medical devices, such as diagnostic equipment, patient monitors, prosthetics, implants, and drug delivery systems.
- Research and development (R&D) to enhance the effectiveness and safety of existing medical devices.

Clinical Engineering:
- Maintenance, management, and optimization of medical equipment in hospitals and healthcare facilities.
- Collaboration with healthcare professionals to ensure equipment meets quality and safety standards.

Medical Imaging:
- Development and enhancement of medical imaging technologies, such as magnetic resonance imaging, computed tomography, ultrasound, and X-ray imaging systems.
- Research to advance the accuracy and resolution of medical imaging.

Bioinformatics and Biomedical Data Processing:
- Analysis of biomedical data to extract valuable information for research and diagnosis.
- Development of algorithms and software for biomedical signal processing.

Tissue Engineering and Regenerative Medicine:
- Research and development of technologies for tissue engineering and regenerative therapies.
- Collaboration with biologists and physicians to develop solutions for tissue and organ repair and regeneration.

Biomedical Project Management:
- Coordination and management of projects in the biomedical field, ensuring compliance with industry regulations and standards.
- Working in multidisciplinary teams to carry out projects from conception to implementation.

Entrepreneurship and Startup Development:
- Establishment of new companies focused on biomedical innovation.
- Development of novel solutions and technologies to address specific health issues.

Academic Research:
- Conducting research at academic institutions to advance knowledge in the field of biomedical engineering.

- Publishing research in scientific journals and participating in conferences.

Education and Training:
- Teaching at educational institutions to share knowledge and experiences in biomedical engineering.
- Development of training programs for professionals and students.

Biomedical Technology Consulting:
- Offering consulting services to hospitals, companies, and organizations requiring guidance on biomedical technologies and their implementation.

The combination of technical skills and knowledge in Medical Devices, Regulatory Affairs, and Health Information Technologies allows you to contribute significantly to the advancement of healthcare and the improvement of people's quality of life. The demand for professionals in this field continues to grow, offering exciting opportunities in various work environments.

Learning Methodology

Aleph University employs an active learning environment that fosters critical thinking through interaction within the learning community. A variety of pedagogical learning scenarios are promoted, including self-study, idea exchange, small group work, problem-solving, debates, and research seminars. Students have access to various sources of information, learning alternatives, and activities to enhance their learning experience.

The teaching and learning approach include a traditional tutorial method enriched with practical learning approaches such as the Harvard Case Study Method and Project-Based Learning.

Harvard Case Study Method

This method employs the discussion of real-life situations that professionals face in their workplace. It requires student preparation and group work with their peers.

Project-Based Learning

This method fosters a deep conceptual understanding of abstract concepts through class projects. Students will actively develop their understanding by learning and applying key class concepts to solve challenging everyday problems.

Admissions Process

The admission criteria at Aleph University are based on the institutional mission, goals, academic merit, and the Florida Commission for Independent Education rules for the acceptance and enrollment of students in higher education academic programs. Aleph University's admissions policy assures that only students who are reasonably capable of completing and benefiting from the educational offerings are enrolled. The admissions process requires an admission interview of prospective students to evaluate their ability to achieve and benefit from the program.

The general admission and readmission requirements are as follows:

- **Application:**

Online admission applications must be received by the Admissions Department..

- **Identification Document:**

Copy of a government-issued identification document.

- **Fee Payment:**

A non-refundable application fee must be paid with the Admission Application.

- **Transcripts:**

Official academic records from all attended educational institutions must be submitted according to the application instructions. To be admitted to a Master's program, the applicant must have completed a bachelor's degree from an appropriately accredited academic institution, having obtained a minimum GPA of 3.0.

- **Personal Statement:**

A statement of purpose explaining why the chosen academic program would enable the applicant to achieve their professional goals.

- **Interviews:**

All applicants must have an interview with the Director of Admissions to better understand their interests, goals, and personalities.

- **English Proficiency:**

International students must meet language proficiency requirements.

Language Proficiency Requirements:

To enroll at Aleph University, prospective students whose first language is not English must possess college-level English ability.

List of Courses

Concentrations	Course Type	Code	Course Name	Credits
GENERAL REQUIREMENTS	Core	HUM 500	ETHICS AND VALUES SEMINAR	2
	Core	ENT 510	LEADERSHIP, TEAMWORK AND SUCCESS PRINCIPLES SEMINAR	2
	Core	BME 601	MEDICAL SCIENCES	3
	Core	BME 610	MEDICAL PHYSICS	3
	Core	BME 611	MEDICAL DEVICES	3
	Core	BME 700	SPECIAL TOPICS SEMINAR	2
	Core	BME 710 / 720	INTERNSHIP OR CAPSTONE PROJECT	3
	Core	ENT 621	INNOVATION AND ENTREPRENEURSHIP	2
MEDICAL DEVICE	Elective	BME 530	BIOMEDICAL INSTRUMENTATION	2
	Elective	BME 540	BIOMEDICAL SIGNAL ANALYSIS	2
	Elective	BME 630	ENGINEERING COMPLIANCE	2
	Elective	BME 621	CLINICAL ENGINEERING AND TECHNOLOGY MANAGEMENT	2
RA/QA	Elective	RAQ 520	QUALITY MANAGEMENT SYSTEMS	2
	Elective	RAQ 532	PRODUCT SAFETY AND PERFORMANCE TESTING	2
	Elective	BME 612	MEDICAL DEVICE REGULATIONS	2
HEALTH INFORMATION	Elective	BME 620	MEDICAL IMAGING SYSTEMS	2
	Elective	BME 625	DIAGNOSTIC ULTRASOUND INSTRUMENTATION	2
	Elective	BME 621	HEALTH INFORMATION TECHNOLOGIES	2
	Elective	BME 622	MEDICAL INFORMATICS, TELEMEDICINE AND E-HEALTH	2
	Elective	BME 627	SCIENCE AND TECHNOLOGIES IN HEALTHCARE	2

2 electives are required*

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CONTACT

490 Sawgrass Corporate Parkway, Suite 130 Sunrise, FL 33325

Call us: +1 (954) 234-2707 I info@alephuniversity.us

www.alephuniversity.us

@alephuniversity @aleph_uonline @alephuni