FLORIDA ATLANTIC UNIVERSITY

NEW/CHANGE PROGRAM REQUEST
Undergraduate Programs

UUPC Approval _____
UFS Approval _____
Banner _____
Catalog _____

Department Biomedical Engineering

College COECS

Program Name
Biomedical Engineering

☐ **New Program***

☑ **Change Program***

Effective Date
(TERM & YEAR)
Fall 2026

Please explain the requested change(s) and offer rationale below or on an attachment.

Catalog Description
- Adding a EGN 1111C Engineering Graphics course to the Engineering Topics category.
- Adding a statement for substitution of EGN1002 Fundamentals of Engineering with an approved upper-level BME tech elective for some qualified students.
- For the Biomaterials & Tissue Engineering track, add BME 4332 Tissue Engineering Basic Concepts and remove EGN 3321 Dynamics

Program Flow Chart
- Biomaterials and Tissue Engineering Track: Remove EGN 3321 Dynamics & Add BME4332 Tissue Engineering Basic Concepts

*All new programs and changes to existing programs must be accompanied by a catalog entry showing the new or proposed changes.

Faculty Contact/Email/Phone
Javad Hashemi/jhashemi@fau.edu/561-297-3438

Consult and list departments that may be affected by the change(s) and attach documentation

Approved by		***Date***
Department Chair	Javad Hashemi	1/14/26
College Curriculum Chair	Galan Liu	1/14/26
College Dean		1/19/26
UUPC Chair		
Undergraduate Studies Dean		
UFS President		
Provost		

Email this form and attachments to mjenning@fau.edu seven business days before the UUPC meeting.

Biomedical Engineering

Faculty:
Asghar, W.; Assis, R.; DeGiorgio, M.; Du, S.; Engeberg, E.; Ghoraani, B.; Hashemi, J.; Kang, Y.; Kim, M.; Lin, M.; Merk, V.; Pandya, A.; Pashaie, R.; Pavlovic, M.; Ranji, M; Roth, Z.; Tsai, C.

The Department of Biomedical Engineering (BME) at Florida Atlantic University (FAU) integrates engineering principles with biological sciences to address critical challenges in healthcare and medicine. Our program is dedicated to advancing human health through cutting-edge research, exceptional education, and impactful clinical applications. We emphasize hands-on experience through innovative research, state-of-the-art facilities, and collaborative projects with industry and clinical partners. Our comprehensive curriculum covers fundamental engineering principles, biological sciences, and specialized topics such as medical devices, smart health, tissue engineering, biorobotics, and biomaterials.

Link to Combined Bachelor of Science in Biomedical Engineering (B.S.B.M.E.)

Link to Master of Science in Biomedical Engineering

Bachelor of Science

(Minimum of 120 credits required)

The Bachelor of Science in Biomedical Engineering (B.S.B.M.E.) reflects the breadth of the profession. The curriculum incudes coursework in basic science and mathematics, engineering sciences and engineering systems and materials. Students gain a strong interdisciplinary foundation while exploring specialized topics in three areas of focus:

1. Biomaterials and Tissue Engineering;

2. Smart Health Systems;

3. Biorobotics

Graduates of the B.S.B.M.E. program are prepared for careers in medical device design, diagnostics, prosthetics, and biotechnology, as well as roles in healthcare, government, and consulting. The program also serves as an excellent foundation for advanced study in graduate programs, including Master's and Ph.D. degrees in engineering or science disciplines, or for pre-medical tracks leading to medical school.

Biomedical Engineering Educational Objectives and Student Outcomes
The Biomedical Engineering program strongly supports the educational objectives and learning outcomes of the College of Engineering and Computer Science (see the Educational Objectives and Expected Student Learning Outcomes subsections previously listed in this section).

Program Educational Objectives are broad statements that describe the expected accomplishments and professional status of Biomedical Engineering graduates a few years beyond the baccalaureate degree.

The Biomedical Engineering program at Florida Atlantic University is dedicated to graduating engineers who, within a few years after graduation, will:

1. **Practice biomedical engineering disciplines** within the general areas of biomaterials and tissue engineering, bio-robotics and smart health systems in the organizations that employ them;
2. **Advance their knowledge of biomedical engineering**, both formally and informally, by engaging in lifelong learning experiences, including attainment of professional licensure and/or graduate studies;

3. **Serve as effective professionals** based on strong interpersonal and teamwork skills, an understanding of professional and ethical responsibility, and a willingness to take the initiative and seek progressive responsibilities and
4. **Participate as leaders in activities that support service to, and/or economic development of, the community.**

The educational objectives of the Bachelor of Science in Biomedical Engineering program are achieved by ensuring that graduates have the following ABET outcomes:

1. An ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics;
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare, as well as global, cultural, social, environmental and economic factors;
3. An ability to communicate effectively with a range of audiences;
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts;
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objectives;
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data and use engineering judgment to draw conclusions; and
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Admission Requirements
All students must meet the minimum admission requirements of the University. Please refer to the Admissions section of this catalog. All students must meet the preprofessional requirements listed above to be accepted into the B.S.B.M.E. program as discussed under General Requirements for admission to the college.

Prerequisite Coursework for Transfer Students
Students transferring to Florida Atlantic University must complete both lower-division requirements (including the General Education ~~Program~~ requirements) and the college and major requirements. Lower-division requirements may be completed through the A.A. degree from any Florida public college, university or community college or through equivalent coursework at another regionally accredited institution. Before transferring and to ensure timely progress toward the baccalaureate degree, students must also complete the prerequisite courses for their major as outlined in the Transition Guides and below.

All courses not approved by the Florida Statewide Course Numbering System that will be used to satisfy requirements will be evaluated individually on the basis of content and will require a catalog course description and a copy of the syllabus for assessment.

Degree Requirements
The Bachelor of Science in Biomedical Engineering degree will be awarded to students who:

1. Meet all general degree requirements of the University.
2. Complete the curriculum for the B.S. in Biomedical Engineering degree (see below).

Curriculum

The Bachelor of Science in Biomedical Engineering degree requires 120 credits. For credit toward the degree, a grade of "C" or better must be received in each course listed. In addition, all prerequisites for each mathematics, science, or engineering course must be completed with a grade of "C" or better before enrollment is permitted. The degree components are listed below.

Requirement	Course Number	Credits		
Communications / Humanities / Social Science				
College Writing 1 (2,3)	ENC 1101	3		
College Writing 2 (2,3)	ENC 1102	3		
General Education Program: Social Science Courses	Options listed in Audit	6		
General Education Program: Humanities Courses	Options listed in Audit	6		
Mathematics				
Calculus with Analytic Geometry 1 (1,4)	MAC 2311	4		
Calculus with Analytic Geometry 2 (1,4)	MAC 2312	4		
Natural Science				
General Chemistry 1	CHM 2045			
General Chemistry 1 Lab	CHM 2045L			
General Physics for Engineers 1	PHY 2048	3		
		1		
General Physics 1 Laboratory	PHY 2048L	3		
		1		
		Biomaterials	Smart Health	Biorobotics
Additional Mathematics and Science				
Biostatistics	STA 3173	3	3	-
Engineering Mathematics Differential Equations	MAP 3305 or MAP 2302	3	3	3
General Physics 2	PHY 2049		4	4
General Physics 2 Laboratory	PHY 2049L			1
Bioprinciples	BSC 1010	3	3	3
Bioprinciples Lab	BSC 1010L	1	1	1
Biodiversity	BSC 1011	3		
Biodiversity Lab	BSC 1011L	1		
General Chemistry 2	CHM 2046	3	3	
General Chemistry 2 Lab	CHM 2046L	1	1	
Organic Chemistry 1	CHM 2210	3		
Organic Chemistry 2	CHM 2211	3		

Organic Chemistry 2 Lab	CHM 2211L	2		
Biochemistry 1	BCH 3033	3		
General Microbiology	MCB 3020	3		
General Microbiology Lab	MCB 3020L	1		
Anatomy and Physiology 1	BSC 2085	3	3	3
Anatomy and Physiology 1 Lab	BSC 2085L	1	1	1
Genetics	PCB 3063	4	4	4
Quantitative Analysis	CHM 3120		2	
Quantitative Analysis Lab	CHM 3120L		2	
~~**Engineering Graphics**~~				
~~Engineering Graphics~~	~~EGN 1111C~~	~~3~~	~~3~~	~~3~~
Engineering Topics				
Engineering Graphics~~Fundamentals of Engineering~~	EGN 1111C~~EGN 1002~~	~~3~~3	~~3~~3	~~3~~3
Fundamentals of Engineering	EGN 1002	3	3	3
Introduction to Programming in Python	COP 3035C	3	3	3
Statics	EGN 3311	3	3	3
Dynamics	EGN 3321	~~3~~	3	3
Circuits	EEL 3111	3	3	3
Signals & Digital Filter Design	EEL 3502		3	3
Controls	EEL 4652C			3
Fluid Mechanics	EML 3701		3	3
Strengths of Materials	EGN 3331	3		3
Biomedical Instrumentation	BME 4503C	3	3	3
Tissue Engineering Basic Concepts	BME 4332	3		
Orthopedic Biomechanics	BME 4201	3	3	3
Biomedical Signal Processing	BME 4509		3	3
Intro to Bio-Imaging	BME 4536		3	
Microfabrication Technology	BME 4583		3	
Intro to Robotics	EML 4800			3
Neuro-Mechanics	BME 4364			3
Applied Biorobotics	BME 4276C			3
Biomaterials	BME 4100	3	3	
Methods in Biomedical Research	BME 4070C	3	3	3
Engineering Design				
Engineering Design I (5)	EGN 4950C or EML4521C	3	3	3
Engineering Design II (5)	EGN 4952C or EML4551	3	3	3
Technical Electives		6	5	9

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	Total Credits:	120	120	120

Notes:

1. Contributes to the University Core Curriculum.
2. Contributes to Writing Across Curriculum (Gordon Rule) writing.
3. General Education Program courses, totaling 6 credits, must be selected to satisfy Writing Across Curriculum (Gordon Rule) writing requirements.
4. Contributes to Gordon Rule mathematics.
5. PHY 2048, General Physics for Engineers 1 (4 credits) is an acceptable substitute, but only 3 credits will apply toward the degree.
6. Students who enter with a B.S. degree or more than 60 completed credits and who have not taken EGN 1002 may substitute an approved upper-level biomedical engineering technical elective for EGN 1002.

Internships

Biomedical Engineering students are strongly encouraged to gain practical experience through participation in internship opportunities. However, internships require prior approval from the department and coordination with the Career Center (IDS3949, Engineering Professional Internship). For more information, contact the FAU Career Center at 561-297-3533 or visit www.fau.edu/cdc.

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