

Engineering Pre-Major - Bioengineering Subplan

Associate in Engineering Science Degree (AES1)

swic.edu/engineering

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Bioengineering is the application of experimental and analytical techniques based on the engineering sciences to support the development of biologics, materials, devices, implants, processes, and systems that advance biology and medicine and improve medical practice and health care. Beyond medicine, bioengineering also includes applications in biotechnology, agriculture, bioenergy, and environmental protection, where engineers design sustainable processes, biomanufacturing systems, and engineered organisms for societal benefit. Bachelor's degrees in bioengineering vary widely in requirements. Students are encouraged to work with the program coordinator and their advisor early to develop an academic plan that will ensure transferability of coursework and timely degree completion.

Articulation Agreements

- SIU-Carbondale – B.S. Biomedical Engineering

Important Information

The following semester sequence is designed as a guide for students enrolled full time and is not intended as a required schedule. Students should take courses in progression following the appropriate requisites. For information on requisites, please refer to the *Course Description Guide* (yellow section) in this catalog.

Associate in Applied Science Degree Bioengineering Subplan

First Year

Fall Semester		Semester Credits
MATH	203 Analytic Geometry & Calculus I*	5
CHEM	105 General Chemistry I*	5
ENG	101 Rhetoric & Composition I*	3
BIOL	101 Principles of Biology I* OR	
AGRI	121 Soil Science	4
Total Semester Credits		17

First Year

Spring Semester		Semester Credits
MATH	204 Analytic Geometry & Calculus II *	5
CHEM	106 General Chemistry II*	5
PHYS	204 Physics - Mechanics*	4
ENG	102 Rhetoric & Composition II	3
Total Semester Credits		17

Second Year

Fall Semester		Semester Credits
MATH	205 Analytic Geometry & Calculus III*	4
MATH	171 Computer Science I-JAVA* OR	
MATH	210 Computer Programming for Engineers* OR	
ENGR	103 Engineering Graphics	3-4
CHEM	201 Organic Chemistry I* OR	
ENGR	263 Analytical Mechanics-Statics*	3-5
PHYS	205 Physics - Heat, Elec. & Magnetism*	4
COMM	151 Introduction to Public Speaking OR	
COMM	155 Interpersonal Communications	3
Total Semester Credits		17-20

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Second Year

Spring Semester		Semester Credits
MATH	290 Differential Equations*	3
CHEM	202 Organic Chemistry II OR	
ENGR	264 Analytical Mechanic-Dynamics* OR	
ENGR	275 Mechanics of Solids OR	
BIOL	270 Genetics	3-5
PHYS	206 Physics-Light & Modern Physics* OR	
General Education Selection		3-4
Human Relations Selection		3
ECON	201 Principles of Macroeconomics OR	
ECON	202 Principles of Microeconomics OR	
POLS	150 Introduction to American Government	3
Total Semester Credits		15-18
Total Credits		66-72

*Indicates courses that must be taken in order.

Career Opportunities

A graduate of Associate of Engineering Science-Bioengineering Subplan can find employment as:

- Biomedical Technician
- Equipment Technician
- Manufacturing and Process Engineering Technician
- Research and Development Technician

A student who transfers to earn a Bachelor of Science in Bioengineering can find employment as:

- Biochemical Engineer
- Bioinstrumentation Engineer
- Biomaterials Engineer
- Biomechanics Engineer
- Clinical Engineer
- Genetic Engineer
- Rehabilitation Engineer