

ROBOTICS ENGINEERING BACHELOR OF SCIENCE

Leading to a Bachelor of Science Degree in Robotics Engineering

The Bachelor of Science in Robotics Engineering degree's innovative curriculum prepares students for the rapidly evolving field of robotics. The program integrates mechanical, electrical, and computer engineering principles, providing a comprehensive education covering all aspects of robotic systems. Students gain hands-on experience through state-of-the-art laboratories and real-world projects, ensuring they develop the practical skills needed to excel in this dynamic industry. Our graduates are well prepared for pursuing both an advanced degree and a professional career.

Program Educational Objectives

Graduates of the engineering program will (within a few years of graduation):

- Lifelong learning — Pursue professional development to meet and adapt to the emerging and evolving technology.
- Successful Careers — Embark on a successful career in the field of robotics engineering or related fields.
- Professionalism — Graduates will contribute to their fields or professions.

Student Outcomes

Students from the engineering program will attain (by the time of graduation):

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- 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.
- An ability to communicate effectively with a range of audiences.
- 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.
- 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.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

First Year		
Fall Semester		Credits
ENGR1000	INTRODUCTION TO ENGINEERING	3
FYS1000	FIRST YEAR SEMINAR	1
MATH1776	CALCULUS 1A	2
MATH1777	CALCULUS 1B	2

PHYS1250	ENGINEERING PHYSICS I	4
English Sequence*		4
Credits		16

Spring Semester		
ENGR1300	FIRST-YEAR ENGINEERING DESIGN	2
ENGR1406	APPLIED ENGINEERING ANALYSIS-BSEN	2
MATH1876	CALCULUS 2A	2
MATH1877	CALCULUS 2B	2
PHYS1750	ENGINEERING PHYSICS II	4
English Sequence*		4

Credits		16
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Second Year		
Fall Semester		
ENGR2100	PROGRAMMING FOR ENGINEERS	4
MATH2600	DIFFERENTIAL EQUATIONS & LINEAR SYSTEMS	4
MECH2400	APPLIED MECHANICS	4
MATH/SCIENCE ELECTIVE		4

Credits		16
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Spring Semester		
MATH2025	MULTIVARIABLE CALCULUS	4
ELEC2300	CIRCUIT ANALYSIS	4
MECH3850	ENGINEERING DYNAMICS	4
Humanities Elective		4
COOP2500	INTRODUCTION TO COOPERATIVE EDUCATION	0

Credits		16
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Summer Semester		
COOP3000	OPTIONAL COOP EDUCATION	0

Credits		0
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Third Year		
Fall Semester		
ELEC2525	ELECTRICIAL FUNDAMENTALS FOR ROBOTICS	4
MECH3175	MECHANICAL FUNDAMENTALS FOR ROBOTICS	4
ELEC3660	SIGNALS AND SYSTEMS ANALYSIS	4
Social Science Elective		4

Credits		16
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Spring Semester		
COOP3500	COOP EDUCATION 1	0

Credits		0
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Summer Semester		
ELEC3275	MICROCONTROLLER & COMMUNICATION	4
ELEC4475	FEEDBACK AND CONTROL	4
MATH2100	PROBABILITY & STATISTICS FOR ENGINEERS	4
ENGR3600	ROBOTICS ENGINEERING I	4

Credits		16
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Fourth Year		
Fall Semester		
COOP4500	COOP EDUCATION 2	0

Credits		0
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Spring Semester

ENGR4000	ROBOTICS ENGINEERING II	4
ENGR5000	ENGINEERING SENIOR DESIGN I	4
FREE ELECTIVE		4
ENGINEERING ELECTIVE		4
Credits		16

Summer Semester

ENGR5500	ENGINEERING SENIOR DESIGN II	4
HSS Elective*		4
FREE ELECTIVE		4
ENGINEERING ELECTIVE		4
Credits		16

Total Credits		128
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