Robotics Minor

Minor Requirements

Minimum Credits Required: 18

Part One - Core Content Areas: 9 credits are required for Part One 1) Robotics Principles Area (Required) 2) Take two courses from two of the 3 areas listed below for Part One. 6 Core Programming Area ME 213 Modeling of Engineering Systems CSC1 122 Visual BASIC CSC1 122 Visual BASIC CSC1 227 Computing Fundamentals in Python I ECE 173 Introduction to Computing Controls and Robot Applications Area ABEN 388 Electric Energy Application in Agriculture ASC1 485 Artificial Intelligence for Robots and Cyber-Physical Systems ECE 461 Control Systems I ECE 463 Modern Control IME 482 Automated Manufacturing Systems ME 475 Automatic Controls MEASY Instrumentation & Measurements ECE 483 Instrumentation for Engineers ME 412 Engineering Measurements ME 412 Engineering Measurements ME 446 Mechatronics Part Two - Additional Courses 3) Select 9 credits from the following: ME 465 Introduction to Machine Learning IME 465 Introduction to Artificial Intelligence SCS 1485 Artificial Intelligence for Robots and Cyber-Physical Systems ECE 448 Introduction to Machine Learning IME 465 Introduction to Artificial Intelligence SCS 1485 Artificial Intelligence for Robots and Cyber-Physical Systems CSC1 486 Introduction to Artificial Intelligence SCS 1486 Introduction to Ar	Code	Title	Credits
ENGR 321	Part One - Core Content A	reas: 9 credits are required for Part One	
2) Take two courses from two of the 3 areas listed below for Part One. Core Programming Area ME 213	1) Robotics Principles Are	a (Required)	
Core Programming Area ME 213 Modeling of Engineering Systems CSCI 122 Visual BASIC CSCI 227 Computing Fundamentals in Python I EUE 173 Introduction to Computing Controls and Robot Applications Area ABEN 358 Electric Energy Application in Agriculture CSCI 485 Artificial Intelligence for Robots and Cyber-Physical Systems EUE 463 Modern Control IME 482 Automated Manufacturing Systems ME 475 Automatic Controls Measurements and Actuation Systems Area ABEN 479 Fluid Power Systems Design ABEN 482 Instrumentation & Measurements EUE 483 Instrumentation for Engineers ME 412 Engineering Measurements ME 416 Mechatronics Part Two - Additional Courses 3 Select 9 credits from the following: 9 Artificial Intelligence & Machine Learning: IME 465 Introduction to Machine Learning EUE 477 Hardware Design for Machine Learning CSCI 425 Machine Learning: IME 465 Introduction to Artificial Intelligence CSCI 436 Intelligent Agents CSCI 436 Intelligent Agents CSCI 438 Human-Computer Interaction Perception & Data Processing ABEN 482 Instrumentation & Measurements EUE 448 Image Analysis I EUE 448 Image Masurements EUE 446 Image Masurements EUE 447 Image Masurements EUE 448 Image Masurements EUE 448 Image Masurements EUE 446 Image Masurements EUE 447 Image Masurements EUE 448 Image Masurements EUE 446 Image Masurements EUE 447 Image Masurements EUE 448 Image Masurements EUE	ENGR 321	Introduction to Robotics	3
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CSCI 122 Visual BASIC CSCI 227 Computing Fundamentals in Python I ECE 173 Introduction to Computing Controls and Robot Applications Area ABEN 358 Electric Energy Application in Agriculture CSCI 455 Artificial Intelligence for Robots and Cyber-Physical Systems ECE 461 Control Systems I ECE 463 Modern Control IME 482 Automatic Controls Measurements and Actuation Systems Area ABEN 475 Automatic Controls Measurements and Actuation Systems Area ABEN 479 Fluid Power Systems Design ABEN 482 Instrumentation & Measurements ECE 483 Instrumentation for Engineers ME 412 Engineering Measurements ME 476 Mechatronics PART Yor - Additional Courses 3) Select 9 credits from the following: 9 Artificial Intelligence & Machine Learning: 9 Artificial Intelligence & Machine Learning: 9 ECE 477 Hardware Design for Machine Learning ECE 477 Hardware Design for Machine Learning CSCI 425 Machine Learning CSCI 425 Introduction to Artificial Intelligence CSCI 436 Intelligent Agents CSCI 438 Human-Computer Interaction Perception & Data Processing ABEN 482 Instrumentation & Measurements ECE 444 Applied Digital Signal Processing ECE 448 Image Analysis I ECE 446 Engineering Measurements ECE 447 Applied Digital Signal Processing ECE 476 Advanced Embedded Systems ECE 463 Modern Control ECE 476 Advanced Embedded Systems ME 475 Automatic Controls	Core Programming Are	а	
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IME 482 Automated Manufacturing Systems ME 475 Automatic Controls Measurements and Actuation Systems Area ABEN 479 Fluid Power Systems Design ABEN 482 Instrumentation & Measurements ECE 483 Instrumentation for Engineers ME 412 Engineering Measurements ME 476 Mechatronics Part Two - Additional Courses 3) Select 9 credits from the following: 1 9 Artificial Intelligence & Machine Learning: IME 465 Introduction to Machine Learning ECE 477 Hardware Design for Machine Learning CSCI 426 Introduction to Artificial Intelligence CSCI 426 Introduction to Artificial Intelligence CSCI 436 Intelligent Agents CSCI 485 Artificial Intelligence for Robots and Cyber-Physical Systems CSCI 488 Human-Computer Interaction Perception & Data Processing ABEN 482 Instrumentation & Measurements ECE 444 Applied Digital Signal Processing ECE 448 Image Analysis I ECE 483 Instrumentation for Engineers ME 412 Engineering Measurements ELECT 481 Control Systems ECE 461 Control Systems ECE 461 Control Systems ECE 462 Modern Control ECE 476 Advanced Embedded Systems ECE 476 Advanced Embedded Systems ECE 476 Advanced Embedded Systems ME 475 Automatic Controls	ECE 461	Control Systems I	
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Artificial Intelligence & Machine Learning: IME 465	Part Two - Additional Cou	rses	
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ECE 461 Control Systems I ECE 463 Modern Control ECE 476 Advanced Embedded Systems ME 475 Automatic Controls	Electric Machines and	Control Systems	
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ECE 476 Advanced Embedded Systems ME 475 Automatic Controls	ECE 461	Control Systems I	
ME 475 Automatic Controls	ECE 463	•	
ME 475 Automatic Controls		Advanced Embedded Systems	
	ME 476	Mechatronics	

2 Robotics Minor

CE 452 Total Credits	Fundamentals of Oil & Gas Pipeline: Design, Operation, Inspection & Maintenance	18
	-	
CE 425	Bridge Evaluation and Rehabilitation	
PAG 454	Applications of Precision Agriculture	
PAG 315	Electronic Systems in Precision Ag	
PAG 115	Introduction to Precision Agriculture	
IME 482	Automated Manufacturing Systems	
IME 437	Methods for Precision Manufacturing	
ABEN 452	Bioenvironmental Systems Design	
ABEN 358	Electric Energy Application in Agriculture	
Applications of Unman	ned Systems	
ME 489	Vehicle Dynamics	
ME 442	Machine Design I	
ABEN 479	Fluid Power Systems Design	
ABEN 478	Machinery Analysis & Design	
Kinematics & Dynamic	s of Machineries	

Courses are grouped by interest area but the 9 credits can be from any of the areas.

Program Notes

• Any course used to satisfy Part One: Core Courses may not use that course to satisfy any of the nine credits for Part Two: Approved Courses.