

## ROBOTICS ENGINEERING 2026-2027

### FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
MATH 1131Q – Calculus I	4	MATH 1132Q – Calculus II	4
CHEM 1127Q – Gen. Chem. I	4	PHYS 1501Q – Engineering Physics I <sup>1</sup>	4
CSE 1010 – Intro. to Computing for Engr.	3	ENGR 1166 – Foundations of Engineering	3
ENGL 1007 – Writing	4	ECE 1401 – Programming for Elec. Engineers	3
ENGR 1000 – Orientation to Engr.	<u>1</u>	TOI course <sup>2</sup>	<u>3</u>
	16		17

### SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
ECE 2001 – Electric Circuits	4	ECE 3101 – Signals and Systems	3
MATH 2110Q – Multivariable Calculus	4	MATH 2210Q – Applied Linear Algebra	3
MATH 2410Q – Differential Equations	3	ECE 3411 – Microprocessor Applications	3
PHYS 1502Q – Engineering Physics II <sup>1</sup>	4	ECE/ME 3161 – Introduction to Robotics	3
CSE 2050 – Data Structures and OO Design	<u>3</u>	CSE 2500 – Intro. to Discrete Systems or MATH 2710 – Transition to Adv. Maths	<u>3</u>
	18		15

### JUNIOR YEAR

First Semester	Credits	Second Semester	Credits
ECE 3111 – Systems Analysis or ME 3253 – Linear System Theory or ME 3254 – Linear System Theory	4/3	ECE/ME 3163 – Robot Control & Dynamics	3
ECE/ME 3162 – Robot Motion Planning	3	ECE 4161: Robotics Systems Laboratory	3
CSE 3500 – Algorithms	3	CSE 4820 – Intro to Machine Learning	3
STAT 3345 – Prob. Models Engineers <sup>3</sup>	3	Track Elective <sup>4</sup>	3
TOI course <sup>2</sup>	<u>3</u>	TOI course <sup>2</sup>	<u>3</u>
	16/15		15

### SENIOR YEAR

First Semester	Credits	Second Semester	Credits
ECE 4901/4900W <sup>5</sup> or ME 4974W <sup>5</sup> /4975 or CSE 4939W <sup>5</sup> – Design I	3/4	ECE 4902 or ME 4976 <sup>5</sup> or CSE 4940 – Design II	3
Track Elective <sup>4</sup>	3	Track Elective <sup>4</sup>	3
TOI course <sup>2</sup>	3	Robotics Elective <sup>6</sup>	3
Robotics Elective <sup>6</sup>	3	TOI course <sup>2</sup>	3
Elective	<u>2/3</u>	Elective	<u>3</u>
	14/15		15

<sup>1</sup> Either the two-semester sequence of PHYS 1401Q-1402Q or the three-semester sequence of PHYS 1201Q-1202Q followed by PHYS 1230 or 1530 may be taken instead to satisfy this requirement. However, only eight credits of PHYS 1201-1202-1230/1530 can be used toward the required 126 credits for the Engineering degree.

<sup>2</sup> The five TOI courses must be taken from each of the topics of inquiry 1-5 (Creativity: Design, Expression, Innovation; Cultural Dimensions of Human Experiences; Diversity, Equity, and Social Justice; Environmental Literacy; and Individual Values and Social Institutions). One of the TOI courses can be used to fulfill two TOI areas thus reducing the count to four courses. The TOI-6 and Focus requirements are satisfied by CHEM1127, PHYS1501, and PHYS1502.

<sup>3</sup> STAT 3345 can be replaced with MATH 3160, though STAT 3345 is recommended

<sup>4</sup> Choose three (3) courses from one of the defined tracks: Electronics, Systems, Mechanical, Biomedical

<sup>5</sup> **One additional W course must be taken**, typically as one of the TOI courses.

<sup>6</sup> Choose two (2) courses from any of the tracks, but not already chosen as a track elective

***Track Electives:***

Choose 3 courses from one of the following tracks. With prior approval by the program director, special topics courses (CSE 4095, CSE 5095, ECE 4095, ECE 6095, or ME 3295) and up to 3 credits of thesis (ECE 4097 or CSE 4997 or ME 3279 or ME 3396) may count towards Track or Robotics Elective credits. Required Robotics Engineering Courses cannot also be used to fulfill Track or Robotics Electives.

*Electronics Track*

CSE 2301: Principles and Practice of Digital Logic Design  
ECE 3201: Electronic Circuit Design and Analysis  
ECE 3211: Power Electronics  
ECE 3212: Electric Machines and Drives

*Systems Track*

CSE 3100: Systems Programming  
CSE 4705: Artificial Intelligence  
CSE 4709: Networked Embedded Systems  
ECE 4131: Digital Signal Processing  
ECE 4132: Image Processing Systems Laboratory

*Mechanical Track*

CE 2110: Applied Mechanics I  
CE 3110: Mechanics of Materials  
ME 2120: Applied Mechanics II  
ME 3164: Aerospace Control Systems  
ME 3165: Soft Robotics  
ME 3220: Mechanical Vibrations  
ME 3221: Manufacturing Automation  
ME 3227: Design of Machine Elements  
ME 3262: Applied Measurements & Data Analysis

*Biomedical Track*

BME 3500: Biomedical Engineering Measurements  
BME 3600: Biomechanics  
BME 4120: Neural Information Processing and Sensory Coding  
BME 4130: Neural Prostheses  
BME 4300: Physiological Control Systems  
BME 4500: Bioinstrumentation