

Computer Engineering Technical Electives 2020–2021

Five (5) Technical Electives are required in the Computer Engineering Program. Those five electives must be selected from the following list of courses. Of the five courses, not more than two (2) may be Electrical Engineering courses (identified with an asterisk *).

FALL TERM 2020

Course		Prerequisites	Cr. Hrs.
ECE 3580 *	Foundations of Electromagnetics	PHYS 2152, MATH 3132, ECE 2240	4
ECE 3670 *	Electronics 3E	ECE 2160	4
ECE 3720 *	Electric Power and Machines	ECE 2262	4
ECE 4150 *	Control Systems	ECE 3780, ECE 2160	4
ECE 4260 *	Communication Systems	STAT 2220, ECE 3780	4
ECE 4390 *	Engineering Computation 4E	MATH 3132, ECE 2240	4
ECE 4450	Applied Computational Intelligence	MATH 3132	4
ECE 4530	Parallel Processing	COMP 2140, ECE 3760	4
ECE 4560	Modern Computing Systems	ECE 3610	4
ECE 4610 *	Biomedical Instrumentation and Signal Processing	ECE 2160, ECE 3780	4
ECE 4740	Digital System Implementation	ECE 4240	4
ECE 4860	(T05) Applied Probability and Stochastic Processes	STAT 2220	4
COMP 2160	Programming Practices	COMP 1020	3
COMP 3020	Human-Computer Interaction 1	COMP 2140	3
COMP 3190	Introduction to Artificial Intelligence	COMP 2140	3
COMP 3380	Database Concepts and Usage	COMP 2140	3
COMP 3490	Computer Graphics 1	COMP 2140, MATH 1210, MATH 1510	3
COMP 4140	Introduction to Cryptography and Cryptosystems	COMP 2130	3
COMP 4710	Introduction to Data Mining	COMP 3380	3

WINTER TERM 2021

Course		Prerequisites	Cr. Hrs.
ECE 3540 *	Advanced Circuit Analysis and Design	ECE 2262, MATH 3132	4
ECE 3600 *	Physical Electronics	PHYS 2152, MATH 3132, ECE 3670	4
ECE 4100 *	Microelectronic Fabrication	ECE 3670	4
ECE 4150 *	Control Systems	ECE 3780, ECE 2160	4
ECE 4160 *	Control Engineering	ECE 4150	4
ECE 4180	Introduction to Robotics	ECE 4150, ECE 4240	4
ECE 4250	Digital Communications	ECE 4260, ECE 3780	4
ECE 4260 *	Communication Systems	STAT 2220, ECE 3780	4
ECE 4440	Computer Vision	ECE 3780	4
ECE 4540	Wireless Networks	ECE 3700, ECE 3780	4
<i>ECE 4860</i>	<i>(T02) Biomedical Signal Processing</i>	<i>ECE 3780</i>	4
ECE 4860	(T08) Sensors, Instrumentation, and the IoT	ECE 2160	4
<i>ECE 4860</i>	<i>(T14) Optimization Techniques</i>	<i>MATH 3132 or Permission of the Instructor (LoVetri)</i>	4
COMP 2150	Object Orientation	COMP 2140, COMP 2160	3
COMP 3010	Distributed Computing	ECE 3740 or COMP 2150	3
COMP 3350	Software Engineering 1	ECE 3740 or COMP 2150	3
COMP 4020	Human-Computer Interaction 2	COMP 3020	3
COMP 4190	Artificial Intelligence	COMP 3190	3
COMP 4350	Software Engineering 2	COMP 3350	3
COMP 4360	Machine Learning	COMP 3190	3
COMP 4380	Database Implementation	COMP 3380	3
COMP 4430	Operating Systems 2	COMP 2160, COMP 3430	3
COMP 4490	Computer Graphics 2	COMP 3490	3
COMP 4580	Computer Security	COMP 3430, COMP 3010	3

Elective Courses Not Offered in 2020-2021

Course		Prerequisites	Cr. Hrs.
ECE 3750	Systems Engineering Principles 2	ECE 3740	4
ECE 3770	Digital Systems Design 2	ECE 4240	4
ECE 4420	Digital Control	ECE 4830, ECE 4150	4
ECE 4520	Simulation and Modelling	STAT 2220, COMP 2140	4
COMP 3290	Introduction to Compiler Construction	COMP 2140, ECE 3610	3
COMP 4200	Expert Systems	COMP 3190	3

Note: Courses shown in italics are either new topics course offerings.

Natural Science Electives – Computer Engineering 2020–2021

Computer Engineering students are required to complete two (2) Natural Science Electives as part of their program. These courses may be taken anytime during the student's program. One course must be selected from *Group A*. The second may be selected from either *Group A* or *Group B*.

Approved Natural Science Electives – Group A (1 required)

FALL TERM 2020

Course		Prerequisites	Cr. Hrs.
CHEM 1310	University 1 Chemistry: An Introduction to Physical Chemistry	CHEM 1300	3
PHYS 2600	Electromagnetic Field Theory	PHYS 2152, MATH 1710	3

WINTER TERM 2021

Course		Prerequisites	Cr. Hrs.
CHEM 1310	University 1 Chemistry: An Introduction to Physical Chemistry	CHEM 1300	3
PHYS 3630	Electro- and Magnetostatic Theory	PHYS 2600, MATH 3132	3

Approved Natural Science Electives – Group B

FALL TERM 2020

Course		Prerequisites	Cr. Hrs.
ASTR 3180	Stars	Permission of the Physics Department	3
BIOL 1020	Biology 1: Principles and Themes		3
BIOL 1300	Economic Plants		3
BIOL 1410	Anatomy of the Human Body		3
ENTM 2050	Introduction to Entomology		3
GEOL 1340	The Dynamic Earth		3
MBIO 1220	Essentials of Microbiology		3
PHYS 2260	Optics	PHYS 1050, MATH 1510, MATH 1210, MATH 1710	3

WINTER TERM 2021

Course		Prerequisites	Cr. Hrs.
ASTR 1810	Introduction to Astronomy: The Magnificent Universe		3
CHEM 1320	University 1 Chemistry: An Introduction to Organic Chemistry	CHEM 1300	3
GEOL 1340	The Dynamic Earth		3
PHYS 2386	Introduction to Quantum Mechanics and Special Relativity	PHYS 2152, MATH 1710	3
PHYS 2650	Classical Mechanics 1	PHYS 2152, MATH 3132	3
PHYS 3220	Medical Physics and Physiological Measurements	ECE 3580	3

Note: Term information is preliminary and is subject to change prior to the time of registration. Students should consult Aurora for the most up-to-date schedule information.