

## Electrical Engineering Technical Electives 2020–2021 (7 required)

### GROUP A QUALIFIED ENGINEERING DESIGN ELECTIVE COURSES (3 required)

#### FALL TERM 2020

Course		Prerequisites	Cr. Hrs.
ECE 4290	Microwave Engineering	ECE 3590	4
ECE 4370	Power Electronics	ECE 2160, ECE 3720	4

#### WINTER TERM 2021

Course		Prerequisites	Cr. Hrs.
ECE 4160	Control Engineering	ECE 4150	4
ECE 4250	Digital Communications	ECE 4260, ECE 3780	4
ECE 4830	Signal Processing 2	ECE 3780	4

### GROUP B TECHNICAL ELECTIVE COURSES

#### FALL TERM 2020

Course		Prerequisites	Cr. Hrs.
ECE 4240	Microprocessor Interfacing	ECE 2160, ECE 3610	4
ECE 4270	Antennas	ECE 3590	4
ECE 4300	Electrical Energy Systems 1	ECE 3650	4
ECE 4390	Engineering Computation 4E	MATH 3132, ECE 2240	4
ECE 4430	Design of RF Devices and Wireless Systems	ECE 3590	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 4540	Wireless Networks	ECE 3700, ECE 3780	4
ECE 4580	Optoelectronics	ECE 3600	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 1020	Computer Science 2	COMP 1012	3
COMP 2140	Data Structures and Algorithms	COMP 1020	3
COMP 3190	Introduction to Artificial Intelligence	COMP 2140	3
MATH 3120	Applied Discrete Mathematics	ECE 2220, MATH 2130	3
PHYS 2260	Optics	PHYS 2152, MATH 1510, MATH 1210, MATH 1710	3
PHYS 4646	Electro- and Magnetodynamics and Special Relativity	ECE 3590 and pre- or co-requisite of MATH 3132	3

#### WINTER TERM 2021

Course		Prerequisites	Cr. Hrs.
ECE 3650	Electric Machines	ECE 3720	5
ECE 3700	Telecommunication Network Engineering	COMP 2140	4
ECE 4100	Microelectronic Fabrication	ECE 3670	4
ECE 4180	Introduction to Robotics	ECE 4150, (ECE 4240 or ECE 3730)	4
ECE 4310	Electrical Energy Systems 2	ECE 4150, ECE 4300	4
ECE 4360	High Voltage Engineering	ECE 3580, ECE 3720	4
ECE 4440	Computer Vision	ECE 3780	4
<i>ECE 4860</i>	<i>(T02) Biomedical Signal Processing</i>	<i>ECE 3780</i>	4
ECE 4860	(T07) Materials Characterizations	Permission of the Instructor (D. Oliver)	4
ECE 4860	(T08) Sensors, Instrumentation, and the IoT	ECE 2160	4
ECE 4860	(T09) Bioelectromagnetics	ECE 3590 or permission of the instructor (E. Salimi)	4
<i>ECE 4860</i>	<i>(T12) Renewable Energy Systems</i>	<i>ECE 3650, ECE 4300</i>	4
<i>ECE 4860</i>	<i>(T14) Optimization Techniques</i>	<i>MATH 3132 or Permission of the Instructor (J. LoVetri)</i>	4
COMP 1020	Computer Science 2	COMP 1012	3
COMP 2140	Data Structures and Algorithms	COMP 1020	3
COMP 4360	Machine Learning	COMP 3190	3
MATH 3460	Partial Differential Equations	Permission of the Department of Mathematics	3
PHYS 3220	Medical Physics and Physiological Measurement	ECE 3580	3
PHYS 4590	Advanced Optics	PHYS 2260, PHYS 3640	3

### Elective Courses Not Offered in 2020–2021

Course		Prerequisites	Cr. Hrs.
ECE 3770	Digital Systems Design 2	ECE 4240	4
ECE 4140	Power Transmission Lines	ECE 3720	4
ECE 4200	Electric Filter Design	ECE 3540	4
ECE 4280	Engineering Electromagnetics	ECE 3590	4
ECE 4420	Digital Control	ECE 4830, ECE 4150	4
ECE 4520	Simulation and Modelling	STAT 2220, COMP 2140	4

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

## Natural Science Electives – Electrical Engineering 2020–2021

Electrical Engineering students are required to complete one Natural Science Elective as part of their program. This course may be taken anytime during the student's program.

### Approved Natural Science Electives

#### 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
CHEM 1310	University 1 Chemistry: An Introduction to Physical Chemistry	CHEM 1300	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 1310	University 1 Chemistry: An Introduction to Physical Chemistry	CHEM 1300	3
CHEM 1320	University 1 Chemistry: An Introduction to Organic Chemistry	CHEM 1300	3
GEOL 1340	The Dynamic Earth		3
MBIO 1220	Essentials of Microbiology		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.*