

# Electrical Engineering

2023-2024 Bachelor of Science Requirements – 131 Credit Hours

## Freshman Year

Fall Semester		Credits	Spring Semester		Credits
XXXX 193	First-Year Seminar <sup>1</sup>	3	CPSC 121	Computer Science I	3
CHEM 101	General Chemistry I	3	MATH 258	Calculus & Analytic Geometry II	4
CHEM 101L	General Chemistry I Lab	1	PHYS 121	Physics I	4
MATH 157	Calculus & Analytic Geometry I	4	PHYS 121L	Physics I Lab	1
PHIL 101	Reasoning	3	PHIL 201	Human Nature	3
COMM 100	Communication & Speech	3	ENGL 101	Writing (WE)	3
<b>Total Credits</b>		<b>17</b>	<b>Total Credits</b>		<b>18</b>

## Sophomore Year

Fall Semester		Credits	Spring Semester		Credits
CPEN 230	Introduction to Digital Logic	3	CPEN 231	Embedded Computer Systems	3
CPEN 230L	Introduction to Digital Logic Lab	1	CPEN 231L	Embedded Computer Systems Lab	1
EENG 201	Circuit Analysis I	3	EENG 202	Circuit Analysis II	3
EENG 201L	Circuit Analysis I Lab	1	MATH 260	Ordinary Differential Equations	3
MATH 259	Calculus & Analytical Geometry III	4	PHYS 122	Physics II	4
RELI XXX	Christianity & Catholic Traditions <sup>1</sup>	3	PHYS 122L	Physics II Lab	1
<b>Total Credits</b>		<b>15</b>	RELI XXX	World/Comparative Religion (GS) <sup>1</sup>	3
			<b>Total Credits</b>		<b>18</b>

## Junior Year

Fall Semester		Credits	Spring Semester		Credits
EENG 301	Electromag Fields & Materials	4	EENG 304	Electronics Design II	3
EENG 303	Electronics Design I	3	EENG 304L	Electronics Design II Lab	1
EENG 303L	Electronics Design I Lab	1	EENG 322	Signals & Systems II	3
EENG 311	Signals & Systems I	4	EENG 340	Intro to Electric Power Eng	3
PHIL 301	Ethics <i>or</i> RELI Ethics <sup>1</sup>	3	EENG 340L	Intro to Electric Power Eng Lab	1
<b>Total Credits</b>		<b>15</b>	XXXX 1 <sup>st</sup>	Broadening CORE Requirement <sup>2</sup>	3
			XXXX 432	CORE Integration Seminar <sup>1</sup>	3
			<b>Total Credits</b>		<b>17</b>

## Senior Year

Fall Semester		Credits	Spring Semester		Credits
ENSC 491	Senior Design Project I	2	ENSC 492	Senior Design Project II (WE, FA)	3
EENG 411	Intro Control Systems	3	XXXX 3 <sup>rd</sup>	Technical Elective <sup>3</sup>	3
EENG 411L	Intro Control Systems Lab	1	XXXX 4 <sup>th</sup>	Technical Elective <sup>3</sup>	3
EENG 421	Intro Communications Systems	3	XXXX 5 <sup>th</sup>	Technical Elective <sup>3</sup>	3
EENG 421L	Intro Communications Sys. Lab	1	ENSC 400	Fundamentals of Eng. Exam	0
XXXX 1 <sup>st</sup>	Technical Elective <sup>3</sup>	3	XXXX 2 <sup>nd</sup>	Broadening CORE Requirement <sup>2</sup>	3
XXXX 2 <sup>nd</sup>	Technical Elective <sup>3</sup>	3	<b>Total Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>16</b>			

<sup>1</sup> Refer to Gonzaga CORE requirements for options.

<sup>2</sup> Select two broadening courses from History, Literature, or Social & Behavioral Science, with no more than one course per topic.

<sup>3</sup> See back for approved technical electives.

## Approved Technical Elective Courses for Electrical Engineering

Additional Courses may be offered - Please see your advisor.

Only 300- and 400-level courses that are not required in the degree plan can be used to satisfy the technical elective requirements. The student's advisor must approve the selection and must contain courses from at least two of the following specializations:

- Electromagnetics, Circuits, Electronics, and Filters
- Control Systems and Automation
- Communication Systems and Signal Processing
- Electric Power and Power Systems Engineering
- Computer Engineering

Please see your advisor for current course offerings.

Course	Title	Credits	Prerequisite (Co-requisite)
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### Electrical Engineering

EENG 401	Low Power Bioelectronics	3	EENG 304
EENG 402	Electromagnetic Compatibility	3	EENG 301
EENG 403	Passive and Active Filter Design	3	EENG 311
EENG 406	VLSI Circuits and Systems	3	CPEN 231, EENG 304
EENG 410	Information Theory and Coding	3	CPSC 121
EENG 412	Digital Control Systems	3	EENG 411
EENG 424	Digital Signal Processing	3	EENG 311
EENG 427	Wireless Systems	3	EENG 202
EENG 428	Wireless Systems II	3	EENG 427
EENG 441	Analysis of Power Systems	3	EENG 340
EENG 442	Electric Power Distribution	3	EENG 340
EENG 443	Analysis of Electrical Machines	3	EENG 340
EENG 452	Antenna Analysis and Design	3	EENG 202

### Computer Engineering

CPEN 342/L	Embedded Computer Systems	4	CPEN 231, EENG 201/L
CPEN 430/L	Digital System Design	4	CPEN 231 or CPSC 260
CPEN 431	Computer Architecture	3	CPEN 231 or CPSC 260
CPEN 435	Parallel and Cloud Computing	3	CPEN 231 or CPSC 260
CPEN 436	Machine Learning in Biomedicine	3	CPSC 121
CPEN 442	Introduction to Robotics	3	CPEN 231 or CPSC 260
CPEN 443	Autonomous Mobile Robots	3	CPEN 231 or CPSC 260

### Engineering Science

ENSC 355	Thermal Science	3	None
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