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Bachelor of ELECTRICAL ENGINEERING (EE)

Updated July 2024

4-Year Recommended Course Sequence with *Calculus Entry*

Click on the Course Name to access the course in the Undergraduate Catalog 23-24

Fall Semester 1	Spring Semester 2	Fall Semester 3	Spring Semester 4	Fall Semester 5	Spring Semester 6	Fall Semester 7	Spring Semester 8
ESC 120 [2] Intro to Engineering Design	ESC 151 [3] C Programming	EEC 310 [4] Electric Circuits I (*ESC 120, *ESC 250, *MTH 284 & *PHY 244)	EEC 313 [3] Electronics I (EEC 310)	EEC 383 [3] Digital Systems (*EEC 310 or *PHY 244)	EEC 441 [2] Control Systems Laboratory (*EEC 440)	EEC 493 [2] Senior Design I (*EEC 440 or *EEC 450 or *EEC 470)	EEC 494 [3] Senior Design II (EEC 493)
CHM 261 [3] Gen. Chem. I CHM 266 [1] Gen. Chem. Lab	MTH 182 [4] Calculus II (MTH 181)	PHY 244 [5] Physics II (PHY 243, MTH 182) (WAC)	EEC 315 [2] Electronics Lab (EEC 312 & *EEC 313)	EEC 314 [3] Electronics II (EEC 311 & *EEC 313)	EEC 460 [4] Engr. Electromagnetics (PHY 244 & EEC 361)	EEC 450 [3] Communications (EEC 310, EEC 313 & EEC 318)	EEC/CIS Tech Elective [3] 300-400 Level
MTH 181 [4] Calculus I	ESC 102 [3] Technical Writing (Preferred) (ENG 100 or ENG 101)	MTH 286 [3] Intro. to Diff EQ (MTH 182 – C or better) OR ESC 250 [3] Diff EQ for Eng. (MTH 182 – C or better)	EEC 311 [4] Circuits II (EEC 310 – C or better)	EEC 361 [3] Electromechanical Energy Conversion (EEC 311 and MTH 283)	EEC/CIS Tech Elective [3] 300-400 Level	EEC 451 [2] Comm. Lab (EEC 315 or EEC 316 & *EEC 450)	EEC/CIS Tech Elective [3] 300-400 Level
ENG 100 [3] Intensive Writing or ENG 101 [3] College Writing I	PHY 243 [5] Physics I (MTH 181) (WAC)	MTH 283 [2] Multivariable Calculus (MTH 182 – C or better)	EEC 318 [3] Signals & Systems (*EEC 311)	General Ed. Elective [3]	EEC 384 [2] Digital Systems Lab (EEC 383)	EEC 470 [3] Power Electronics I (EEC 314, EEC 318 & EEC 361)	General Ed. Elective [3]
General Ed. Elective [3]		EEC 312 [2] Electric Circuits Lab (*EEC 310)	PHL 215 [3] <i>A&H</i> Engineering Ethics (ENG 102 or ESC 102) (WAC)	EEC 414 [2] Writing in ECE (PHL 215) (WAC)	EEC 440 [3] Control Systems (EEC 315 & EEC 318)	EEC 471 [3] Power Electro. & Lab (EEC 470)	ESC 282 [3] <i>SS</i> Engineering Economy (MTH 182)
★ ESC 100 [1] New Student Orientation		**ESC 130 [1] Engineering & Computer Science Career Preparation		MTH 284 [2] Matrices for Engineers (MTH 182 – C or better)		General Ed. Elective [3]	
17 Total Credit Hours	15 Total Credit Hours	17 Total Credit Hours	15 Total Credit Hours	16 Total Credit Hours	14 Total Credit Hours	16 Total Credit Hours	15 Total Credit Hours

Total Credits for EE Degree: 125 including ESC 130 Engineering Co-op Orientation

(Prerequisites) • (*Pre/co-requisite) • [# of Course Credits] • EEC XXX = Only Offered That Fall/Spring Semester

- Required EEC Courses **Highly recommended, yet optional.
- Required Science Courses
- Required English Courses (ESC 102 is preferred. However, can be substituted with ENG 102.)
- Required Writing Across the Curriculum (WAC) Courses

★ Must take ESC 100 (Exception of ASC 101 upon WCE Advisor Approval or special ASC 101 section)

- Required EEC 300-400 Level Electives
- Required Math Courses Substitute MTH 286 for ESC 250 to add Math Minor
- General Ed. Electives (2 A&Hs, 2 Ss, 1 ALAAME, & 2 DIVs)

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↓ [Scroll Down to View the Precalculus Entry 4-Year Plan Degree Chart](#)

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Bachelor of ELECTRICAL ENGINEERING (EE)

4-Year Recommended Course Sequence with *Precalculus Entry*

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Fall Semester 1	Spring Semester 2	Summer Semester #1	Fall Semester 3	Spring Semester 4	Fall Semester 5	Spring Semester 6	Fall Semester 7	Spring Semester 8
ESC 120 [2] Intro to Engineering Design	★ ESC 100 [1] New Student Orientation		PHY 243 [5] Physics I (MTH 181) (WAC)	EEC 310 [4] Electric Circuits I (*ESC 120, *ESC 250, *MTH 284, and *PHY 244)	EEC 313 [3] Electronics I (EEC 310)	EEC 440 [3] Control Systems (EEC 315 and EEC 318)	EEC 493 [2] Senior Design I (*EEC 440 or *EEC 450 or *EEC 470)	EEC 494 [3] Senior Design II (EEC 493)
MTH 165 [3] Intensive Precalc I OR MTH 167 [3] Precalculus I	MTH 168 [3] Precalculus II (MTH 165 or MTH 167)		CHM 261 [3] Gen. Chem. I CHM 266 [1] Gen. Chem I Lab (MTH 168)	PHY 244 [5] Physics II (PHY 243) (WAC)	EEC 312 [2] Circuits Lab (*EEC 310)	EEC 314 [3] Electronics II (EEC 311 and EEC 313 and *EEC 315)	EEC 470 [3] Power Electronics I (EEC 314, EEC 318 & EEC 361)	EEC 460 [4] Engineering Electromagnetics (PHY 244 and EEC 361)
ENG 100 [3] Intensive Writing or ENG 101 [3] College Writing I	ESC 102 [3] Technical Writing (Preferred)	ESC 151 Programming (MTH 168) [3]	MTH 182 [4] Calculus II (MTH 181)	MTH 286 [3] Intro. to Diff EQ (MTH 182 – C or better) OR ESC 250 [3] Diff EQ for Eng. (MTH 182 – C or better)	EEC 311 [4] Circuits II (EEC 310 – C or better)	EEC 361 [3] Electro-Mech Energy conv. (EEC 311 and MTH 283)	EEC 471 [3] Power Electro. & Lab (EEC 470)	ESC 282 [3] <i>ss</i> Engr. Economy (MTH 182)
General Ed. Elective [3]	General Ed. Elective [3]		PHL 215 [3] <i>A&H</i> Engineering Ethics (ENG 102 or ESC 102) (WAC)	MTH 283 [2] Multivariable Calculus (MTH 182 – C or better)	EEC 318 [3] Signals & Systems (*EEC 311)	EEC/CIS Tech Elective [3] 300-400 Level	EEC 450 [3] Communications (ESC 310, EEC 313 & EEC 318)	EEC 384 [2] Digital Systems Lab (EEC 383)
General Ed. Elective [3]	General Ed. Elective [3]	OPSTEM MTH 180 SUMMER CALCULUS I (Average B- or better in MTH 167&168) [4]	**ESC 130 [1] Engineering Co-op Orientation	MTH 284 [2] Matrices (MTH 182)	ESC 310 [3] Statistics & Prob. (MTH 182) OR STA 323 [3] Statistical Methods (MTH 182)	EEC 441 [2] Control Systems Lab (EEC 315 and EEC 318)	EEC 451 [2] Comm. Lab (EEC 315 or EEC 316 & *EEC 450)	EEC/CIS Tech Elective [3] 300-400 Level
					EEC 414 [2] Writing in ECE (PHL 215) (WAC)	EEC 315 [2] Electronics Lab (EEC 312 & *EEC 313)	EEC 383 [3] Digital Systems (*EEC 310 or *PHY 244)	EEC/CIS Tech Elective [3] 300-400 Level
14 Total Credit Hours	13 Total Credit Hours	7 Total Credit Hours	17 Total Credit Hours	16 Total Credit Hours	17 Total Credit Hours	16 Total Credit Hours	17 Total Credit Hours	16 Total Credit Hours

Total Credits for EE Degree: 132 or 133 including ESC 130 Engineering Co-op Orientation

(Prerequisites) • (*Pre/co-requisite) • [# of Course Credits] • EEC XXX = Only Offered That Fall/Spring Semester

- Required EEC Courses **Highly recommended, yet optional.
- Required Science Courses
- Required English Courses (ESC 102 is preferred. However, can be substituted with ENG 102.)
- Required Writing Across the Curriculum (WAC) Courses

- Required EEC 300-400 Level Electives
- Required Math Courses Substitute MTH 286 for ESC 250 to add Math Minor
- [General Ed. Electives \(2 A&Hs, 2 Ss, 1 ALAAME, & 2 DIVs\)](#)

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★ Must take ESC 100 (Exception of ASC 101 upon WCE Advisor Approval or special ASC 101 section)

C [500-level courses that satisfy Undergraduate and Master's degree credits](#)

↓ [Scroll Down to View the Precalculus Entry 5-Year Plan Degree Chart](#) ↓

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Bachelor of ELECTRICAL ENGINEERING (EE)

5-Year Recommended Course Sequence with *Precalculus Entry*

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Fall Semester 1	Spring Semester 2	Fall Semester 3	Spring Semester 4	Fall Semester 5	Spring Semester 6	Fall Semester 7	Spring Semester 8	Fall Semester 9	Spring Semester 10
ESC 120 [2] Intro to Engineering Design	ESC 102 [3] Technical Writing (Preferred)	CHM 261 [3] Gen. Chem. I CHM 266 [1] Gen. Chem I Lab (MTH 168)	PHY 243 [5] Physics I (MTH 181) (WAC)	EEC 310 [4] Electric Circuits I (*ESC 120, *ESC 250, *MTH 284, and *PHY 244)	MTH 283 [2] Multivariable Calculus for Eng. (MTH 182)	EEC 313 [3] Electronics I (EEC 310)	EEC 314 [3] Electronics II (EEC 311 and EEC 313 and *EEC 315)	EEC 493 [2] Senior Design I (*EEC 450 and *EEC 450 or *EEC 470)	EEC 494 [3] Senior Design II (EEC 493)
MTH 165 [3] Intensive Precalc I OR MTH 167 [3] Precalculus I	MTH 168 [3] Precalculus II (MTH 165 or MTH 167)	MTH 181 [4] Calculus I (MTH 168)	MTH 182 [4] Calculus II (MTH 181)	PHY 244 [5] Physics II (PHY 243) (WAC)	ESC 310 [3] Statistics and Probability (MTH 182) OR STA 323 [3] Statistical Methods (MTH 182)	EEC 315 [2] Electronics Lab (EEC 312 and *EEC 313)	EEC 361 [3] Electro-Mech Energy conv. (EEC 311 and MTH 283)	EEC 450/451 [5] Comm. & Lab (EEC 313 and ESC 310 and EEC 318)	EEC 460 [4] Engr. Electro-magnetics (PHY 244 and EEC 361)
ENG 100 [3] Intensive Writing or ENG 101 [3] College Writing I	General Ed. Elective [3]	PHL 215 [3] A&H Engineering Ethics (ENG 102 or ESC 102) (WAC)	EEC 414 [2] Writing in ECE (PHL 215) (WAC)	MTH 286 [3] Intro. to Diff EQ (MTH 182 – C or better) OR ESC 250 [3] Diff EQ for Eng. (MTH 182 – C or better)	EEC 311 [4] Circuits II (EEC 310 – C or better)	EEC 383 [3] Digital Systems (*EEC 310 or *PHY 244)	EEC 441 [2] Control Systems Lab (EEC 315 and EEC 318)	EEC 470/471 [5] Power & Electronics Lab (EEC 314 and EEC 361 and EEC 318)	EEC/CIS Tech Elective [3] 300-400 Level
General Ed. Elective [3]	General Ed. Elective [3]	ESC 151 [3] C Programming (MTH 168)	General Ed. Elective [3]	MTH 284 [2] Matrices (MTH 182)	EEC 312 [2] Circuits Lab (*EEC 310)	EEC 318 [3] Signals & Systems (*EEC 311)	EEC 384 [2] Digital Systems Lab (EEC 383)	EEC/CIS Tech Elective [3] 300-400 Level	EEC/CIS Tech Elective [3] 300-400 Level
★ ESC 100 [1] New Student Orientation		**ESC 130 [1] Engineering Co-op Orientation			ESC 282 [3] SS Engineering Economy (MTH 182)		EEC 440 [3] Control Systems (EEC 315 and EEC 318)		
12 Total Credit Hours	12 Total Credit Hours	15 Total Credit Hours	14 Total Credit Hours	14 Total Credit Hours	14 Total Credit Hours	11 Total Credit Hours	13 Total Credit Hours	15 Total Credit Hours	13 Total Credit Hours

Total Credits for EE Degree: **132** or **133** including ESC 130 Engineering Co-op Orientation

(Prerequisites) • (*Pre/co-requisite) • [# of Course Credits] • EEC XXX = Only Offered That Fall/Spring Semester

- Required EEC Courses **Highly recommended, yet optional.
- Required Science Courses
- Required English Courses (ESC 102 is preferred. However, can be substituted with ENG 102.)
- Required Writing Across the Curriculum (WAC) Courses

★ Must take ESC 100 (Exception of ASC 101 upon WCE Advisor Approval or special ASC 101 section)

- Required EEC 300-400 Level Electives
- Required Math Courses Substitute MTH 286 for ESC 250 to add Math Minor
- [General Ed. Electives \(2 A&Hs, 2 SSs, 1 ALAAME, & 2 DIVs\)](#)

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[500-level courses that satisfy Undergraduate and Master's degree credits](#)

↓ **Be Sure to Select a Course Listed Below that Qualifies for Two (2) General Ed. Electives** ↓

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To eliminate one (1) of your General Education Requirements,
consider taking a course that qualifies as two (2) General Ed. Electives

Recommended Courses that Qualify as Two (2) General Ed. Electives

Course	Social Sciences (SS)	Arts & Humanities (AH)	Non-Western Social Sciences (ALAAME & NW-SS)
ANT 153 – Intro to African Cultures (FALL ONLY)	X		X
ANT 275 – Ancient Mysteries	X		X
COM 233 – Bollywood & Beyond	X		X
HIS 103 – Ancient World His to 1300 C.E.	X		X
HIS 104 – Modern World History	X		X
SOC 210 – Dev. Societies in Changing World	X		X
UST 206 – Megacities of Asia	X		X
ANT 103 – Rise/Fall of Civilizations		X	X
ANT 171 – Native Civilization of Americas		X	X
ARB 274 – Introduction to Middle East (SPRING ONLY)		X	X
ART 281 – Asian Art		X	X
ART 286 – African Art		X	X
HIS 165 – Intro to Latin American History (SPRING ONLY)		X	X
HIS 175 – Intro to African History		X	X
HIS 185 – Survey of Middle Eastern History		X	X
HIS 195 – Intro to East Asian History		X	X
MUS 263 – Black Music of Two Worlds		X	X
PHL 255 – Non-Western Philosophy		X	X
PHL 262 – Medieval Philosophy (SPRING ONLY)		X	X
REL 101 – Understanding Religion		X	X
REL 268 – Religion & Culture in Africa (FALL ONLY)		X	X

Popular Introductory General Ed.
Courses for Engineering Students

SOCIAL SCIENCES (SS)

[PSY 220 – Child Development \(SS\)](#)

[UST 200 – Cleveland: The City \(SS\)](#)

[COM 233 – Bollywood & Beyond \(SS & ALAAME\)](#)

[HIS 103 – Ancient World His. to 1300 C.E. \(SS & ALAAME\)](#)

ARTS & HUMANITIES (AH)

[MUS 161 – Roots of Rock & Soul \(AH\)](#)

[UST 201 – Building Cleveland \(AH\)](#)

[REL 101 – Understanding Religion \(AH & ALAAME\)](#)

[MUS 263 – Black Music of Two Worlds \(AH & ALAAME\)](#)

US DIVERSITY (US DIV)

[ANT 100 – Human Diversity \(US DIV\)](#)

[SOC 201 – Race/Class/Gender \(US DIV\)](#)

AFRICAN-AMERICAN (AFRICAN-AMER.)

[SWK 150 – The Black Experience \(African- Amer.\)](#)

[UST 202 – Cleveland: The Afr-Amer Exp. \(African-Amer.\)](#)