ELECTRICAL ENGINEERING MAJOR REQUIREMENTS 2017-2018

Electrical & Computer Engineering Student Affairs Office / ece.ucsd.edu / Jacobs Hall 2701, 2702

COMMUNICATION SYSTEMS

Lower Division [72 units] MATH 18, 20A-B-C-D-E PHYS 2A-B-C-D CHEM 6A ECE 5, 15, 25, 30, 35, 45, 65

COMPUTER SYSTEM DESIGN

Lower Division [72 units] MATH 18, 20A-B-C-D-E PHYS 2A-B-C-D CHEM 6A ECE 5, 15, 25, 30, 35, 45, 65

ELECTRONIC CIRCUITS & SYSTEMS

Lower Division [72 units] MATH 18, 20A-B-C-D-E PHYS 2A-B-C-D CHEM 6A ECE 5, 15, 25, 30, 35, 45, 65

ELECTRONIC DEVICES & MATERIALS

Lower Division [72 units] MATH 18, 20A-B-C-D-E PHYS 2A-B-C-D CHEM 6A ECE 5, 15, 25, 30, 35, 45, 65

MACHINE LEARNING & CONTROLS

Lower Division [72 units] MATH 18, 20A-B-C-D-E PHYS 2A-B-C-D CHEM 6A ECE 5, 15, 25, 30, 35, 45, 65

PHOTONICS

Lower Division [72 units] MATH 18, 20A-B-C-D-E PHYS 2A-B-C-D CHEM 6A ECE 5, 15, 25, 30, 35, 45, 65

SIGNAL & IMAGE PROCESSING

Lower Division [72 units]

MATH 18, 20A-B-C-D-E PHYS 2A-B-C-D CHEM 6A ECE 5, 15, 25, 30, 35, 45, 65

Upper Division [68 units]

Breadth: ECE 100, 101,102, 107, 109 Depth: ECE 153, 154A-B-C, 158A Technical Electives : four upper division engineering, math, or physics courses Professional Electives: two upper division courses Design: one of ECE 111, 190, or 191

Upper Division [68 units]

Breadth: ECE 100, 101, 102, 103, 109 Depth: CSE 141, ECE 165 and two of ECE 111, 158A or CSE 143 Technical Electives: five upper division engineering, math, or physics courses Professional Electives: two upper division courses Design: one of ECE 111 (if not selected as a Depth course), 190, or 191

Upper Division [68 units]

Breadth: ECE 100, 101, 102, 103, 107, 109 Depth: ECE 164, 165, 166 Technical Electives: five upper division engineering, math, or physics courses Professional Electives: two upper division courses Design: one of ECE 111, 190, or 191

Upper Division [68 units]

Breadth: ECE 100, 101, 102, 103, 107, 109 Depth: ECE 135A-B, 136L, 183 Technical Electives: four upper division engineering, math, or physics courses Professional Electives: two upper division courses Design: one of ECE 111, 190, or 191

Upper Division [68 units]

Breadth: ECE 100, 101, 107, 109 Depth: ECE 171A, 174, 175A and one of ECE 171B, 172A, or 175B Technical Electives: six upper division engineering, math, or physics courses Professional Electives: two upper division courses Design: one of ECE 111, 190, or 191

Upper Division [68 units]

Breadth: ECE 100, 101, 103, 107, 109 Depth: ECE 181, 182, 183 and either ECE 184 or 185 Technical Electives: five upper division engineering, math, or physics courses Professional Electives: two upper division courses Design: one of ECE 111, 190, or 191

Upper Division [68 units]

Breadth: ECE 100, 101, 107, 109 Depth: ECE 153, 161A-B-C Technical Electives: six upper division engineering, math, or physics courses Professional Electives: two upper division courses Design: one of ECE 111, 190, or 191

Electrical and Computer Engineering

COMMUNICATIONS SYSTEMS DEPTH

	FALL QUARTER	WINTER QUARTER	SPRING QUARTER
Ye	ECE 5 or ECE 15	ECE 15 or ECE 5	ECE 30
	ECE 25	ECE 45	ECE 65
Year 1	ECE 35	MATH 20E	PHYS 2D
	ECE 100	ECE 102	ECE 107
Year 2	ECE 101	ECE 109	ECE 153
ar 2	Tech. Elective 1	Tech. Elective 2	Prof. Elective 1
	ECE 154A	ECE 154B	ECE 154C
Year 3	ECE 158A	Tech. Elective 3	Design
	Prof. Elective 2	Tech. Elective 4	

PLEASE NOTE:

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- Course offerings are subject to change. Go to http://www.ece.ucsd.edu/courses for more information.
- Go to http://www.ece.ucsd.edu/undergraduate/ee-ep-electives for a list of acceptable electives.
- ALL courses used to satisfy major requirements must be taken for a letter grade and passed with a C- or better.
- This plan assumes that students have completed equivalent lower division MATH, PHYS and CHEM courses at the community college that are required for the major.
- For personalized course plans, please set up an appointment with an advisor.

ELECTRICAL ENGINEERING MAJOR Communications Systems Depth

Suggested Transfer Plan 2017-2018

MAJOR REQUIREMENTS

Lower Division Requirements

□ CHEM 6A General Chemistry I

PHYS 2A Mechanics
 PHYS 2B Electricity and Magnetism
 PHYS 2C Flu,Wav,Thrmdyn,Optics
 PHYS 2D Relativity & Quantum

ECE 5 Intro to ECE
 ECE 15 Engineering Computation
 ECE 25 Intro to Digital Design
 ECE 30 Intro to Computer Eng
 ECE 35 Intro to Analog Design
 ECE 45 Circuits & Systems
 ECE 65 Components & Circuits Lab

MATH 18 Linear Algebra
 MATH 20A Calculus I
 MATH 20B Calculus II
 MATH 20C Calculus III
 MATH 20D Differential Equations
 MATH 20E Vector Calculus

Upper Division Requirements BREADTH

ECE 100 Linear Electronic Systems
 ECE 101 Linear Systems Fundamentls
 ECE 102 Intro Active Circuit Design
 ECE 107 Electromagnetism
 ECE 109 Eng. Probability & Stats

COMMUNICATIONS SYSTEMS DEPTH

ECE 153 Probability and Random Processes for Engineers
 ECE 154A Communications Systems I
 ECE 154B Communications Systems II
 ECE 154C Communications Systems III
 ECE 158A Data Networks I

□ Design Course: ECE 111, 115, 191, or 190

ELECTIVES

4 Technical	2 Professional
□	

Electrical and Computer Engineering

COMPUTER SYSTEM DESIGN DEPTH

	FALL QUARTER	WINTER QUARTER	SPRING QUARTER
Ye	ECE 5 or ECE 15	ECE 15 or ECE 5	ECE 30
	ECE 25	ECE 45	ECE 65
Year 1	ECE 35	MATH 20E	PHYS 2D
	ECE 100	ECE 102	ECE 165
Year 2	ECE 101	ECE 109	Tech. Elective 2
ar 2	ECE 103	Tech. Elective 1	Prof. Elective 1
	ECE 158A*	CSE 141	ECE 111*
Yea	Tech. Elective 3	Tech. Elective 4	Design
Year 3	Prof. Elective 2	Tech. Elective 5	

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ELECTRICAL ENGINEERING MAJOR Computer System Design Depth Suggested Transfer Plan 2017-2018

MAJOR REQUIREMENTS

Lower Division Requirements

CHEM 6A General Chemistry I

PHYS 2A Mechanics
 PHYS 2B Electricity and Magnetism
 PHYS 2C Flu,Wav,Thrmdyn,Optics
 PHYS 2D Relativity & Quantum

ECE 5 Intro to ECE
 ECE 15 Engineering Computation
 ECE 25 Intro to Digital Design
 ECE 30 Intro to Computer Eng
 ECE 35 Intro to Analog Design
 ECE 45 Circuits & Systems
 ECE 65 Components & Circuits Lab

Upper Division Requirements BREADTH

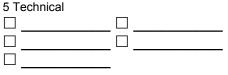
□ECE 100 Linear Electronic Systems □ECE 101 Linear Systems FundamentIs □ECE 102 Intro Active Circuit Design □ECE 103 FundamentIs/Devics & MatrIs □ECE 109 Eng. Probability & Stats

COMPUTER SYSTEM DESIGN DEPTH

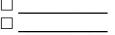
- $\hfill\square$ CSE 141 Intro to Computer Architecture $\hfill\square$ ECE 165 Digital Integrated Circuit Design and two of
- ECE 111 Advanced Digital Design Project
- ECE 158A Data Networks I
- [→] CSE 143 Microelectronic System Design

Design Course: ECE 191 or 190

ELECTIVES



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MATH 20A Calculus I
 MATH 20B Calculus II
 MATH 20C Calculus III
 MATH 20D Differential Equations
 MATH 20E Vector Calculus
 MATH 18 Linear Algebra

Electrical and Computer Engineering

ELECTRONIC CIRCUITS & SYSTEMS DEPTH

	FALL QUARTER	WINTER QUARTER	SPRING QUARTER
	FALL QUARTER	WINTER QUARTER	SPRING QUARTER
Year 1	ECE 5 or ECE 15	ECE 15 or ECE 5	ECE 30
	ECE 25	ECE 45	ECE 65
Ir 1	ECE 35	MATH 20E	PHYS 2D
	ECE 100	ECE 102	ECE 107
Year 2	ECE 101	ECE 109	ECE 165
r 2	ECE 103	Tech. Elective 1	Prof. Elective 1
	ECE 164	Tech. Elective 2	Tech. Elective 5
Year 3	ECE 166	Tech. Elective 3	Design
r 3	Prof. Elective 2	Tech. Elective 4	

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ELECTRICAL ENGINEERING MAJOR Electronic Circuits & Systems Depth Suggested Transfer Plan 2017-2018

MAJOR REQUIREMENTS

Lower Division Requirements

CHEM 6A General Chemistry I

PHYS 2A Mechanics
 PHYS 2B Electricity and Magnetism
 PHYS 2C Flu,Wav,Thrmdyn,Optics
 PHYS 2D Relativity & Quantum

ECE 5 Intro to ECE
 ECE 15 Engineering Computation
 ECE 25 Intro to Digital Design
 ECE 30 Intro to Computer Eng
 ECE 35 Intro to Analog Design
 ECE 45 Circuits & Systems
 ECE 65 Components & Circuits Lab

Upper Division Requirements BREADTH

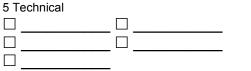
□ECE 100 Linear Electronic Systems
 □ECE 101 Linear Systems Fundamentls
 □ECE 102 Intro Active Circuit Design
 □ECE 103 Fundamentls/Devics & Matrls
 □ECE 107 Electromagnetism
 □ECE 109 Eng. Probability & Stats

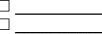
ELECTRONIC CIRCUITS & SYSTEMS DEPTH

□ECE 164 Analog Integrated Circuit Design □ECE 165 Digital Integrated Circuit Design □ECE 166 Microwave Systems and Circuits

Design Course: ECE 111, 191, or 190

ELECTIVES





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MATH 20A Calculus I
MATH 20B Calculus II
MATH 20C Calculus III
MATH 20D Differential Equations
MATH 20E Vector Calculus
MATH 18 Linear Algebra

Electrical and Computer Engineering

ELECTRONIC DEVICES & MATERIALS DEPTH

	FALL QUARTER	WINTER QUARTER	SPRING QUARTER
	ECE 5 or ECE 15	ECE 15 or ECE 5	ECE 30
Year 1	ECE 25	ECE 45	ECE 65
ar 1	ECE 35	MATH 20E	PHYS 2D
	ECE 100	ECE 102	ECE 107
Year 2	ECE 101	ECE 109	Tech. Elective 2
ar 2	ECE 103	Tech. Elective 1	Prof. Elective 1
	ECE 135A	ECE 135B	ECE 136L
Yea	Tech. Elective 3	ECE 183	Design
Year 3	Prof. Elective 2	Tech. Elective 4	

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ELECTRICAL ENGINEERING MAJOR Electronic Devices & Materials Depth Suggested Transfer Plan 2017-2018

MAJOR REQUIREMENTS

Lower Division Requirements

CHEM 6A General Chemistry I

PHYS 2A Mechanics
 PHYS 2B Electricity and Magnetism
 PHYS 2C Flu,Wav,Thrmdyn,Optics
 PHYS 2D Relativity & Quantum

ECE 5 Intro to ECE
 ECE 15 Engineering Computation
 ECE 25 Intro to Digital Design
 ECE 30 Intro to Computer Eng
 ECE 35 Intro to Analog Design
 ECE 45 Circuits & Systems
 ECE 65 Components & Circuits Lab

MATH 20A Calculus I
 MATH 20B Calculus II
 MATH 20C Calculus III
 MATH 20D Differential Equations
 MATH 20E Vector Calculus
 MATH 18 Linear Algebra

Upper Division Requirements BREADTH

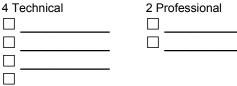
□ECE 100 Linear Electronic Systems
 □ECE 101 Linear Systems Fundamentls
 □ECE 102 Intro Active Circuit Design
 □ECE 103 Fundamentls/Devics & Matrls
 □ECE 107 Electromagnetism
 □ECE 109 Eng. Probability & Stats

ELECTRONIC DEVICES & MATERIALS DEPTH

ECE 135A Semiconductor Physics
 ECE 135B (Electronic Devices
 ECE 136L Microelectronics Laboratory
 ECE 183 Optical Electronics

□ Design Course: ECE 111, 191, or 190

ELECTIVES



Electrical and Computer Engineering

MACHINE LEARNING & CONTROLS DEPTH

	FALL QUARTER	WINTER QUARTER	SPRING QUARTER
	ECE 5 or ECE 15	ECE 15 or ECE 5	ECE 30
Year 1	ECE 25	ECE 45	ECE 65
ar 1	ECE 35	MATH 20E	PHYS 2D
	ECE 100	ECE 107	ECE 171A
Year 2	ECE 101	ECE 109	Prof. Elective 1
ar 2	Tech. Elective 1	Tech. Elective 2	Tech. Elective 3
	ECE 171B*	ECE 172A*	ECE 175B*
Year 3	ECE 174	ECE 175A	Tech. Elective 6
ar 3	Prof. Elective 2	Tech. Elective 4	Design
		Tech. Elective 5	

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ELECTRICAL ENGINEERING MAJOR Machine Learning & Controls Depth Suggested Transfer Plan 2017-2018

MAJOR REQUIREMENTS

Lower Division Requirements

CHEM 6A General Chemistry I

□ PHYS	2A Mechanics
□ PHYS	2B Electricity and Magnetism
□ PHYS	2C Flu,Wav,Thrmdyn,Optics
\Box PHYS	2D Relativity & Quantum

□ ECE 5 Intro to ECE

ECE 15 Engineering Computation
 ECE 25 Intro to Digital Design
 ECE 30 Intro to Computer Eng
 ECE 35 Intro to Analog Design
 ECE 45 Circuits & Systems
 ECE 65 Components & Circuits Lab

MATH 18 Linear Algebra
 MATH 20A Calculus I
 MATH 20B Calculus II
 MATH 20C Calculus III
 MATH 20D Differential Equations
 MATH 20E Vector Calculus

Upper Division Requirements

BREADTH ECE 100 Linear Electronic Systems ECE 101 Linear Systems Fundamentls ECE 107 Electromagnetism ECE 109 Eng. Probability & Stats

MACHINE LEARNING & CONTROLS DEPTH

ECE 171A Linear Control System Theory)
 ECE 174 Intro to Linear and Nonlinear Optimization with Applications

ECE 175A Elements of MI: Pattern Recognition & Machine Learning

*One of: ECE 171B Linear Control System Theory, OR ECE 172A Intro to Intelligent Sys: Robotics & Machine Intelligence, OR ECE 175B Elements of MI: Probabilistic Reasoning & Graphical Models

Design Course: ECE 111, 191, or 190

ELECTIVES



Electrical and Computer Engineering

	PHOTONICS DEPTH				
	FALL QUARTER	WINTER QUARTER	SPRING QUARTER		
	ECE 5 or ECE 15	ECE 15 or ECE 5	ECE 30		
Year 1	ECE 25	ECE 45	ECE 65		
ar 1	ECE 35	MATH 20E	PHYS 2D		
	ECE 100	ECE 107	ECE 181		
Year 2	ECE 101	ECE 109	Tech. Elective 2		
ar 2	ECE 103	Tech. Elective 1	Prof. Elective 1		
	ECE 182	ECE 183	ECE 185*		
Year 3	Tech. Elective 3	ECE 184*	Tech. Elective 5		
	Prof. Elective 2	Tech. Elective 4	Design		

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ELECTRICAL ENGINEERING MAJOR

Photonics Depth

Suggested Transfer Plan 2017-2018

MAJOR REQUIREMENTS

Lower Division Requirements

CHEM 6A General Chemistry I

PHYS 2A Mechanics
 PHYS 2B Electricity and Magnetism
 PHYS 2C Flu,Wav,Thrmdyn,Optics
 PHYS 2D Relativity & Quantum

ECE 5 Intro to ECE
 ECE 15 Engineering Computation
 ECE 25 Intro to Digital Design
 ECE 30 Intro to Computer Eng
 ECE 35 Intro to Analog Design
 ECE 45 Circuits & Systems
 ECE 65 Components & Circuits Lab

MATH 18 Linear Algebra
 MATH 20A Calculus I
 MATH 20B Calculus II
 MATH 20C Calculus III
 MATH 20D Differential Equations
 MATH 20E Vector Calculus

Upper Division Requirements BREADTH

□ECE 100 Linear Electronic Systems □ECE 101 Linear Systems Fundamentls □ECE 103 Fundamentls/Devics & Matrls □ECE 107 Electromagnetism □ECE 109 Eng. Probability & Stats

PHOTONICS DEPTH

ECE 181 Physical Optics and Fourier Optics

□ ECE 182 Electromagnetic Optics, Guided-Wave, and Fiber Optics

- □ ECE 183 Optical Electronics
- One of: ECE 184 Optical Information Processing and Holography, OR ECE 185 Lasers and Modulators

Design Course: ECE 111, 191, or 190

ELECTIVES



Electrical and Computer Engineering

SIGNAL & IMAGE PROCESSING DEPTH

	FALL QUARTER	WINTER QUARTER	SPRING QUARTER
Ye	ECE 5 or ECE 15	ECE 15 or ECE 5	ECE 30
	ECE 25	ECE 45	ECE 65
Year 1	ECE 35	MATH 20E	PHYS 2D
	ECE 100	ECE 107	Prof. Elective 1
Yea	ECE 101	ECE 109	Tech. Elective 3
Year 2	Tech. Elective 1	Tech. Elective 2	Tech. Elective 4
	ECE 153	ECE 161B	ECE 161C
Year 3	ECE 161A	Tech. Elective 5	Design
	Prof. Elective 2	Tech. Elective 6	

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ELECTRICAL ENGINEERING MAJOR Signal & Image Processing Depth Suggested Transfer Plan 2017-2018

MAJOR REQUIREMENTS

Lower Division Requirements

CHEM 6A General Chemistry I

PHYS 2A Mechanics
 PHYS 2B Electricity and Magnetism
 PHYS 2C Flu,Wav,Thrmdyn,Optics
 PHYS 2D Relativity & Quantum

- ECE 5 Intro to ECE
 ECE 15 Engineering Computation
 ECE 25 Intro to Digital Design
 ECE 30 Intro to Computer Eng
 ECE 35 Intro to Analog Design
 ECE 45 Circuits & Systems
 ECE 65 Components & Circuits Lab
- MATH 18 Linear Algebra
 MATH 20A Calculus I
 MATH 20B Calculus II
 MATH 20C Calculus III
 MATH 20D Differential Equations
 MATH 20E Vector Calculus

Upper Division Requirements BREADTH

ECE 100 Linear Electronic Systems
 ECE 101 Linear Systems Fundamentls
 ECE 107 Electromagnetism
 ECE 109 Eng. Probability & Stats

SIGNAL & IMAGE PROCESSING DEPTH

ECE 153 Probability and Random Processes for Engineers
 ECE 161A Intro to Digital Signal Processing
 ECE 161B Digital Signal Processing I
 ECE 161C Applications of Digital Signal Processing

Design Course: ECE 111, 191, or 190

ELECTIVES

