The University of Texas at Austin
Chandra Department of Electrical and Computer Engineering
Cockrell School of Engineering

TECHNICAL COMPONENT PACKET

The ECE Curriculum and Technical Components are designed to be flexible so that it can be adapted to meet your career goals while also satisfying the ABET degree accreditation requirements.

PROCESS:

1) Choose or update your choice of technical component on the "Technical Cores/Components" Website, which you can change until your graduating semester starts. When choosing or updating your technical component, you will also choose a faculty mentor (see a list of mentors here).

2) **Each technical component requires 8 upper division courses be completed**, with pre-approved electives listed in this handout.

a) The ECB Dual Degree Program requires 7 upper division courses be completed, with pre-approved electives listed in this handout.

b) Note that in all BS ECE degrees, **there is an additional ECE course to take that is a separate requirement from the technical component.** This can be referred to as the "Advanced Tech Elective" or the "ECE Upper Division Elective."

3) **Substitute a Technical Elective**

a) You may substitute an upper division course as a technical component elective or the advanced tech elective with approval. If you would like to substitute an upper division course as an elective in your technical component, please meet with your faculty mentor to discuss your career goals and what courses will help you meet them. Career applicable non-engineering courses can act as substitutions as well.

Graduate level ECE courses can also be substituted for technical component electives with approval from your faculty mentor. We recommend students look for graduate courses that align with their undergraduate track (graduate tracks are noted at the top of each page of this document). Classes from other graduate tracks may also be approved by faculty mentors. Please note all graduate courses meant as an elective substitution must be taken for undergraduate credit. Please review the instructions for registering for a graduate course on our academic policies page.

b) After meeting with your faculty mentor, please fill out the ABET advising worksheet (ECB students should fill out the ECB ABET advising worksheet) and send the worksheet along with your substitution request to your faculty mentor. If the faculty mentor approves, forward their approval and the ABET worksheet to your undergraduate faculty advisor for additional approval. Students must ensure on the ABET worksheet that they meet engineering and math/science hour accreditation requirements.

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GUIDANCE FOR DECIDING A TECHNICAL COMPONENT TRACK

When choosing your technical component, we suggest primarily *using your career goals and interests to guide your decision*, however, former classes can also serve as an indicator of ability. Below is a chart that can give you a place to start when considering what technical component track you will choose.

Once you have a general idea of what technical components you may like to pursue, it is suggested that you reach out to a faculty member (list linked here) from that technical component to learn more about what the track entails, what careers align with the track, and what research the track is currently focused on. Additionally, the advising office hosts a tech core fair each semester.

DECIDING ELECTRICAL OR COMPUTER ENGINEERING

You might like Electrical Engineering if you liked & did well in…	You might like Computer Engineering if you liked & did well in…
ECE 302	ECE 306
ECE 411	ECE 319K
ECE 313	ECE 312

STARTING POINT TO DECIDE YOUR TECHNICAL COMPONENT TRACK

This is only a guide to start your decision process. Your career goals and interests should be the main guiding point in your decision.

YOU MIGHT CONSIDER DECLARING…	IF YOU LIKED & DID WELL IN…	TO GAUGE YOUR INTEREST IN THE TRACK, CONSIDER TAKING THIS…*
Communication, Signal Processing, Networks and Systems	ECE 313, 351K	ECE 351M
Electronics and Integrated Circuits	ECE 411	ECE 438 or 316
Energy Systems and Renewable Energy	ECE 302 & 411	ECE 462L or 468L or 369
Fields, Waves, and Electromagnetic Systems	PHY ECE 411	ECE 325 or 339 or 363N
Nanoelectronics and Nanotechnology	PHY 303L ECE 302 ECE 411	ECE 339
Computer Architecture and Embedded Systems	ECE 306, 319K, & 312	ECE 316 or 445L
Data Science and Information Processing	ECE 351K	ECE 461P or 460J
Software Engineering and Design	ECE 312	ECE 422C or 360C

**If you take a course from a track to gauge your interest in the track but decide to declare another track, the course can count towards your free electives.*

COMMUNICATION, SIGNAL PROCESSING, NETWORKS AND SYSTEMS

ALIGNS WITH THE GRADUATE TRACK: "DECISION, INFORMATION, AND COMMUNICATIONS ENGINEERING (DICE)"

Considers communication systems, system and signal analysis, networking theory and protocols, and control and optimization theory. Applications include wireless communications; speech, audio, image, and video processing; and feedback control & robotics. *(Courses greyed out with an * indicate that the course has not been offered recently.)*

Required Courses:

Advanced Math	Core	Core	Core Lab
M 427L Adv Calculus for Applications II ***Prerequisite:*** M 408D, M 408L, or M 408S	**ECE 351M** Digital Signal Processing ***Prerequisites***: ECE 313 ***Corequisite***: ECE 351K or **ECE 325** Electromagnetic Engineering ***Prerequisites:*** ECE 411, M 427J or M 427K, PHY 303L & PHY 105N ***Corequisite***: M 427L	**ECE 362K** Introduction to Automatic Control ***Prerequisites***: Upper div Standing, ECE 313 & M 340L **ECE 371Q*** Digital Image and Video Processing ***Prerequisites***: ECE 313 & ECE 351K **ECE 360K** Intro to Digital Communications ***Prerequisites***: ECE 313, ECE 351K, & ECE 351M or ECE 445S or **ECE 372N** Telecommunication Networks ***Prerequisites***: M 340L, ECE 313, & ECE 351K	**ECE 445S** Real-Time Digital Signal Processing Laboratory ***Prerequisites***: ECE 312, ECE 313, & ECE 319K ***Corequisite***: ECE 333T & ECE 351K or **ECE 471C** Wireless Communication Laboratory ***Prerequisite***: ECE 445, ECE 351M, or ECE 360K ***Corequisite***: ECE 333T

General ECE students and ECE Honors students must pick 4 additional electives from the following courses:

ECB Dual degree students must pick 3 additional electives from the following courses:

Course	Course Name	Prerequisites & Corequisites
ECE 325	Electromagnetic Engineering	**Prerequisite**: ECE 411, M 427J or M 427K, PHY 303L & PHY 105N **Corequisite:** M 427L
ECE 325K	Antennas and Wireless Propagation	**Prerequisite**: ECE 325
ECE 351M	Digital Signal Processing	**Prerequisite**: ECE 313 **Corequisite:** ECE 351K
ECE 360C	Algorithms	**Prerequisite**: ECE 312 & M 325K
ECE 360K	Intro to Digital Communications	**Prerequisite**: ECE 313, ECE 351K, & ECE 351M or ECE 445S
ECE 362K	Introduction to Automatic Control	**Prerequisite**: Upper Div Standing, ECE 313 & M 340L
ECE 363M	Microwave and Radio Frequency Engineering	**Prerequisite**: ECE 325
ECE 371P/379K	Intro to Computer Vision	**Prerequisite**: ECE 313 & ECE 351K
ECE 371R/371Q	Digital Image Processing* *last offered Fall 2023*	**Prerequisite**: ECE 313 & ECE 351K
ECE 372N	Telecommunications Network	**Prerequisite**: M 340L, ECE 313, & ECE 351K
ECE 374N	Neural Engineering	**Prerequisite**: ECE 351M or ECE 445S & ECE 460J or ECE 461P
ECE 379K	Antenna Theory and Practice* *last offered Spring 2021*	**Prerequisite**: ECE 325
ECE 379K	Enterprise Network Security* *last offered Fall 2019*	**Prerequisite**: ECE 312 or ECE 313
ECE 379K	Information/Cryptography* *last offered Fall 2023*	**Prerequisite**: ECE 351K
ECE 379K	Optical Communications	**Prerequisite:** ECE 325
ECE 445S	Real-Time Digital Signal Processing Laboratory	**Prerequisite**: ECE 312, ECE 313, & ECE 319K **Corequisite:** ECE 333T & ECE 351K
ECE 460J	Data Science Laboratory	**Prerequisite**: ECE 313, ECE 351K, & M 340L **Corequisite:** ECE 333T
ECE 461P	Data Science Principles	**Prerequisite**: ECE 422C & ECE 360C
ECE 471C	Wireless Communications Laboratory	**Prerequisite**: ECE 445S, ECE 351M, or ECE 360K **Corequisite:** ECE 333T

ELECTRONICS AND INTEGRATED CIRCUITS

ALIGNS WITH THE GRADUATE TRACK: "INTEGRATED CIRCUITS & SYSTEMS (ICS)"

Trains students for careers involving design of electronics and integrated circuits including analog and digital integrated circuits, radio frequency circuits, power electronics, and biomedical electronics.

*(Courses greyed out with an * indicate that the course has not been offered recently.)*

Required Courses:

Advanced Math	Core	Core	Core Lab	Required Elective
M 427L Adv Calculus for Applications II ***Prerequisite:*** M 408D, M 408L, or M 408S	**ECE 325** Electromagnetic Engineering ***Prerequisites:*** ECE 411, M 427J or M 427K, & PHY 303L & PHY 105N ***Corequisite***: M 427L	**ECE 339** Solid-State Electronic Devices ***Prerequisites***: M 427J or M 427K & PHY 303L & PHY 105N ***Corequisite***: ECE 325	**ECE 438** Fundamentals of Electronic Circuits I Laboratory ***Prerequisite***: ECE 411 ***Corequisite***: ECE 333T	**ECE 316** Digital Logic Design ***Prerequisite***: ECE 306

General ECE students and ECE Honors students must pick 3 additional electives from the following courses:

ECB Dual degree students must pick 2 additional electives from the following courses:

Course	Course Name	Prerequisites & Corequisites
ECE 338L	Analog Integrated Circuit Design* *last offered Fall 2022*	**Prerequisite**: ECE 411 & ECE 438
ECE 362M	Power Electronics II	**Prerequisite**: ECE 462L
ECE 363M	Microwave & Radio Frequency Engineering	**Prerequisite**: ECE 325
ECE 374K	Biomedical Electronic Instrument Design* *last offered Fall 2021*	**Prerequisite**: ECE 438
ECE 374L	Applications of Biomedical Engineering* *last offered Spring 2020*	**Prerequisite**: ECE 374K **Corequisite:** ECE 333T
ECE 379K	ASIC Design Lab II	**Prerequisite**: ECE 382M Asic Design Lab I
ECE 379K	Power Management Integrated Circuits	**Prerequisite**: ECE 312 or ECE 313 & ECE 462L or ECE 338L
ECE 438K	Analog Electronics	**Prerequisite**: ECE 438
ECE 440	Integrated Circuits Nanomanufacturing Techniques	**Prerequisite**: M 427J & PHY 303L/105N **Corequisite:** ECE 333T
ECE 445L	Embedded Systems Design Laboratory	**Prerequisite**: ECE 312, ECE 313, ECE 319K, & ECE 411 **Corequisite:** ECE 333T
ECE 445S	Real-Time Digital Signal Processing Laboratory	**Prerequisite**: ECE 312, ECE 313, & ECE 319K **Corequisite:** ECE 333T & ECE 351K
ECE 460M	Digital Systems Design Using HDL	**Prerequisite**: ECE 312, ECE 316 & ECE 319K
ECE 460N	Computer Architecture	**Prerequisite**: ECE 306, ECE 312, & ECE 319K
ECE 460R	Introduction to VLSI Design	**Prerequisite**: ECE 316 & ECE 411

ENERGY SYSTEMS AND RENEWABLE ENERGY

ALIGNS WITH THE GRADUATE TRACK: "POWER ELECTRONICS & POWER SYSTEMS (PEPS)"

Provides the foundation for a career in electric power systems, generation, grid operation, motors and drives, and renewable energy sources. *(Courses greyed out with an * indicate that the course has not been offered recently.)*

Required Courses:

Advanced Math	Core	Core	Core Lab	Required Elective
M 427L Adv Calculus for Applications II ***Prerequisite***: M 408D, M 408L, or M 408S	**ECE 325** Electromagnetic Engineering ***Prerequisites***: ECE 411, M 427J or M 427K, & PHY 303L & PHY 105N ***Corequisite***: M 427L	**ECE 368L/468L** Power Systems Apparatus & Lab ***Prerequisite***: ECE 411 ***Corequisite***: ECE 333T or **ECE 369** Power Systems Engineering ***Prerequisite***: ECE 411	**ECE 462L** Power Electronics Laboratory ***Prerequisite***: ECE 411 ***Corequisite***: ECE 333T or **ECE 368L/468L** Power Systems Apparatus & Lab ***Prerequisite***: ECE 411 ***Corequisite***: ECE 333T	**ECE 362K** Introduction to Automatic Control ***Prerequisites***: Upper div standing, ECE 313 & M 340L

General ECE students and ECE Honors students must pick 3 additional electives from the following courses:

ECB Dual degree students must pick 2 additional electives from the following courses:

Course	Course Name	Prerequisites & Corequisites
ECE 339	Solid-State Electronic Devices	**Prerequisite**: M 427J or M 427K & PHY 303L & PHY 105N **Corequisite**: ECE 325
ECE 339S	Solar Energy Conversion Devices	**Prerequisite**: M 427J or M 427K & PHY 303L & 105N
ECE 341	Electric Drives and Machines* *last offered Spring 2022*	**Prerequisite**: ECE 411
ECE 362G	Smart Grids* *last offered Fall 2020*	**Prerequisite**: ECE 368L/468L or ECE 369
ECE 362M	Power Electronics II	**Prerequisite**: ECE 462L
ECE 362Q	Power Quality and Harmonics	**Prerequisite**: ECE 368L/468L or ECE 369
ECE 362R	Renewable Energy and Power Systems* *last offered Fall 2017*	**Prerequisite**: ECE 411
ECE 362S	Development of a Solar-powered Vehicle* *last offered Fall 2019*	**Prerequisite**: ECE 312 or ECE 313
ECE 369	Power Systems Engineering	**Prerequisite**: ECE 411
ECE 379K	Data Analytics: Power Systems	**Prerequisite**: M 340L, ECE 351K, & ECE 368L/468L or ECE 369
ECE 379K	Connected Autonomous Electric Vehicles	**Prerequisite**: junior or senior standing
ECE 379K	Power Semiconductor Devices	**Prerequisite**: ECE 339
ECE 379K	Power Management Integrated Circuits	**Prerequisite**: ECE 312 or ECE 313 & ECE 462L or ECE 338L
ECE 462L	Power Electronics Laboratory	**Prerequisite**: ECE 411 **Corequisite**: ECE 333T
ECE 468L/368L	Power Systems Apparatus and Laboratory	**Prerequisite**: ECE 411 **Corequisite**: ECE 333T
ME 337C	Intro to Nuclear Power Systems	**Prerequisite**: ME 318M or ME 218 & PHY 303L & 105N
ME 337C has all credit hours in engineering topics. See the Technical Component ABET advising sheet for allocation of engineering versus math & basic science topics.		

FIELDS, WAVES, AND ELECTROMAGNETIC SYSTEMS

ALIGNS WITH THE GRADUATE TRACK: "ELECTROMAGNETICS & ACOUSTICS"

Students in this technical component area study different aspects of applied electromagnetics, including antennas, radio wave propagation, microwave and radio frequency circuits and transmission structures, optical components and lasers, and engineering acoustics.

*(Courses greyed out with an * indicate that the course has not been offered recently.)*

Required Courses:

Advanced Math	Core	Core	Core Lab	Required Elective
M 427L Adv Calculus for Applications II ***Prerequisite:*** M 408D, M 408L, or M 408S	**ECE 325** Electromagnetic Engineering ***Prerequisites:*** ECE 411, M 427J or M 427K, & PHY 303L & PHY 105N ***Corequisite***: M 427L	**ECE 339** Solid-State Electronic Devices ***Prerequisites***: M 427J or M 427K & PHY 303L & PHY 105N ***Corequisite***: ECE 325	**ECE 438** Fundamentals of Electronic Circuits I Laboratory ***Prerequisite***: ECE 411 ***Corequisites***: ECE 333T or **ECE 462L** Power Electronics Laboratory ***Prerequisite***: ECE 411 ***Corequisite***: ECE 333T or **ECE 368L/468L** Power Systems Apparatus & Lab ***Prerequisite***: ECE 411 ***Corequisite***: ECE 333T	**ECE 325K** Antennas & Wireless Propagation ***Prerequisite***: ECE 325 or **ECE 363M** Microwave & Radio Frequency Engineering ***Prerequisite***: ECE 325

General ECE students and ECE Honors students must pick 3 additional electives from the following courses:

ECB Dual degree students must pick 2 additional electives from the following courses:

Course	Course Name	Prerequisites & Corequisites
ECE 325K	Antennas and Wireless Propagation	**Prerequisite**: ECE 325
ECE 334K	Quantum Theory of Engineering Materials	**Prerequisite**: M 427J or M 427K & PHY 303L & PHY 105N
ECE 341	Electric Drives and Machines* *last offered Spring 2022*	**Prerequisite**: ECE 411
ECE 347	Modern Optics	**Prerequisite**: ECE 313 & ECE 325
ECE 348	Laser and Optical Engineering	**Prerequisite**: ECE 325
ECE 361R	Radio Frequency Circuit Design	**Prerequisite**: ECE 325 & ECE 438
ECE 363M	Microwave and Radio Frequency Engineering	**Prerequisite**: ECE 325
ECE 363N	Engineering Acoustics	**Prerequisite**: M 427J or M 427K
ECE 369	Power Systems Engineering	**Prerequisite**: ECE 411
ECE 374K	Biomedical Electronic Instrument Design* *last offered Fall 2021*	**Prerequisite**: ECE 438
ECE 374L	Applications of Biomedical Engineering* *last offered Spring 2020*	**Prerequisite**: ECE 374K **Corequisite:** ECE 333T
ECE 379K	Antenna Theory and Practice* *last offered Spring 2021*	**Prerequisite**: ECE 325
ECE 379K	Optical Communications	**Prerequisite:** ECE 325
ECE 379K	Magnetic Materials and Devices	**Prerequisite**: ECE 325 & M 427L

NANOELECTRONICS AND NANOTECHNOLOGY

ALIGNS WITH THE GRADUATE TRACK: "ELECTRONICS, PHOTONICS, & QUANTUM SYSTEMS"

Students in this technical component area learn about the materials and devices used in modern electronic and optoelectronic systems. *(Courses greyed out with an * indicate that the course has not been offered recently.)*

Required Courses:

Advanced Math	Core	Core	Core Lab
M 427L Adv Calculus for Applications II ***Prerequisite*:** M 408D, M 408L, or M 408S	**ECE 325** Electromagnetic Engineering ***Prerequisites:*** ECE 411, M 427J or M 427K, & PHY 303L & PHY 105N ***Corequisite***: M 427L	**ECE 339** Solid-State Electronic Devices ***Prerequisite***: M 427J or M427K & PHY 303L & PHY 105N ***Corequisite***: ECE 325	**ECE 440** Integrated Circuits Nanomanufacturing Techniques ***Prerequisite:*** M 427J & PHY 303L/105N ***Corequisite***: ECE 333T

General ECE students and ECE Honors students must pick 4 additional electives from the following courses:

ECB Dual degree students must pick 3 additional electives from the following courses:

Course	Course Name	Prerequisites & Corequisites
ECE 334K	Quantum Theory of Engineering Materials	**Prerequisite**: M 427J or M 427K & PHY 303L & PHY 105N
ECE 338L	Analog Integrated Circuit Design* *last offered Fall 2022*	**Prerequisite**: ECE 411 & ECE 438
ECE 339S	Solar Energy Conversion Devices	**Prerequisite**: M 427J or M 427K & PHY 303L & 105N
ECE 340P	High-Throughput Nanopatterning	**Prerequisite**: ECE 411, ECE 339, & M 427J or M 427K
ECE 347	Modern Optics	**Prerequisite**: ECE 313 & ECE 325
ECE 348	Laser and Optical Engineering	**Prerequisite**: ECE 325
ECE 379K	Optical Communications	**Prerequisite:** ECE 325
ECE 379K	Intro to Quantum Info Sci: Hon	**Prerequisite**: ECE 312 or ECE 313, M 340L, & ECE 360C
ECE 379K	Magnetic Materials and Devices	**Prerequisite**: ECE 325 & M 427L
ECE 379K	Power Semiconductor Devices	**Prerequisite**: ECE 339
ECE 438	Fundamentals of Electronic Circuits I Laboratory	**Prerequisite**: ECE411 **Corequisite**: ECE 333T
ECE 460R	Introduction to VLSI Design	**Prerequisite**: ECE 316 & ECE 411

COMPUTER ARCHITECTURE AND EMBEDDED SYSTEMS

ALIGNS WITH THE GRADUATE TRACK: "ARCHITECTURE, COMPUTER SYSTEMS, & EMBEDDED SYSTEMS (ACSES)"

Involves understanding the operation and design of computers and embedded systems on many different levels, including the instruction set, microarchitecture, logic design, hardware & software interfacing to the computer, hardware and software components of a larger system, and stand-alone systems.

*(Courses greyed out with an * indicate that the course has not been offered recently.)*

Required Courses:

Advanced Math	Core	Core	Core Lab	Required Elective
M 325K Discrete Mathematics ***Prerequisite:*** M 408D, M 408L, or M 408S	**ECE 316** Digital Logic Design ***Prerequisite***: ECE 306	**ECE 460N** Computer Architecture ***Prerequisites:*** ECE 306, ECE 312 & ECE 319K	**ECE 445L** Embedded Systems Design Laboratory ***Prerequisites:*** ECE 312, ECE 313, ECE 319K, & ECE 411 ***Corequisite***: ECE 333T	**ECE 360C** Algorithms ***Prerequisites***: ECE 312 & M 325K

General ECE students and ECE Honors students must pick 3 additional electives from the following courses:

ECB Dual degree students must pick 2 additional electives from the following courses:

Course	Course Name	Prerequisites & Corequisites
ECE 360G/379K	Programming Paradigms	**Prerequisite**: ECE 360C, & ECE 422C or ECE 461L
ECE 360P	Concurrent and Distributed Systems	**Prerequisite**: ECE 360C & ECE 422C
ECE 361C	Multicore Computing	**Prerequisite**: ECE 360C & ECE 422C
ECE 361E	Machine Learning/Data Analytics for Edge AI	**Prerequisite**: ECE 460J or CS 342
ECE 361G	Engineering Program Analysis	**Prerequisite**: ECE 360C & ECE 422C or ECE 461L
ECE 361N	Information Security & Privacy	**Prerequisite**: ECE 312
ECE 362K	Introduction to Automatic Control	**Prerequisite**: Upper div Standing, ECE 313 & M 340L
ECE 372N	Telecommunication Networks	**Prerequisite**: M 340L, ECE 313, & ECE 351K
ECE 379K	ASIC Design Lab II	**Prerequisite**: ECE 382M Asic Design Lab I
ECE 379K	Computer Security Fundamentals	**Prerequisite**: ECE 312 & M 325K
ECE 379K	Enterprise Network Security* *last offered Fall 2019*	**Prerequisite**: ECE 312 or ECE 313
ECE 379K	Multithreading Prog/Arch/Tools	**Prerequisite**: ECE 422C
ECE 379K	Network Security and Privacy	**Prerequisite**: CS 439
ECE 422C	Software Design & Implementation II	**Prerequisite**: ECE 312 or 312H
ECE 445M	Embedded and Real-Time Systems Laboratory	**Prerequisite**: ECE 306, ECE 312, ECE 319K
ECE 445S	Real-Time Digital Signal Processing Laboratory	**Prerequisite**: ECE 312, ECE 313, & ECE 319K **Corequisite:** ECE 333T & ECE 351K
ECE 460J	Data Science Laboratory	**Prerequisite**: ECE 313, ECE 351K, & M 340L **Corequisite:** ECE 333T
ECE 460M	Digital Systems Design Using HDL	**Prerequisite**: ECE 312, ECE 316 & ECE 319K
ECE 460R	Introduction to VLSI Design	**Prerequisite**: ECE 316 & ECE 411
ECE 461S	Operating Systems	**Prerequisite**: ECE 312, ECE 319K, & M 325K
ECE 461T/479K	Compilers	**Prerequisite**: ECE 306 & ECE 312

DATA SCIENCE AND INFORMATION PROCESSING

ALIGNS WITH THE GRADUATE TRACK: "DECISION, INFORMATION, AND COMMUNICATIONS ENGINEERING (DICE)"

Trains students in information and signal processing, data mining as well as decision and control algorithms. Applications include data analytics, machine learning, sound and image processing, knowledge extraction and actuation. *(Courses greyed out with an * indicate that the course has not been offered recently.)*

Required Courses:

Advanced Math	Core	Core	Core Lab	Required Elective	Required Elective*
M 325K Discrete Mathematics ***Prerequisites***: M 408D, M 408L, or M 408S	**ECE 461P** Data Science Principles ***Prerequisites***: ECE 313, ECE 351K, & M 340L	**ECE 360C** Algorithms ***Prerequisites***: ECE 312 & M 325K	**ECE 460J** Data Science Laboratory ***Prerequisites***: ECE 313, ECE 351K, & M 340L ***Corequisite***: ECE 333T	**ECE 351M** Digital Signal Processing ***Prerequisite***: ECE 313 ***Corequisite***: ECE 351K	**ECE 316** Digital Logic Design ***Prerequisite***: ECE 306 or **ECE 445S** Real-Time Digital Sig Proc Lab ***Prerequisites***: ECE 312, ECE 313, & ECE 319K ***Corequisite***: ECE 333T & ECE 351K or **ECE 471C** Wireless Comm Lab ***Prerequisites***: ECE 445S, ECE 351M, or ECE 360K ***Corequisite***: ECE 333T

General ECE students and ECE Honors students must pick 2 additional electives from the following courses:

ECB Dual degree students must pick 1 additional elective from the following courses:

Course	Course Name	Prerequisites & Corequisites
ECE 316	Digital Logic Design	**Prerequisite**: ECE 306
ECE 360G/379K	Programming Paradigms	**Prerequisite**: ECE 360C & ECE 422C or ECE 461L
ECE 360P	Concurrent and Distributed Systems	**Prerequisite**: ECE 360C & ECE 422C
ECE 361C	Multicore Computing	**Prerequisite**: ECE 360C & ECE 422C
ECE 361E	Machine Learning/Data Analytics for Edge AI	**Prerequisite**: ECE 460J or CS 342
ECE 361N	Information Security & Privacy	**Prerequisite**: ECE 312
ECE 362K	Introduction to Automatic Control	**Prerequisite**: Upper div standing, ECE 313 & M 340L
ECE 371R/371Q	Digital Image Processing* *last offered Fall 2023*	**Prerequisite**: ECE 313 & ECE 351K
ECE 372N	Telecommunication Networks	**Prerequisite**: M 340L, ECE 313, & ECE 351K
ECE 374N *Previously ECE 379K*	Neural Engineering	**Prerequisite**: ECE 351M or ECE 445S & ECE 460J or ECE 461P
ECE 379K	Architecture for Big Data Science* *last offered Spring 2016*	**Prerequisite**: ECE 422C, ECE 351K, & M 340L
ECE 422C	Software Design & Implementation II	**Prerequisite**: ECE 312 or 312H
ECE 445S	Real-Time Digital Signal Processing Laboratory	**Prerequisite**: ECE 312, ECE 313, & ECE 319K **Corequisite:** ECE 333T & ECE 351K
ECE 461L	Software Engineering and Design Laboratory	**Prerequisite**: ECE 422C & M 325K **Corequisite**: ECE 333T
ECE 471C	Wireless Communications Laboratory	**Prerequisite**: ECE 445S, ECE 351M, or ECE 360K **Corequisite:** ECE 333T

SOFTWARE ENGINEERING AND DESIGN

ALIGNS WITH THE GRADUATE TRACK: "SOFTWARE ENGINEERING & SYSTEMS (SES)"

This component covers the engineering life cycle of software systems, including requirement analysis and specification, design, construction/programming, testing, deployment, maintenance, and evolution.

*(Courses greyed out with an * indicate that the course has not been offered recently.)*

Required Courses:

Advanced Math	Core	Core	Core Lab	Required Elective*
M 325K Discrete Mathematics ***Prerequisite*:** M 408D, M 408L, or M 408S	**ECE 422C** Software Design & Implementation II ***Prerequisite*:** ECE 312	**ECE 360C** Algorithms ***Prerequisites*:** ECE 312 & M 325K	**ECE 461L** Software Engineering & Design Laboratory ***Prerequisites*:** ECE 422C & M 325K ***Corequisite*:** ECE 333T	**ECE 316** Digital Logic Design ***Prerequisite*:** ECE 306 or **ECE 445L** Embedded Systems Design Laboratory ***Prerequisites*:** ECE 312, ECE 313, ECE 319K, & ECE 411 ***Corequisite*:** ECE 333T

General ECE students and ECE Honors students must pick 3 additional electives from the following courses:

ECB Dual degree students must pick 2 additional electives from the following courses:

Course	Course Name	Prerequisites & Corequisites
ECE 316	Digital Logic Design	**Prerequisite**: ECE 306
ECE 360G/379K	Programming Paradigms	**Prerequisite**: ECE 360C & ECE 422C or ECE 461L
ECE 360P	Concurrent and Distributed Systems	**Prerequisite**: ECE 360C & ECE 422C
ECE 360T	Software Testing	**Prerequisite**: ECE 422C
ECE 361C	Multicore Computing	**Prerequisite**: ECE 360C & ECE 422C
ECE 361G	Engineering Program Analysis	**Prerequisite**: ECE 360C & ECE 422C or ECE 461L
ECE 361Q	Requirements Engineering	**Prerequisite**: ECE 312
ECE 361M	Software Architectures	**Prerequisite**: ECE 422C & ECE 360C
ECE 361N	Information Security & Privacy	**Prerequisite**: ECE 312
ECE 371P/379K	Intro to Computer Vision	**Prerequisite**: ECE 313 & ECE 351K
ECE 372N	Telecommunication Networks	**Prerequisite**: M 340L, ECE 313, & ECE 351K
ECE 379K	Computer Security Fundamentals	**Prerequisite**: ECE 312 & M 325K
ECE 379K	Enterprise Network Security* *last offered Fall 2019*	**Prerequisite**: ECE 312 or ECE 313
ECE 379K	Information/Cryptography* *last offered Fall 2023*	**Prerequisite**: ECE 351K
ECE 379K	Multithreading Prog/Arch/Tools	**Prerequisite**: ECE 422C
ECE 379K	Network Security and Privacy	**Prerequisite**: CS 439
ECE 445L	Embedded Systems Design Laboratory	**Prerequisite**: ECE 312, ECE 313, ECE 319K, & ECE 411 **Corequisite:** ECE 333T
ECE 445M	Embedded and Real-Time Systems Laboratory	**Prerequisite**: ECE 306, ECE 312, & ECE 319K
ECE 460J	Data Science Laboratory	**Prerequisite**: ECE 313, ECE 351K, & M 340L **Corequisite:** ECE 333T
ECE 460N	Computer Architecture	**Prerequisite**: ECE 306, ECE 312, & ECE 319K
ECE 461P	Data Science Principles	**Prerequisite**: ECE 313, ECE 351K, & M 340L
ECE 461S	Operating Systems	**Prerequisite**: ECE 312, ECE 319K, & M 325K
ECE 461T/479K	Compilers	**Prerequisite**: ECE 306 & ECE 312

Choosing Your Track Electives

Students can view a prospective tech elective offering schedule to view what courses *may** be offered in the upcoming semesters. This list is always subject to change and not guaranteed. Once the official course schedule posts, it is unlikely that any other courses will be added to the schedule.

Students having a difficult time finding track electives should review the substitution process. When searching for a class to substitute, students should check to see if there are grad courses or other engineering major courses that relate to their technical component.

Students pursuing a grad course should follow the 'Undergrad students taking Grad courses' instructions on the academic policies page. A grad course should be taken for undergraduate credit if wishing to substitute for an elective in the BS degree.
Students pursuing courses in other majors should consult the academic advisors in that department to inquire what their policies are for non-majors taking their courses.

Advanced Tech Elective

The Advanced Tech Elective or the "ECE Upper Division Elective" is a separate requirement from the technical component courses. This does not double dip with any other part of the degree. This can be fulfilled by any ECE Upper Division 3-4 credit course. ECE 316 may be used as the advanced tech elective if not already in use by the technical component courses.

FREE ELECTIVES

Free Electives (FE) are an additional required part of the ECE degree. Students must complete 14 hours of free electives.

Important considerations for Free Electives:

- Students *must take at least one math or science course* for FEs.
- Students *must take at least 11 hours of upper division hours* for FEs.
- Students *must take at least 11 hours in residence* for FEs.
- Students cannot use AP credit or University Extension courses for FEs.

Please view the Free Elective website for more detailed information.

Students can view the approved Free Elective courses on the Free Elective Database.

If a student would like to count a course as a free elective but it is not on the database, they can complete a Free Elective Petition, located on the Free Elective website. Petitions can take up to 3 months to be reviewed; it is recommended that students petition a course BEFORE registering for it.

ACADEMIC RESOURCES

When planning what technical component courses you will take, you should consult the Registrar's online course schedule, which contains the most accurate course offerings, topics, and prerequisites.

UT course syllabi are available at the Syllabi and CV database website.