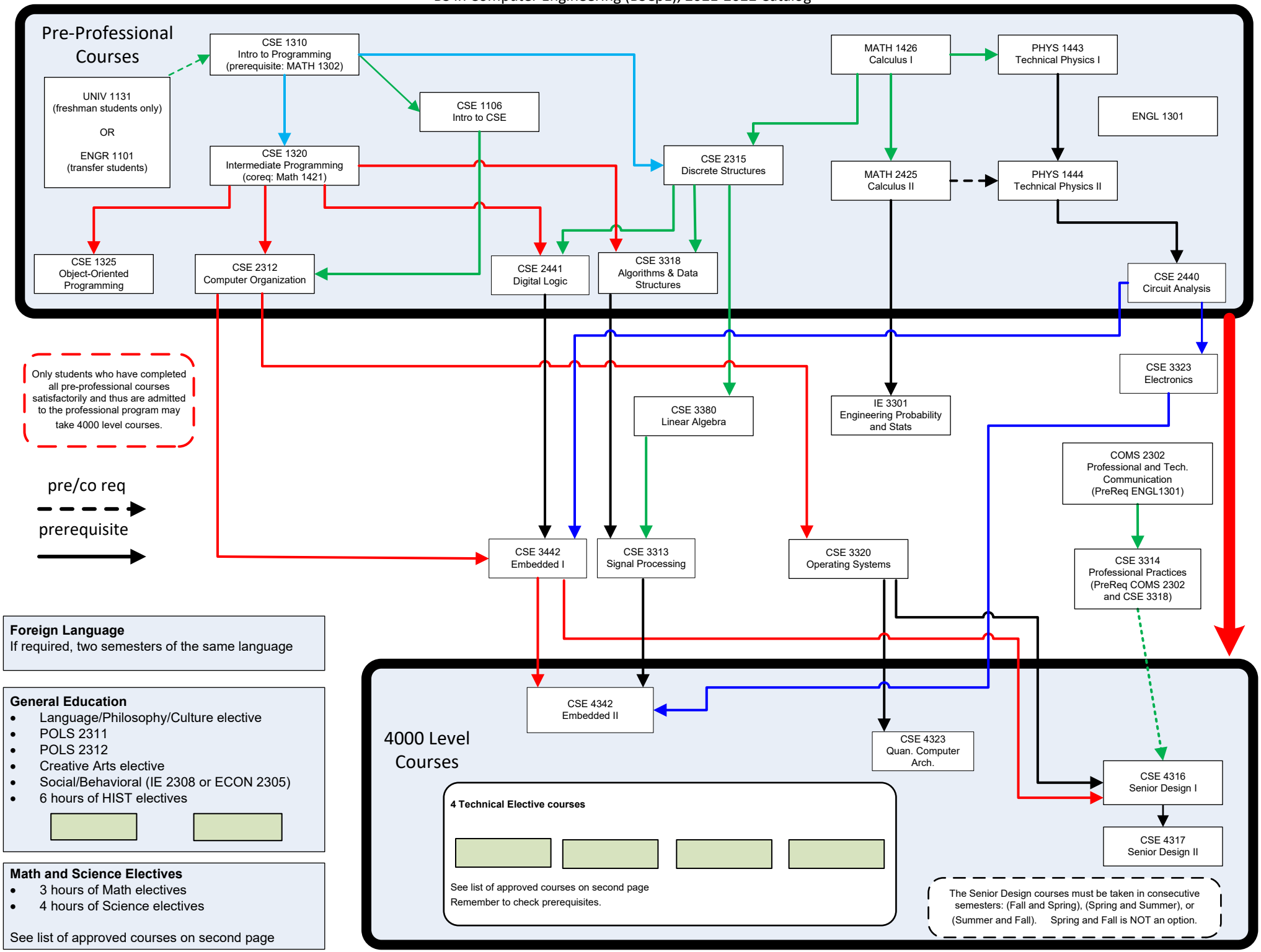
# BS in Computer Engineering (BSCpE), 2021-2022 Catalog




**Foreign Language**
If required, two semesters of the same language

**General Education**
- Language/Philosophy/Culture elective
- POLS 2311
- POLS 2312
- Creative Arts elective
- Social/Behavioral (IE 2308 or ECON 2305)
- 6 hours of HIST electives

**Math and Science Electives**
- 3 hours of Math electives
- 4 hours of Science electives

See list of approved courses on second page

**CPE 2021-2022 Classes**

**Mathematics Electives**

- MATH 2326 - Calculus III (Fall, Spring, & Summer)
- CSE 4345 - Computational Methods (Fall & Spring)
- CSE 3315 - Theoretical Concepts in CSE (Fall & Spring)

**Science Electives**

- BIOL 1441 – Cell and Molecular Biology (Fall, Spring, & Summer)
- CHEM 1441 – General Chemistry (Fall, Spring, & Summer)
- CHEM 1465 – Chemistry for Engineers (Fall, Spring, & Summer)

PHYS 3313 & PHYS 3183 – Intro to Modern Physics (Fall & Spring)

**Technical Electives**

You need to complete three tech electives for your degree plan, but you are only allowed to take **ONE** of the following: CSE 4308, CSE 4309, CSE 4310, CSE 4340, CSE 4360, CSE 4378, and CSE 4380.

- CSE 4308 – Artificial Intelligence
  prereqs: CSE 3318, and CSE 3380 or MATH 3330 (Fall, Spring, and Summer)

- CSE 4309 – Fundamentals of Machine Learning
  prereqs: CSE 3318, IE 3301 or MATH 3313, and CSE 3380 or MATH 3330 (Fall only)

- CSE 4310 - Fundamentals of Computer Vision
  prereqs: CSE 3318, IE 3301 or MATH 3313, CSE 3380 or MATH 3330 (Spring only)

- CSE 4340 – Fundamentals of Wireless Networks
  prereqs: CSE 4344 or CSE 4352 (Fluctuates)

- CSE 4352 – IoT and Networking
  prereqs: CSE 3442 (Spring only)

- CSE 4354 – Real-time Operating Systems
  prereqs: CSE 3320 and CSE 3442 (Fall only)

- CSE 4355 – Electomechanical Systems and Sensors
  prereqs: CSE 3323 and CSE 3442 (Fall only)

- CSE 4356 – System on Chip (SoC) Design
  prereqs: CSE 3442 (Fall only)

- CSE 4357 – Advanced Digital Logic Design
  prereqs: CSE 3442 (Spring only)

- CSE 4358 – Microprocessor Systems
  prereqs: CSE 3323 (Spring only)

- CSE 4360 - Autonomous Robot Design and Programming
  prereqs: CSE 3318, CSE 3320, and CSE 3380 or MATH 3330 (Fall only)

- CSE 4372 – RISC Processor Design
  prereqs: CSE 3442 (Spring only)

- CSE 4373 – General Purpose GPU Programming
  prereqs: CSE 3320 (Fall only)

- CSE 4376 – Digital Communication Systems
  prereqs: CSE 3313 (Fall only)

- CSE 4377 – Wireless Communication Systems
  prereqs: CSE 3313 (Spring only)

- CSE 4378 – Intro to Unmanned Vehicle Systems
  prereqs: Admission to the professional program and permission from an advisor (Fall only)

- CSE 4380 – Information Security
  prereqs: CSE 3320 (Fall and Spring)

**Language, Philosophy & Culture Electives**

- ANTHROPOLOGY (ANTH) 2322
- ARABIC (ARAB) 2310, 2314
- ARCHITECTURE (ARCH) 2300
- ART & ART HISTORY (ART) 1317
- American Sign Lang. (ASL) 2314
- CHINESE (CHIN) 2310, 2314
- CLASSICS (CLAS) 1300
- ENGLISH (ENGL) 2303, 2309, 2319, 2329
- FRENCH (FREN) 2310, 2314
- GERMAN (GERM) 2310, 2314
- GLOBAL (GLOBAL) 2301
- GREEK (GREK) 2314
- HISTORY (HIST) 2377
- INTERDISCIPLINARY STUDIES (INTS) 1310
- KOREAN (KORE) 2310, 2314
- LATIN (LATN) 2314
- LINGUISTICS (LING) 2371
- MEXICAN AMERICAN STUDIES (MAS) 2300
- PHILOSOPHY (PHIL) 1304, 2300, 2314
- RUSSIAN (RUSS) 2310 , 2314
- SOCIOLOGY (SOCI) 1310
- SPANISH (SPAN) 2310, 2314, 2315
- WOMEN'S & GENDER STUDIES (WOMS) 2310

**Creative Arts Electives**

- ARCHITECTURE (ARCH) 1301
- ART & ART HISTORY (ART) 1301, 1309, 1310
- DANCE (DNCE) 1300
- ENGLISH (ENGL) 1375
- MUSIC (MUSI) 1300, 1302, 1304, 2300, 2301
- THEATER ARTS (THEA) 1342, 1343

**History Electives**

- HIST 1301
- HIST 1302
- HIST 1331
- HIST 1332

# Bachelor of Science in Computer Engineering

Degree Plan Requirements: **Fall 2021**

UNIVERSITY OF TEXAS ARLINGTON | COLLEGE OF ENGINEERING

Student Name: _____ UTA ID#: _____

## General Education/Core Curriculum

| | Course | Hours Earned | Hours |
|---|---|---|---|
| | US History* | | 3 |
| | US History* | | 3 |
| | POLS 2311 | | 3 |
| | POLS 2312 | | 3 |
| | ECON 2305 or IE 2308 | | 3 |
| | Creative Arts* | | 3 |
| | Language, Philosophy, and Culture* | | 3 |
| | ENGL 1301 | | 3 |
| | COMS 2302 | | 3 |
| | **TOTAL General Education/Core** | | 27 |

## Mathematics

| | Course | Hours Earned | Hours |
|---|---|---|---|
| | MATH 1426 Calculus I | | 4 |
| | MATH 2425 Calculus II | | 4 |
| | IE 3301 or MATH 3313 Engr. Probability | | 3 |
| | CSE 3380 or MATH 3330 Linear Algebra | | 3 |
| | Math Elective ** | | 3 |
| | **TOTAL Mathematics** | | 17 |

## Science

| | Course | Hours Earned | Hours |
|---|---|---|---|
| | PHYS 1443 Technical Physics 1 | | 4 |
| | PHYS 1444 Technical Physics 2 | | 4 |
| | Science Elective ** | | 4 |
| | **TOTAL Science** | | 12 |

## COE Foreign Language

__ Earned in High School,

__ Earned in College, or

__ Exempt (ESL)

## Engineering Success

| | Course | Hours Earned | Hours |
|---|---|---|---|
| | ENGR 1101 or UNIV 1131 | | 1 |
| | **TOTAL Engineering Success** | | 1 |

## Major: Computer Engineering

| | Course | Hours Earned | Hours |
|---|---|---|---|
| | CSE 1106 Introduction to CSE | | 1 |
| | CSE 1310 Introduction to Programming | | 3 |
| | CSE 1320 Intermediate Programming | | 3 |
| | CSE 1325 Object-Oriented Programming | | 3 |
| | CSE 2312 Computer Organization | | 3 |
| | CSE 2315 Discrete Structures | | 3 |
| | CSE 2440 Circuit Analysis | | 4 |
| | CSE 2441 Digital Logic Design | | 4 |
| | CSE 3318 Algorithms & Data Structures | | 3 |
| | CSE 3313 Intro to Signal Processing | | 3 |
| | CSE 3314 Professional Practices | | 3 |
| | CSE 3320 Operating Systems | | 3 |
| | CSE 3323 Electronics | | 3 |
| | CSE 3442 Embedded Systems I | | 4 |
| | CSE 4316 Senior Design I | | 3 |
| | CSE 4317 Senior Design II | | 3 |
| | CSE 4323 Quantitative Computer Arch. | | 3 |
| | CSE 4342 Embedded Systems II | | 3 |
| | Technical Elective** | | 3 |
| | Technical Elective** | | 3 |
| | Technical Elective** | | 3 |
| | Technical Elective** | | 3 |
| | **TOTAL Computer Science** | | 67 |

**Total Hours for CpE Degree Plan 2021: 124 Hours**

* Refer to the UTA catalog for options (https://catalog.uta.edu/degreerequirements/generalcorerequirements/)

** Refer to flowcharts on website for options (https://www.uta.edu/academics/schools-colleges/engineering/academics/degree-plans)

# BS in Computer Engineering Course Pre/Co-requisite Requirements 2021-2022

- This document lists all courses required for a BS degree in Computer Engineering along with any required pre-requisites and co-requisites.
- For Texas Common Course Number (TCCN), visit https://www.uta.edu/admissions/apply/transfer/transfer-guides. Scroll down the page to view "Current Transfer Guides." Prior to registering, confirm with your UTA advisor any courses you plan to take outside of UTA.
- This document lists three categories of course requirements: 1. General Education; 2. Pre-professional; and 3. Professional.
- To be eligible to enroll in College of Engineering (COE) pre-professional and/or professional level courses, must be in "good standing" with the College

## 1. General Education

### U.S. History

| Course Required | Prerequisites | Corequisites* | UTA Alternative Course Options |
|---|---|---|---|
| Any U.S. History course from the UTA approved list | None | ENGL 1301 (HIST 1301/2) | None |
| Any U.S. History course from the UTA approved list | None | ENGL 1301 (HIST 1301/2) | None |

### Political Science

| Course Required | Prerequisites | Corequisites* | UTA Alternative Course Options |
|---|---|---|---|
| POLS 2311 – Government of the United States | None | None | None |
| POLS 2312 – State and Local Government | None | None | None |

### Social/Behavioral Science

| Course Required | Prerequisites | Corequisites* | UTA Alternative Course Options |
|---|---|---|---|
| IE 2308 – Economics for Engineers or ECON 2305 – Principles of Macroeconomics | MATH 1426 (for IE 2308) | None | None |

### Creative Arts

| Course Required | Prerequisites | Corequisites* | UTA Alternative Course Options |
|---|---|---|---|
| Any Creative Arts course from the UTA approved list | Varies | None | None |

## Language, Philosophy, Culture

| Course Required | Prerequisites | Corequisites* | UTA Alternative Course Options |
|---|---|---|---|
| Any Language, Philosophy, Culture course from the UTA approved list | Varies | None | None |

## Communication

| Course Required | Prerequisites | Corequisites* | UTA Alternative Course Options |
|---|---|---|---|
| ENGL 1301 – Rhetoric and Composition 1 | None | None | None |
| COMS 2302 – Professional and Technical Communication | ENGL 1301 + 30 hours completed | None | None |

## Mathematics

| Course Required | Prerequisites | Corequisites* | UTA Alternative Course Options |
|---|---|---|---|
| MATH 1426 – Calculus 1 | MATH 1421 or MPT scores | None | None |
| MATH 2425 – Calculus 2 | MATH 1426 | None | None |
| IE 3301 – Engineering Probability or MATH 3313 – Intro to Probability | For IE 3301 – MATH 2425 (or concurrent enrollment)<br>For MATH 3313 – C or better in MATH 2326 | None | None |
| CSE 3380 or MATH 3330 Linear Algebra | For CSE 3380- C or better in CSE 2315<br>For MATH 3330- C or better in MATH 2425 | None | None |
| Math Elective | Varies | Varies | Varies |

## Science

| Course Required | Prerequisites | Corequisites* | UTA Alternative Course Options |
|---|---|---|---|
| PHYS 1443 – Physics 1 with Lab | MATH 1426 | None | None |
| PHYS 1444 – Physics 2 with Lab | PHYS 1443 | MATH 2425 | None |
| Science Elective | Varies | Varies | Varies |

## Engineering

| Course Required | Prerequisites | Corequisites* | UTA Alternative Course Options |
|---|---|---|---|
| Transfer Students: ENGR 1101 – Entrance to Engineering<br>or<br>Freshmen: UNIV 1131 – Student Success | None | None | None |

## 2. Computer Engineering Pre-Professional Engineering Courses

| Course Required | Prerequisites | Corequisites* | UTA Alternative Course Options |
|---|---|---|---|
| CSE 1106 – Introduction to Computer Science and Engineering | CSE 1310 | None | None |
| CSE 1310 – Introduction to Computers and Programming | C or better in MATH 1302 or C or better in (or concurrent enrollment in) a subsequent mathematics course (MATH 1421, MATH 1426, MATH 2425, MATH 2326, MATH 3330, HONR-SC 1426 or HONR-SC 2425) and C or better in UNIV 1131 (or concurrent enrollment) or ENGR 1101 (or concurrent enrollment) | ENGR 1101 or UNIV 1131 | None |
| CSE 1320 – Intermediate Programming | C or better in CSE 1310 or C or better in CSE 1312, and C or better in (or concurrent enrollment) (MATH 1421, MATH 1426, MATH 2425, MATH 2326, MATH 3330, HONR-SC 1426, or HONR-SC 2425) and C or better in UNIV 1131 (or concurrent enrollment) or ENGR 1101 (or concurrent enrollment) | ENGR 1101 or UNIV 1131 | None |
| CSE 1325 – Object-Oriented Programming | CSE 1320 | None | None |
| CSE 2312 – Computer Organization and Assembly Language Programming | C or better in CSE 1320 and a C or better in CSE 1106 | None | None |
| CSE 2315 – Discrete Structures | C or better in CSE 1310 and MATH 1426 (or C or better in or concurrent enrollment in MATH 2425) | None | None |
| CSE 2440 – Circuit Analysis | C or better in MATH 2425 and PHYS 1444. | None | None |

| Course Required | Prerequisites | Corequisites* | UTA Alternative Course Options |
|---|---|---|---|
| CSE 2441 – Digital Logic Design | CSE 1320 and CSE 2315. | None | None |
| CSE 3318 – Algorithms and Data Structures | CSE 1320 and CSE 2315 | None | None |
| CSE 3313 – Introduction to Signal Processing | C or better in each of the following: CSE 3318 and either CSE 3380 or MATH 3330. | None | None |
| CSE 3314 – Professional Practices | C or better in COMS 2302 and CSE 3318 | None | None |
| CSE 3320 – Operating Systems | C or better in CSE 2312 | None | None |
| CSE 3323 – Electronics | C or better in CSE 2440. | None | None |
| CSE 3442 – Embedded Systems 1 | C or better in each of the following: CSE 2312, CSE 2440 and CSE 2441. | None | None |

## 3. Computer Engineering Professional Courses: MUST BE ADMITTED INTO A CpE PROFESSIONAL PROGRAM

| Course Required | Prerequisites | Corequisites* | UTA Alternative Course Options |
|---|---|---|---|
| CSE 4316 – Computer System Design Project I | For academic plan CS_CS or SE_SE, C or better in CSE 3310 and CSE 3320, and C or better in CSE 3314 (or concurrently). For academic plan CSE_CP, C or better in CSE 3320 and CSE 3442, and C or better in CSE 3314 (or concurrently) | CSE 3314 | None |
| CSE 4317 – Computer System Design Project II | C or better in CSE 4316 and continuation with the same team | None | None |
| CSE 4323 – Quantitative Computer Architecture | C or better in CSE 3320 | None | None |
| CSE 4342 – Embedded Systems 2 | C or better in each of the following: CSE 3323, CSE 3442, and CSE 3313. | None | None |
| Technical Elective 1 | Varies | Varies | Varies |
| Technical Elective 2 | Varies | Varies | Varies |
| Technical Elective 3 | Varies | Varies | Varies |
| Technical Elective 4 | Varies | Varies | Varies |

*In order for a course to be considered a co-requisite, both courses must be registered for at UTA.