FAQ

Q: What are the basic requirements for the Elements certificate?
A: To earn an Elements certificate from the Department of Computer Science and have it recognized on your official UT transcript, you must take 18 semester hours of Elements courses, in which at least 12 hours must be upper-division courses. All students must complete CS 303E and CS 313E, or the approved equivalents. Please visit the Elements website for further details.

Q: How do I apply for certification?
A: Submit the online certification form, which can be found on the Elements website, after you have completed the program requirements prior to the semester deadline. You do not need to apply to take the courses as they are open to all students meeting the prerequisites.

Q: Can I use Elements courses towards a Computer Science degree at UT?
A: No. Only non-CS majors are allowed to take Elements courses. Please check with your advisor to see if Elements courses will count towards your degree plan.

Q: Is there a specific order in which these courses should be taken?
A: Before taking any upper-division Elements courses, you must complete CS 303E and/or CS 313E, both of which count towards your certification. Please check the pre-requisites for each course.

Q: What are the semester deadlines to submit the certification form?
A: In order for us to certify you for a given semester, please submit your online certification form by these deadlines. If the date falls on a weekend, please submit your form by the next business day. If you missed the deadline, please submit your form prior to the next deadline so that we may certify you for that semester.

- **Spring:** May 1 by 5 PM
- **Summer:** August 1 by 5 PM
- **Fall:** Dec 1 by 5 PM

THE UNIVERSITY OF TEXAS AT AUSTIN
COMPUTERSCIENCE

Computer Science has become the enabling science of our age. It is the engine that drives innovation and discovery in science, engineering, medicine, business, and national defense and will soon transform arts, humanities and the social sciences.

The UT Department of Computer Science repeatedly ranks as a top-ten computer science program in the United States and has one of the largest undergraduate programs in the country. Our faculty have garnered multiple awards in their field and hold leadership roles in computer science education at national and international levels.

Questions?

Contact the Computer Science Undergraduate Advising Office
GDC 2.702
512-471-9509
elements@cs.utexas.edu

https://www.cs.utexas.edu/undergraduate-program/academics/elements-computing

Updated September 2018

The University of Texas at Austin
College of Natural Sciences

The Elements of Computing Program

Computer Science Courses for Non-Majors

The University of Texas at Austin
WHAT STARTS HERE CHANGES THE WORLD

Coursework

Degree-seeking students who complete 18 semester hours of Elements courses, in which at least 12 hours are upper-division coursework, will earn a certificate from the Department of Computer Science and have it recognized on their official UT transcripts. All students are required to complete CS 303E and CS 313E, or the approved equivalents. Please note that the course offerings vary each semester.

If you would like for faculty to review a course substitution for a course you are currently enrolled in or have previously take, please visit the Elements website for the Elements Course Substitution Request form.

Please visit the Elements website for more details: https://www.cs.utexas.edu/undergraduate-program/academics/elements-computing

Lower-Division Courses

CS 303E: Elements of Computers & Programming *(required)*
An introduction to programming concepts using a simple but powerful scripting language. Involves problem solving and fundamental algorithms for various applications. CS 303E, or equivalent, is required for certification.

CS 313E: Elements of Software Design
(required)
Pre-requisite: CS 303E, or equivalent.
Learn how to use basic programming skills to design software, create graphical user interfaces (GUIs), and use pre-existing software components to create new usable systems. Students with prior programming credit may take CS 313E instead of CS 303E after receiving permission.

Please check the Elements website for list of approved substitutions for Elements courses. No more than two course substitutions may be used towards the Elements of Computing certificate. CS 312 and CS 314 will not count against the course substitution limit.

Upper-Division Courses

CS 324E: Elements of Graphics & Visualization
Pre-requisite: CS 303E, or equivalent.
An introduction to basic 2D & 3D computer graphics systems and how to manipulate digital media. Other topics may include animation, interactive graphics and game design, graphical user interfaces, and visual information presentation.

CS 327E: Elements of Databases
Pre-requisite: CS 303E, or equivalent.
An introduction to SQL and the fundamentals of database technology to facilitate information searches. Learn valuable skills used in many work environments and research practices.

CS 329E: Topics in Elements of Computing
(topics may vary each semester)
Pre-requisite: CS 313E, or equivalent.

- **Elements of Data Visualization**

Teaches the essential skills necessary to communicate information about data effectively through graphical means. Rendering data with appropriate visual analytics reduces the time required to achieve understanding and helps in managing the ever growing amount of available digital data.

- **Elements of Mobile Computing**

This course will introduce you to designing and implementing a mobile application across all the layers, including the database backend, the web-service, and a native Android client application. We will address technical issues such as the testing, deployment, and scaling you app, as well as getting it deployed to a cloud provider.

- **Elements of Web Programming**

Create your own digital presence on the World Wide Web by learning how to build web sites and databases using the latest technology.

- **Elements of Game Development**

This course provides students with the fundamentals of digital game creation. The course focuses on three areas: (1) learning html5, CSS, and JavaScript using the Phaser game engine, (2) general principles of game design and software engineering processes, and (3) development of 2D games.

- **Elements of Programming Languages**

Teaches the essential skills necessary to program in a variety of currently popular programming languages and programming models. This course will enable students to understand the differences between the programming models and decide to embrace one or the other, or a combination of each. The course will also teach how programming languages are constructed.

- **Elements of Data Analytics**

In this course, students will be exposed to a buffet of techniques and processes needed to apply the science to the data, utilizing the art of mining actionable insights, to derive business value and successful outcomes from data sets. The focus will be on using statistical and data mining algorithms to build, visualize, and interpret models.

CS 330E: Elements of Software Engineering I
Pre-requisite: CS 313E, or equivalent.
Formally known as CS 329E: Elements of Software Engineering; only one course may count towards the certificate
This is a course on software engineering using Python. It is strongly focused on using tools to improve the quality of software development including automated builds with make, source control with git and GitLab, unit testing with unittest, code coverage with coverage, continuous integration with GitLab CI, automated documentation with pydoc, Docker.

CS 331E: Elements of Software Engineering II
Pre-requisite: CS 330E
This is an advanced course in software engineering. It will include the creation of a dynamic website with a database backend using tools such as Digital Ocean or Google Cloud Platform, Bootstrap, Flask, Namecheap, PostgreSQL, RESTful APIs, Slack, and SQLAlchemy. It will continue to use software quality improvement tools introduced in CS 330E.

Once you've completed all the certificate requirements, applied for certification, and received approval on your certification form, you will receive a digital Elements of Computing certificate and completion letter at the end of the certification process.