

As of Fall 2021, lower division substitutions are not accepted. Students should plan to take C S 303E and C S 313E for the Elements of Computing certificate at UT. However, we will honor the following courses as substitutions for C S 303E *if taken prior or during the Summer 2021 semester*: MIS 304: Intro to Problem Solving & Programming, EE 312: Software Design & Implementation 1, COE 301: Introduction to Computer Programming, BME 303: Introduction to Computing, and SDS 322: Introduction to Scientific Programming. We will also honor EE 422C: Software Design & Implementation 2 as a substitution for C S 313E if taken prior or during Summer 2021.

If a student would like to petition a non-approved substitution course for the Elements certificate, please fill out the [Elements Course Substitution Form](#) and include the syllabus for the semester that you took that the course was taken. The student must be registered for the course and have received or will be expecting to receive a C-, or better, letter grade. Transfer courses will need to be completed and transferred into UT prior to the evaluation process. These petitions are not guaranteed for approval and the student will be sent a SAN once the Elements faculty advisor makes a final decision.

### Upper Division Course Substitutions

Substitution Course	Elements Equivalent	Approved Through
SDS 335: Scientific and Technical Computing	CS 323E: Scientific Programming*	Summer 2024
PHY 329: Introductory Computational Physics	CS 323E: Scientific Programming*	Summer 2024
ME 318M: Programming & Engineering Computational Methods	CS 323E: Scientific Programming*	Summer 2024
M 348: Scientific Computation in Numerical Analysis	CS 323E: Scientific Programming*	Summer 2024
CHE 348: Numerical Methods in Chem Engineering & Problem Solving	CS 323E: Scientific Programming*	Summer 2024
MIS 325: Database Management	CS 327E: Elements of Databases	Summer 2024
MIS 333K: Web Application Development	CS 329E: Elements of Web Programming	Summer 2024
BCH 339N: Systems Biology & Bioinformatics	CS 329E: Elements of Data Analytics**	Summer 2024
M 375T: Predictive Analysis	CS 329E: Elements of Data Analytics**	Summer 2024
SDS 322E: Elements of Data Science***	CS 329E: Elements of Data Analytics**	Summer 2024
PGE 323M: Reservoir Engineering III	Upper Division Elements Elective	Summer 2024
PGE 379/383: High Performance Computing	Upper Division Elements Elective	Summer 2024
CH 354M/393L: Intro to Computational Methods in Chemistry	Upper Division Elements Elective	Summer 2024

\*Only ONE substitution for C S 323E: Scientific Programming may count towards the certificate

\*\* Only ONE substitution for C S 329E: Elements of Data Analytics may count towards the certificate

\*\*\*Course name was previously SDS 348: Computational Biology & Bioinformatics