

The New Computer Science BS Curriculum

This document was produced by the computer science undergraduate committee

The New CS Major

- **Goal:** a more flexible, integrated curriculum that reflects the different areas of the field of computer science and its interdisciplinary nature
 - The general CS degree is more flexible than the current CS major and allows the option of any CSU minor
 - Ability to focus on specific areas of interest: five concentrations that provide curricula that match different career paths
- You can either do a **general CS degree** or choose one of five **concentrations**.
- Concentrations: artificial intelligence & machine learning, software engineering, computer systems, networks & security, human-centered computing
- Available starting fall 2020

Highlights

- The new curriculum updates the CS and ACT majors into a single unified major
- New courses and flexibility at the 300 level (new courses: machine learning, augmented reality)
- More options at the 400-level (cybersecurity, software testing)
- Modified math requirements: calc II only required in some concentrations (AI/ML), stronger linear algebra requirement
- New CS-specific calculus series planned ("Calculus for Computational Science"). First offering planned for fall 2020.
- 200-level ethics course as part of the curriculum
- More opportunity for taking CS courses



Concentrations

- A concentration is a carefully selected set of courses that prepares you for specific career paths and provides a strong general CS foundation at the same time.
- Why concentrations?
 - Your concentration will appear on your transcript and advertise a set of skills
 - It demonstrates depth in a specific area
- All concentrations are identical in first two years, and have different requirements at the 300-level and above and in the out-of-department courses
- You can always revert to the general CS degree without impacting your progress.



Current CS-CS BS

New BS-General

MATH	<ul style="list-style-type: none"> Calculus I: MATH 160 Calculus II: MATH 161 Linear Algebra: MATH 229 or MATH 369 or DSCI 369 Statistics: STAT 301 or 315 	<ul style="list-style-type: none"> Calculus I: MATH 160 or <i>new Calculus for CS</i> * <i>Calculus II: not required and ...</i> Linear Algebra: MATH 369 or DSCI 369 - Note: does not include MATH 229 Statistics: STAT 301, 307, or 315
Natural Sciences	<ul style="list-style-type: none"> 12 credits, restrictive list of AUCC Natural Sciences and some not on AUCC list 	<ul style="list-style-type: none"> 7 credits, restrictive list of AUCC Natural Sciences, all from AUCC list
AUCC Arts & Humanities	<ul style="list-style-type: none"> 2 required 	<ul style="list-style-type: none"> 2 required – one must be CS 201 (ethics)
CS lower level courses	<ul style="list-style-type: none"> CS 163/164, CS 165, CS 220, CS 270, CS 253 	<ul style="list-style-type: none"> CS 163/164, CS 165, CS 220, CS 270, CS 253
CS 3xx	<ul style="list-style-type: none"> CS 314, CS 320, CS 356, CS 370 	<ul style="list-style-type: none"> CS 314, CS 320, CS 370
CS 4xx	<ul style="list-style-type: none"> Select 4 courses 	<ul style="list-style-type: none"> Select 4 courses (3 if minor or double major)
CS Upper division	<ul style="list-style-type: none"> 0 courses 	<ul style="list-style-type: none"> Select 2 courses
Technical Electives	<ul style="list-style-type: none"> 2 to 3 courses required Long list, many have pre-requisites that most students don't have CS courses not on the list 	<ul style="list-style-type: none"> 2 courses required (0 if minor or double major) Courses more accessible for most students <i>CS courses on the list</i> Added IDEA (design thinking)
Minor	<ul style="list-style-type: none"> Less likely due to number of total degree required credits 	<ul style="list-style-type: none"> General CS degree has <i>option for a minor</i>

- * Calculus II can count for technical elective in new curriculum, required for new AI/ML concentration
- Note **Bold Courses:** Common core required for all CS majors on new curriculum
- See CS website for comparison of new BS curriculum with current HCC and ACT curriculum and for other concentration requirements
- Note: Keep in mind that this is not the official curriculum. The CSU catalog and DARs is your source for that.

Next steps and advising information

- Current students: you can stay in your current major or move to the new curriculum
- Guidelines on whether it is beneficial to change will be provided
- Available for declaring Fall 2020
- Be on the lookout for information sessions with the advising team and information on the CS department website
 - <https://compsci.colostate.edu/new-computer-science-major/>