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.
<table>
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<th><strong>Current CS-CS BS</strong></th>
<th><strong>New BS-General</strong></th>
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| **MATH** | • Calculus I: MATH 160  
• Calculus II: MATH 161  
• Linear Algebra: MATH 229 or MATH 369 or DSCI 369  
• Statistics: STAT 301 or 315 | • **Calculus I**: MATH 160 or *new Calculus for CS*  
• *Calculus II: not required and ...*  
• **Linear Algebra**: MATH 369 or DSCI 369  
  - Note: does not include MATH 229  
• **Statistics**: STAT 301, 307, or 315 |
| **Natural Sciences** | • 12 credits, restrictive list of AUCC Natural Sciences and some not on AUCC list | • 7 credits, restrictive list of AUCC Natural Sciences, all from AUCC list |
| **AUCC Arts & Humanities** | • 2 required | • 2 required – one must be **CS 201** (ethnics) |
| **CS lower level courses** | • CS 163/164, CS 165, CS 220, CS 270, CS 253 | • **CS 163/164, CS 165, CS 220, CS 270, CS 253** |
| **CS 3xx** | • CS 314, CS 320, CS 356, CS 370 | • **CS 314, CS 320, CS 370** |
| **CS 4xx** | • Select 4 courses | • Select 4 courses (3 if minor or double major) |
| **CS Upper division** | • 0 courses | • Select 2 courses |
| **Technical Electives** | • 2 to 3 courses required  
• Long list, many have pre-requisites that most students don’t have  
• CS courses not on the list | • 2 courses required (0 if minor or double major)  
• Courses more accessible for most students  
• **CS courses on the list**  
• Added IDEA (design thinking) |
| **Minor** | • Less likely due to number of total degree required credits | • General CS degree has option for a minor |

- *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/](https://compsci.colostate.edu/new-computer-science-major/)