# http://www.ric.edu/webcommunications/images/SealWithText_Small_Black.pngUNDERGRADUATE CURRICULUM COMMITTEE (UCC)PROPOSAL FORM

## Cover page scroll over blue text to see further important [instructions](#instructions): [if not working select “COMMents on rollover” in your Word preferences under view] please read these.

**N.B. Please do not use highlight to select choices within a category but simply delete the options that do not apply to your proposal (e.g. in A.2 if this is a course revision proposal, just delete the creation and deletion options and the various program ones, so it reads “course revision”) Do not ever delete any of the numbered categories—if they do not apply leave them blank. ALL numbered categories in section (A) must be completed. If there are no resources impacted it is okay to put “none” in A. 7**

|  |  |  |
| --- | --- | --- |
| A.1. [Course or program](#Proposal) | **COMPUTER SCIENCE B.S.** |  |
| [Replacing](#Ifapplicable)  |  |
| A. 1b. Academic unit | **Faculty of Arts and Sciences**  |  |
| A.2. [Proposal type](#type) | **Program:** [**revision**](#revision) |  |
| A.3. [Originator](#Originator) | **Suzanne Mello-Stark** | [Home department](#home_dept) | **Computer Science and Information Systems** |
| A.4. [Context and Rationale](#Rationale) Note: Must include this additional information for all [new programs](#type) | **The Computer Science B.S. has been updated to reflect recent changes from the ACM Curricula Guidelines (**<https://www.acm.org/binaries/content/assets/education/cs2013_web_final.pdf> **) and the ABET (** <https://www.abet.org/wp-content/uploads/2018/12/V1vV2SideBySide_20181128.pdf> **) guidelines. Both agencies are major curricula standard agencies for computer science. There is a separate UCC form for each course change that goes into more detail. The overall program after these changes will be one credit smaller (74-77 instead of 75-78). The summary of the changes are as follows:**1. **Added a new course, CSCI 209 – Discrete Structures. This course teaches the foundations of structures recommended for a computer science degree.**
2. **Deleted CSCI 312 and updated CSCI 313 to include necessary components from CSCI 312. Increased CSCI 313 credits from 3 to 4.**
3. **Revised CSCI 435 to include performance, security and privacy topics. Increased credits from 3 to 4.**
4. **Revised CSCI 455 from 3 to 4 credits by requiring a major project to give more hands-on experience.**
5. **Created two levels of elective courses so students had more elective choices earlier in their program, but add a note that “Students cannot receive credit for both CSCI 305 and CSCI 402 to satisfy this elective requirement.” This is to ensure they take sufficient upper level CSCI courses among their electives (402 is open to none CSCI majors for the Cyber-Security minor so despite the higher prefix number needs less experience in CS than other 400 level CSCI courses).**
6. **Revised CSCI 422 to have CSCI 212 and CSCI 209 as prereqs.**
7. **Revised CSCI 423 to have CSCI 209 as a prereq.**
8. **Moved required math courses into a math grouping (except MATH 212 and MATH 213) to give students more flexibility in choosing math courses and to be more consistent with CSCI programs at other institutions, MATH 248 will be deleted as an option, and MATH 436 will become an elective rather than a requirement.**
 |
| A.5. [Student impact](#student_impact) | **These changes will strengthen the overall program for the students.** |
| A.6. [Impact on other programs](#impact)  | **Math may lose a few students as deleting MATH 248 as an option, and MATH 436 an elective rather than a requirement.** |
| A.7. [Resource impact](#Resource) | [*Faculty PT & FT*](#faculty):  | **None – We studied our course schedule and we can implement these changes with existing faculty.** |
| [*Library*:](#library) | **none** |
| [*Technology*](#technology) | **none** |
| [*Facilities*](#facilities): | **none** |
| A.8. [Semester effective](#Semester_effective) | **FALL 2021** | A.9. [Rationale if sooner than next Fall](#Semester_effective) |  |
| A.10. INSTRUCTIONS FOR CATALOG COPY: This single file copy must include ALL relevant pages from the college catalog, and show how the catalog will be revised. (1) Go to the “Forms and Information” page on the UCC website. Scroll down until you see the Word files for the current catalog. (2) Download ALL catalog sections relevant for this proposal, including course descriptions and/or other affected programs. (3) Place ALL relevant catalog copy into a single file. Put page breaks between sections and **delete any catalog pages not relevant for this proposal**. (4) Using the track changes function, revise the catalog pages to demonstrate what the information should look like in next year’s catalog. (5) Check the revised catalog pages against the proposal form, especially making sure that program totals are correct if adding/deleting course credits. If new copy, indicate where it should go in the catalog. If making related proposals a single catalog copy that includes all is preferred. Send catalog copy as a separate single Word file along with this form. |

### C. [Program Proposals](#program_proposals) **complete only what is relevant to your proposal if this is a revision, but include the enrollment numbers for all proposals. Delete section C if the proposal is not revising, creating, deleting or suspending any progam.**

|  | [Old (for revisions only)](#old_program) | New/revised |
| --- | --- | --- |
| C.1. [Enrollments](#enrollments) | **87 CS BS Majors** |  |
| C.2. [Admission requirements](#admissions) |  |  |
| C.3. [Retention requirements](#retention) |  |  |
| C.4. [Course requirements](#course_reqs) for each program option. Show the course requirements for the whole program here. | Computer Science B.S.Course RequirementsCourses

|  |  |  |  |
| --- | --- | --- | --- |
| CSCI 211 | Computer Programming and Design | 4 | F, Sp |
| CSCI 212W | Data Structures | 4 | F, Sp |
| CSCI 309 | Object-Oriented Design | 4 | F, Sp |
| CSCI 312 | Computer Organization and Architecture I | 4 | F, Sp |
| CSCI 313 | Computer Organization and Architecture II | 3 | F, Sp |
| CSCI 325 | Organization of Programming Language | 3 | F (even years), Sp |
| CSCI 401W | Software Engineering | 3 | F (even years), Sp |
| CSCI 423 | Analysis of Algorithms | 4 | F (odd years), Sp |
| CSCI 435 | Operating Systems and Computer Architecture | 3 | F, Sp (even years) |

THREE COURSES from

|  |  |  |  |
| --- | --- | --- | --- |
| CSCI 305 | Functional Programming | 4 | F |
| CSCI 415 | Software Testing | 4 | Sp |
| CSCI 416 | Human-Computer Interaction Design | 4 | As needed |
| CSCI 422 | Introduction to Computation Theory | 4 | Sp (As needed) |
| CSCI 427 | Introduction to Artificial Intelligence | 3 | As needed |
| CSCI 428 | Machine Learning | 4 | Sp |
| CSCI 437 | Network Architectures and Programming | 4 | As needed |
| CSCI 455 | Introduction to Database Systems | 3 | F |
| CSCI 467 | Computer Science Internship | 4 | As needed |
| CSCI 476 | Advanced Topics in Computer Science | 4 | Sp |

Cognates

|  |  |  |  |
| --- | --- | --- | --- |
| ENGL 230 | Workplace Writing | 4 | F, Sp, Su |
|  | -Or- |  |  |
| ENGL 231W | Multimodal Writing | 4 | As needed |
|  |   |  |  |
| MATH 212 | Calculus I | 4 | F, Sp, Su |
| MATH 213 | Calculus II | 4 | F, Sp, Su |
|  |   |  |  |
| MATH 240 | Statistical Methods I | 4 | F, Sp, Su |
|  | -Or- |  |  |
| MATH 248 | Business Statistics I | 4 | F, Sp, Su |
|  |   |  |  |
| MATH 436 | Discrete Mathematics | 3 | F, Sp |
| PHIL 206 | Ethics | 3 | F, Sp, Su |
|  |   |  |  |

ONE COURSE from

|  |  |  |  |
| --- | --- | --- | --- |
| MATH 300W | Bridge to Advanced Mathematics | 4 | Sp |
| MATH 314 | Calculus III | 4 | F, Sp |
| MATH 324 | College Geometry | 4 | F, Sp |
| MATH 417 | Introduction to Numerical Analysis | 4 | Sp (as needed) |
| MATH 418 | Introduction to Operations Research | 3 | Sp (even years) |
| MATH 431 | Number Theory | 3 | F, Sp |
| MATH 445 | Advanced Statistical Methods | 4 | Sp |

ONE OF THE FOLLOWING TWO-COURSE SEQUENCES

|  |  |  |  |
| --- | --- | --- | --- |
| BIOL 111 | Introductory Biology I | 4 | F, Sp, Su |
|  | -And- |  |  |
| BIOL 112 | Introductory Biology II | 4 | F, Sp, Su |
|  |   |  |  |
|  | -Or- |  |  |
|  |   |  |  |
| CHEM 103 | General Chemistry I | 4 | F, Sp, Su |
|  | -And- |  |  |
| CHEM 104 | General Chemistry II | 4 | F, Sp, Su |
|  |   |  |  |
|  | -Or- |  |  |
|  |   |  |  |
| PHYS 101 | Physics for Science and Mathematics I | 4 | F, Sp, Su |
|  | -And- |  |  |
| PHYS 102 | Physics for Science and Mathematics II | 4 | F, Sp, Su |

Note: Connections courses cannot be used to satisfy these requirements.Note: Eight credit hours from BIOL 111; CHEM 103; MATH 212, MATH 240; or PHYS 101 may be counted toward the Natural Science and Mathematics categories of General Education. | Computer Science B.S.Course RequirementsCourses

|  |  |  |  |
| --- | --- | --- | --- |
| CSCI 209 | Discrete Structures | 4 | CSCI 209 |
| CSCI 211 | Computer Programming and Design | 4 | F, Sp |
| CSCI 212W | Data Structures | 4 | F, Sp |
| CSCI 309 | Object-Oriented Design | 4 | F, Sp |
| CSCI 313 | Computer Organization and Architecture  | 4 | F, Sp |
| CSCI 325 | Organization of Programming Language | 3 | F (even years), Sp |
| CSCI 401W | Software Engineering | 3 | F (even years), Sp |
| CSCI 423 | Analysis of Algorithms | 4 | F (odd years), Sp |
| CSCI 435 | Operating Systems  | 4 | F, Sp (even years) |

THREE COURSES from

|  |  |  |  |
| --- | --- | --- | --- |
| CSCI 305 | Functional Programming | 4 | F |
| CSCI 402 | Cyber Security Principles | 4 | CSCI 402 |
| CSCI 415 | Software Testing | 4 | Sp |
| CSCI 416 | Human-Computer Interaction Design | 4 | As needed |
| CSCI 422 | Introduction to Computation Theory | 4 | Sp (As needed) |
| CSCI 427 | Introduction to Artificial Intelligence | 3 | As needed |
| CSCI 428 | Machine Learning | 4 | Sp |
| CSCI 437 | Network Architectures and Programming | 4 | As needed |
| CSCI 455 | Introduction to Database Systems | 4 | F |
| CSCI 467 | Computer Science Internship | 4 | As needed |
| CSCI 476 | Advanced Topics in Computer Science | 4 | Sp |

Note: Students cannot receive credit for both CSCI 305 and CSCI 402 to satisfy this elective requirement.Cognates

|  |  |  |  |
| --- | --- | --- | --- |
| ENGL 230 | Workplace Writing  | 4 | F, Sp, Su |
|  | -Or- |  |  |
| ENGL 231W | Multimodal Writing  | 4 | As needed |
|  |   |  |  |
| MATH 212 | Calculus I | 4 | F, Sp, Su |
| MATH 213 | Calculus II | 4 | F, Sp, Su |
| PHIL 206 | Ethics | 3 | F, Sp, Su |
|  |   |  |  |

TWO COURSES from

|  |  |  |  |
| --- | --- | --- | --- |
| MATH 240 | Statistical Methods I | 4 | MATH 240 |
| MATH 300W | Bridge to Advanced Mathematics | 4 | Sp |
| MATH 314 | Calculus III | 4 | F, Sp |
| MATH 324 | College Geometry | 4 | F, Sp |
| MATH 436 | Discrete Mathematics | 3 | MATH 436 |
| MATH 417 | Introduction to Numerical Analysis | 4 | Sp (as needed) |
| MATH 418 | Introduction to Operations Research | 3 | Sp (even years) |
| MATH 431 | Number Theory | 3 | F, Sp |
| MATH 445 | Advanced Statistical Methods | 4 | Sp |

ONE OF THE FOLLOWING TWO-COURSE SEQUENCES

|  |  |  |  |
| --- | --- | --- | --- |
| BIOL 111 | Introductory Biology I | 4 | F, Sp, Su |
|  | -And- |  |  |
| BIOL 112 | Introductory Biology II | 4 | F, Sp, Su |
|  |   |  |  |
|  | -Or- |  |  |
|  |   |  |  |
| CHEM 103 | General Chemistry I | 4 | F, Sp, Su |
|  | -And- |  |  |
| CHEM 104 | General Chemistry II | 4 | F, Sp, Su |
|  |   |  |  |
|  | -Or- |  |  |
|  |   |  |  |
| PHYS 101 | Physics for Science and Mathematics I | 4 | F, Sp, Su |
|  | -And- |  |  |
| PHYS 102 | Physics for Science and Mathematics II | 4 | F, Sp, Su |

Note: Connections courses cannot be used to satisfy these requirements.Note: Eight credit hours from BIOL 111; CHEM 103; MATH 212, MATH 240; or PHYS 101 may be counted toward the Natural Science and Mathematics categories of General Education. |
| C.5. [Credit count](#credit_count) for each program option | **75-78** | **74-77** |
| C.6. Program Accreditation (if relevant) |  |  |
| C.7. Other changes if any |  |  |
| C.8. [Program goals](file://Users/sabbotson/Documents/Curriculum/Program%20goals)Needed for all new programs |  |  |

## D. Signatures

* Changes that affect General Education in any way MUST be approved by ALL Deans and COGE Chair.
* Changes that directly impact more than one department/program MUST have the signatures of all relevant department chairs, program directors, and their relevant dean (e.g. when creating/revising a program using courses from other departments/programs). Check UCC manual 4.2 for further guidelines on whether the signatures need to be approval or acknowledgement.
* Proposals that do not have appropriate approval signatures will not be considered.
* Type in name of person signing and their position/affiliation.
* Send electronic files of this proposal and accompanying catalog copy to curriculum@ric.edu and a printed signature copy of this whole form to the current Chair of UCC. Check UCC website for due dates.

##### D.1. Approvals: required from programs/departments/deans who originate the proposal. THESE may include multiple departments, e.g., for joint/interdisciplinary proposals.

| Name | Position/affiliation | [Signature](#_Signature" \o "Insert electronic signature, if available, in this column) | Date |
| --- | --- | --- | --- |
| Dr. Lisa Bain | Chair of Computer Science and Information Systems | \*approved by e-mail | 12/03/2020 |
| Dr. Earl Simson | Dean of Faculty of Arts and Sciences | **Earl Simson** | 12/03/2020 |

##### D.2. [Acknowledgements](#acknowledge): REQUIRED from OTHER PROGRAMS/DEPARTMENTS (and their relevant deans if not already included above) that are IMPACTED BY THE PROPOSAL. SIGNATURE DOES NOT INDICATE APPROVAL, ONLY AWARENESS THAT THE PROPOSAL IS BEING SUBMITTED. CONCERNS SHOULD BE BROUGHT TO THE UCC COMMITTEE MEETING FOR DISCUSSION; all faculty are welcome to attend.

| Name | Position/affiliation | [Signature](#Signature_2) | Date |
| --- | --- | --- | --- |
| Rebecca Sparks | Chair of Mathematical Sciences | \*acknowedged via e-mail | 12/17/20 |
|  |  |  |  |
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