# 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]

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| A.1. [Course or program](#Proposal) | **Bachelors of Science in Data Science**  |  |
| [Replacing](#Ifapplicable)  |  |
| A. 1b. Academic unit | **Faculty of Arts and Sciences** |  |
| A.2. [Proposal type](#type) | **Program:** [**revision**](#revision) |  |
| A.3. [Originator](#Originator) | **Leonardo Pinheiro** **Stephanie Costa** | [Home department](#home_dept) | **Mathematical Sciences** |
| A.4. [Context and Rationale](#Rationale) Note: Must include additional information in smart tip for all [new programs](#type) | The purpose of this proposal is to make changes to the course requirements for the Bachelor of Science in Data Science offered by the Department of Mathematical Sciences. To meet the need for professionals in the high-demand and high-pay technical field of data science, the then Department of Mathematics and Computer Science developed a Bachelor of Science degree in Data Science in 2019. The process followed guidelines from the American Statistical Association and input from industry experts. The result of our efforts was a degree offering a mix of solid theoretical foundation and applicable problem-solving skills needed to succeed in the workforce. During the design of the program, we were very cautious with our course selection, making sure that any important topics were covered in a variety of classes, guaranteeing that students were exposed to the same idea at various levels of the major. While a good idea on the surface, this approach led to negative unintended consequence: our degree has a very prescribed and rigid curriculum with a less-than-ideal amount of redundant content spread across the core classes. To put it bluntly, the major as current structured, has too many core classes that could be treated as electives or be replaced by courses counting towards a second major or minor in related areas. We believe that a more flexible and shorter degree could offer the same content and experiences with fewer prerequisites and other barriers. Here are the proposed changes: We are no longer requiring CSCI 428 Machine Learning, CIS 470 Introduction to Data Analytics, and CIS 472 Data Visualization. The combined main topics of these three courses are covered in more depth in DATA 245 Principle of Data Science, DATA 345 Applied Linear Algebra for Statistical Learning, and DATA 345 Advanced Statistical Methods. ENGL 230 Workplace Writing is being removed because DATA 245, DATA 345, DATA 445, and DATA 461 are writing intensive classes. CSCI 455 Introduction to Databases is being removed as it shares the same contents as CIS 455 but has prerequisites that do not align with the classes in the major.MATH 441 is being removed since only a very small fraction of its content is needed in DATA 445 and can be covered as needed. Consequently we are also removing its prerequisite, MATH 314. The proposed changes are meant to streamline the program’s course sequence and facilitate program access to students from diverse mathematical backgrounds and varied interests. The 41-credit limit with no hidden pre-requisites will allow students to pursue other minors and majors to better align their professional and academic interests. Students will be able to take elective classes outside of math and data science, highlighting the broad reach of the field. |
| A.5. [Student impact](#student_impact)Must include to explain why this change is being made? | The changes will promote easier and more flexible access to a degree in Data Science. The decrease in credit hours and the simplified prerequisite structure will allow for a more streamlined and customizable student experience.  |
| A.6. [Impact on other programs](#impact)  | The change in the program will allow students in other majors, especially computer science and other STEM areas to pursue a degree in data science. Courses from CSCI and CIS, and ENGL will no longer be required and those chairs will be informed. |
| A.7. [Resource impact](#Resource) | [*Faculty PT & FT*](#faculty):  | None |
| [*Library*:](#library) | None |
| [*Technology*](#technology) | None |
| [*Facilities*](#facilities): | None |
| A.8. [Semester effective](#Semester_effective) | **Fall 2023** | A.9. [Rationale if sooner than next Fall](#Semester_effective) |  |
| A.10. INSTRUCTIONS FOR CATALOG COPY: Use the Word copy versions of the catalog sections found on the UCC Forms and Information page. Cut and paste into a single file **ALL the relevant pages from the college catalog that need to be changed.** Use tracked changes feature to show how the catalog will be revised as you type in the revisions. If totally new copy, indicate where it should go in the catalog. If making related proposals a single catalog copy that includes all changes is preferred. Send catalog copy as a separate single Word file along with this form. |
| A.11. List here (with the relevant urls), any RIC website pages that will need to be updated (to which your department does not have access) if this proposal is approved, with an explanation as to what needs to be revised: |
| A. 12 **Check to see if your proposal will impact any of our** [**transfer** **agreements,**](https://emailric-my.sharepoint.com/Users/Lpinheiro/Downloads/transfer%20agreements) **and if it does explain in what way. Please indicate clearly what will need to be updated.** |
| A. 13 Check the section that lists “Possible NECHE considerations” on the UCC Forms and Information page and if any apply, indicate what that might be here and contact Institutional Research for further guidance. |

### C. [Program Proposals](#program_proposals) **Complete only what is relevant to your proposal. Delete section C if not needed. PLease add in the 2020 CIP number for MAJOR revisions or new programs in C. 2; these can be found at** [**https://nces.ed.gov/ipeds/cipcode/browse.aspx?y=56**](https://nces.ed.gov/ipeds/cipcode/browse.aspx?y=56) **consult with Institutional research to be sure you select the correct one.**

|  | [Old (for revisions only)](#old_program) | New/revised |
| --- | --- | --- |
| C.1. [Enrollments](#enrollments) Must be completed. | 9 majors in Fall 2022 |  |
| C. 2. [2020 CIP number](#CIPnumber" \o "THESE CAN BE FOUND AT HTTPS://NCES.ED.GOV/IPEDS/CIPCODE/BROWSE.ASPX?Y=56 CONSULT WITH INSTITUTIONAL RESEARCH TO BE SURE YOU SELECT THE CORRECT ONE.) | **30.7001** |  |
| C.3. [Admission requirements](#admissions) |  |  |
| C.4. [Retention requirements](#retention) |  |  |
| C.5. [Course requirements](#course_reqs) for each program option. Show the course requirements for the whole program here. | MATH 212 Calculus I (4) MATH 213 Calculus II (4) MATH 314 Calculus III (4) MATH 24 Statistical Methods I (4) -Or- MATH 248 Business Statistics I (4)  MATH 245 Principles of Data Science (4) MATH 345 Linear Models for Data Science (4) MATH 436 Discrete Mathematics (3) MATH 441 Introduction to Probability (4) MATH 445 Advanced Statistical Methods (4) MATH 460 Seminar in Data Science(3) CSCI 157 Introduction to Algorithmic Thinking in Python (4) CSCI 428 Machine Learning (4) CIS 455W Database Programming(4) -Or- CSCI 455 Introduction to Databases(4)PHIL 207 Technology and the Future of Humanity (3) CIS 470 Introduction to Data Analytics (4)CIS 472 Data Visualization (4) ENGL 230W Workplace Writing (4)  | MATH 212 Calculus I (4) MATH 213 Calculus II (4) MATH 240 Statistical Methods I (4) -Or- MATH 248 Business Statistics I (4)  DATA 245 Principles of Data Science (4) DATA 345 Applied Linear Algebra for Statistical Learning (4) MATH 436 Discrete Mathematics (3) DATA 445 Advanced Statistical Methods (4)DATA 460 Seminar in Data Science (3)CSCI 157 Introduction to Algorithmic Thinking in Python (4)CIS 455W Database Programming (4) PHIL 207 Technology and the Future of Humanity (3) |
| C.6. [Credit count](#credit_count) for each program option | **65** | **41** |
| C.7. Program Accreditation (if relevant) |  |  |
| C.8 Is it possible that the program will be more than 50% online (includes hybrid)?\* |  | **NO** |
| C.9 Will any classes be offered at sites other than RIC campus or the RI Nursing Ed. Center?\* |  | **NO** |
| C. 10. Do these revisions reflect more than 25% change to the [program?\*](https://emailric-my.sharepoint.com/Users/sabbotson/Documents/Curriculum/Program%20goals)  |  | **NO** |
| C.11. [Program goals](https://emailric-my.sharepoint.com/Users/sabbotson/Documents/Curriculum/Program%20goals)Needed for all new programs |  | **N/A** |
| C.12. Other changes if any |  |  |

\* If answered YES to either of these questions will need to inform Institutional Research and get their acknowledgement on the signature page.

## D. Signatures

##### 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 |
| --- | --- | --- | --- |
| Rebecca Sparks  | Mathematical Sciences Department Chair  | \*Approved via email | 4/24/23 |
| Earl Simson  | Dean of Arts and Sciences  | Earl Simson | 5/2/23 |
|  |  |  |  |

##### 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 |
| --- | --- | --- | --- |
| Suzanne Mello-Stark | Computer Science and Information Systems Department Chair  | \*Acknowledged via email | 4/24/23 |
| Maureen Reddy  | English Department Chair  | \*Acknowledged via email | 4/24/23 |
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