New York City College of Technology, CUNY

CURRICULUM MODIFICATION PROPOSAL FORM

This form is used for all curriculum modification proposals. See the [Proposal Classification Chart](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/2013-10-09-Proposal_Classification_Chart.pdf) for information about what types of modifications are major or minor. Completed proposals should be emailed to the Curriculum Committee chair.

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| **Title of Proposal** | Minor in Computer Science |
| **Date** | December 2, 2021 |
| **Major or Minor** | Minor |
| **Proposer’s Name** | Henry Africk |
| **Department** | Mathematics |
| **Date of Departmental Meeting in which proposal was approved** |  |
| **Department Chair Name** | Jonathan Natov |
| **Department Chair Signature and Date** |  |
| **Academic Dean Name** | Justin Vazquez-Poritz |
| **Academic Dean Signature and Date** |  |
| **Brief Description of Proposal**  (Describe the modifications contained within this proposal in a succinct summary. More detailed content will be provided in the proposal body. | Creation of a Minor in Computer Science using existing courses. This program will allow students throughout the college to add the designation “Minor in Computer Science” to their transcript. |
| **Brief Rationale for Proposal**  (Provide a concise summary of why this proposed change is important to the department. More detailed content will be provided in the proposal body). | The mathematics department currently offers an associate in science degree in computer science. Many of the students in this program would like to continue studying computer science at a bachelor’s degree level. Fortunately, the mathematics department already offers a variety of advance courses related to computer science in its applied mathematics degree program. The required sequence of courses in the proposed minor will provide an adequate preparation for computer science courses at the advanced undergraduate or graduate level. It is designed to provide a fundamental understanding of the key concepts of the theory of computing and will offer students options for careers where knowledge of computers is required. CUNY colleges which already offer a minor in computer science include Baruch College, Brooklyn College, City College, College of Staten Island, Hunter College, Lehman College, and Queens College. |
| **Proposal History**  (Please provide history of this proposal: is this a resubmission? An updated version? This may most easily be expressed as a list). | v1.1 (2021-12-02) - Initial submission. |

Please include all appropriate documentation as indicated in the Curriculum Modification Checklist.

For each new course, please also complete the New Course Proposal and submit in this document.

Please submit this document as a single .doc or .rtf format. If some documents are unable to be converted to .doc, then please provide all documents archived into a single .zip file.

**ALL PROPOSAL CHECK LIST**

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| --- | --- |
| Completed CURRICULUM MODIFICATION FORM including: |  |
| * Brief description of proposal | X |
| * Rationale for proposal | X |
| * Date of department meeting approving the modification | X |
| * Chair’s Signature | X |
| * Dean’s Signature | X |
| Evidence of consultation with affected departments  List of the programs that use this course as required or elective, and courses that use this as a prerequisite. |  |
| Documentation of Advisory Commission views (if applicable). |  |
| Completed [Chancellor’s Report Form](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/2013-10-09-Chancellor_Report_Quick_Reference_Guide1.doc). |  |

**EXISTING PROGRAM MODIFICATION PROPOSALS**

|  |  |
| --- | --- |
| Documentation indicating core curriculum requirements have been met for new programs/options or program changes. |  |
| Detailed rationale for each modification (this includes minor modifications) |  |

**Rationale for Proposal for a Minor in Computer Science**

The mathematics department currently offers an associate in science degree in computer science. Many of the students in this program would like to continue studying computer science at a bachelor’s degree level. Fortunately, the mathematics department already offers a variety of advance courses related to computer science in its applied mathematics degree program. The required sequence of courses provides an adequate preparation for computer science courses at the advanced undergraduate or graduate level. It is designed to provide a fundamental understanding of the key concepts of the theory of computing and will offer students options for careers where knowledge of computers is required. CUNY colleges which already offer a minor in computer science include Baruch College, Brooklyn College, City College, College of Staten Island, Hunter College, Lehman College, and Queens College.

**Detailed Description of the Proposed Minor**

The minor in computer science consists of three required courses and two elective courses: MAT 1630 Introduction to Computational Science (3 credits), MAT 2440 Discrete Structures and Algorithms I (3 credits), MAT 2540 Discrete Structures and Algorithms II (3 credits), and two additional courses at the MAT 2000 level or above, depending on the student’s needs or interests (6-8 credits). The prerequisites for these courses are MAT 1475 Calculus I and MAT 1575 Calculus II. Thus, the minor is 15-17 credits.

While the minor is intended mainly for students in the Applied Mathematics bachelor’s degree program, it is available to students from other programs which provide the required mathematics background. This includes Biomedical Informatics, Applied Chemistry, Applied Computational Physics, Computer Engineering Technology, Computer Systems Technology, Data Analytics in Economics, Data Science, Electrical Engineering Technology, Telecommunications Engineering Technology, and Mechanical Engineering Technology.

**Required and Elective Courses for the Minor**

**REQUIRED COURSES**

* MAT 1630 Introduction to Computational Science (3 credits)
* MAT 2440 Discrete Structures and Algorithms I (3 credits)
* MAT 2540 Discrete Structures and Algorithms II (3 credits)

**ELECTIVE COURSES (Choose two)**

* MAT 2572 Probability and Mathematical Statistics I (4 credits)
* MAT 2580 Introduction to Linear Algebra (3 credits)
* MAT 2630 Numerical Methods (3 credits)
* MAT 2675 Calculus III (4 credits)
* MAT 2680 Differential Equations (3 credits)
* MAT 3672 Probability and Mathematical Statistics II (4 credits)
* MAT 3772 Stochastic Models I (3 credits)
* MAT 4672 Computational Statistics with Applications (3 credits)

**Programmatic Learning Outcomes**

Students will be able to:

* understand and apply the fundamental concepts and methods of computer science, logic, and mathematics.
* think algorithmically and solve STEM problems using computational tools.
* generate algorithms and effectively communicate their purpose.
* use appropriate language to communicate mathematical and technical ideas.
* understand the limitations and implications of an algorithm.

**Chancellor’s Report Form**

**New Minor in Computer Science**

**Offered by the Department of Mathematics**

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| **From**: | **To**: |
| No such minor is currently offered. | **MINOR IN COMPUTER SCIENCE**  Creation of a Minor in Computer Science using existing courses. This program will allow students throughout the college to add the designation “Minor in Computer Science” to their transcript. |
| **Rationale**: |  |
| The mathematics department currently offers an associate in science degree in computer science. Many of the students in this program would like to continue studying computer science at a bachelor’s degree level. Fortunately, the mathematics department already offers a variety of advance courses related to computer science in its applied mathematics degree program. The required sequence of courses provides an adequate preparation for computer science courses at the advanced undergraduate or graduate level. It is designed to provide a fundamental understanding of the key concepts of the theory of computing and will offer students options for careers where knowledge of computers is required. | |
| **Effect Outside Department:** None | |
| **Date of Department Approval**: | |
| **Date of College Council Approval**: | |