

B - Course Revision Form V. 7.2022 : Entry # 3489**DEAN Decision**

Approved

Today's Date

04/17/2025

DEAN Comments

This is a very helpful gen ed course for students in the school of Engineering

EPC Decision

Approved

GEC Decision

Approved

Today's Date

01/09/2026

APIRC Decision

Approved

Today's Date

02/02/2026

Begin Form**Today's Date**

04/17/2025

Your Name

Jenny Sharpe

Your Email:jsharpe1@highpoint.edu**Are you a Department Chair?**

Yes

By checking below, I certify that my department chair has seen and approved the course revisions that are in this proposal

Yes

Please select the appropriate school overseeing this proposal:

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Engineering

Are you submitting multiple courses for revision from the same department?

No, just one

Please list all of the courses that you are submitting revisions for:

Course Prefix	Course Number	Course Title
MTH	3910	Numerical Methods

What would you like to revise?

- Learning Outcomes
- Prerequisites

Gen Ed & Academic Program Information**Is this a revision to meet new Gen Ed requirements?**

Yes

Which area(s) of Gen Ed does your proposal seek for approval?

- Integrative Course [ITG]

Please provide a rationale for how your course is integrative. Please explain how you weave in different disciplines or fields of study. If your course is housed within one discipline, please explain how the epistemologies you integrate within the course are different from one another.

MTH/CSC 3910 (Numerical Methods), is a prime example of the synergy of mathematics and computer science, and the course embodies integrative learning by integrating mathematical theory, computational practice, and interdisciplinary projects. In a nutshell, the course allows students to explore the mathematical and algorithmic issues that arise when solving real world problems on a computer. To effectively solve these problems, each topic must be simultaneously viewed from the perspective of a mathematician and a computer scientist. Students must describe a given problem in a mathematical framework, where known mathematical tools can be utilized to both develop and analyze a method of solution (what conditions will lead to the theoretical success or failure of the method?, for example). Students must then transfer the method to a computer by creating a program, and strive to understand what practical issues might arise when implementing the method (what is the complexity of the algorithm: how long will it take? what memory resources will be required?, when can we trust the output: will the problem suffer from rounding or instability issues?, etc.). Finally, students perform experiments by applying their methods to specific scenarios to force them to think deeply about the their method of solution from both points of view. Throughout the semester, students are given projects that allow them to explore the methodologies learned in class in the context of topics that connect to fields of their choosing. Past projects have included topics related to engineering (motion control for robotics, bridge deformation), physics (orbital mechanics, the double pendulum), finance (predicting options pricing), signal processing (audio compression, gps), chemistry (molecular conformation), and more.

Will this course be team-taught?

No

Is this course part of an academic program?

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- This course does not currently fulfill academic program requirements

Does this course, as revised, include any community engagement?

No

Is this course part of GoGlobal?

No

Does this course count towards a major or a minor?

Yes

Please list the course(s) and whether they are required or electives for the major/minor.

Course Prefix/Number	Name of Major and/or Minor?	Required or Elective?
MTH/CSC 3910	Math (BS, BA, minor)	Elective
MTH/CSC 3910	Computer Science (BS, BA, minor)	Elective
MTH/CSC 3910	Data Analytics and Statistics (major and minor)	Elective

Is this course cross listed?

Yes

Choose the department designator for your course from the list below.

MTH

Choose the second department designator for your course from the list below.

CSC

Current course number

3910

Current course title

Numerical Methods

Revisions to course number, title, credits, prerequisites**Please list the changes to the prerequisites and the rationale for the change**

The current course prerequisite is: MTH 2310 and CSC 1710.

We wish to update the prerequisite to be: (MTH 2310 or MTH 2350 or MTH/PHY 2050) and (CSC 1705 or CSC 1710). The reason for this change is that the Computer Science department will now be offering a parallel option (CSC 1705) pathway to CSC 1710 for students to learn introductory programming skills in Python. This course will provide sufficient programming skills for Numerical Methods. Similarly, MTH 2310, 2350 or 2050 all contain enough content about matrices to be sufficient for the needs of Numerical Methods. The last two of these courses did not exist when the Numerical Methods course was first developed.

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Please list all revised student learning outcomes, including Gen Ed outcomes, for this course in the box below.

The only update to learning outcomes will be to add the Integrative learning outcome:
Synthesize concepts, theories, or frameworks of fields of study and apply them to situations or problems.

Please list any revisions to units or content areas that will be required for all sections of this course in the box below.

N/A

If you have Gen Ed learning outcomes, please address the kinds of assessments you may use for each area that you are proposing the course be designated (i.e., Arts, Humanities, Diversity, etc.)

The rationale provided earlier in the form indicates how this course is integrative in nature and support the integrative learning outcome. Every assessment in the course requires students to simultaneously approach problems from a mathematical and computer science perspective.

Please list any revisions to course policies that will be required for all sections of this course.

N/A

If you would like to specify any revisions to requirements for how contact hours must be met for all sections of this course, please indicate below (e.g., if any experiential learning activities will replace seat time)

The course meets full seat time.

If this course proposal affects any other departments, please describe the consultation and approval that you've received and from whom in the box below.

This proposal has sought and received support from the Department of Computer Science.

Is there any additional information that you would like to provide for this proposal?

No.

Sample Syllabus

- [syllabus3910_revised.pdf](#)