

B - Course Revision Form V. 7.2022 : Entry # 3573**DEAN Decision**

Approved

Today's Date

08/14/2025

EPC Decision

Approved

Today's Date

10/17/2025

Begin Form**Today's Date**

09/14/2025

Your Name

Jenny Sharpe

Your Email:jsharp1@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:

Engineering

When should this proposal take effect?

Fall 2026

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/PHY 2050 Mathematical Methods in Engineering and Physics I

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- Learning Outcomes
- Prerequisites

Are you also revising any of the following for this course?

- Change course title
- Change course description

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

No

Is this course part of an academic program?

- 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/PHY 2050	Electrical engineering major	Required
MTH/PHY 2050	Computer engineering major	Required
MTH/PHY 2050	Physics major, applied math track	Required
MTH/PHY 2050	Math minor	Elective
MTH/PHY 2050	Computer science major	Elective
MTH/PHY 2050	Chemistry major	Elective

Is this course cross listed?

Yes

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

MTH

B - Course Revision Form V, 7.2022 : Entry # 3573**Choose the second department designator for your course from the list below.**

PHY

Current course number

2050

Current course title

Mathematical Methods in Engineering and Physics I

Revisions to course number, title, credits, prerequisites**What are the changes to the course title?**

New title (to remove the numeral I at the end): Mathematical Methods in Engineering and Physics

Please paste the existing catalog description

An introduction to the applications of mathematical techniques to physical problems in mechanics, classical field theory, and electronic circuits. Topics include the use of differential equations and complex numbers in modeling mechanical systems, multivariable calculus and vector analysis. This course cannot be used to count for the major or minor in mathematics.

Prerequisites: PHY 2010 and either MTH 1420 or MTH 1425. This course is offered in the fall. Four credits.

Enter the proposed NEW course description

An introduction to mathematical techniques used in physics and engineering from linear algebra, ordinary differential equations, and Fourier series. Topics from linear algebra include systems of linear equations, matrix algebra, determinants, and eigenvalues and eigenvectors. Topics from differential equations include techniques for solving ordinary differential equations, the Laplace transform, and linear systems of differential equations. Fourier series are studied in the context of modeling periodic signals. The use of complex numbers in engineering contexts is also covered. Models from mechanics, circuits, and other fields are incorporated throughout the course. Credit will not be given for both MTH/PHY 2050 and MTH 3410. Prerequisite: MTH 1420. Corequisites: PHY 2010. This course is offered in the fall. Four credits.

Please list the changes to the prerequisites and the rationale for the change

Current prerequisite: PHY 2010 and either MTH 1420 or MTH 1425.
Proposed prerequisite: Prerequisite: MTH 1420. Corequisites: PHY 2010.

Rationale: MTH 1425 is being removed, so that option is deleted. Instructors coming from both math and physics have agreed that it is not necessary for students to have already completed PHY 2010 in order to take this course, so it is being moved to a co-requisite.

Curriculum Review Information**Please list the revised student learning outcomes for this course in the box below.**

1. Solve linear systems of equations, apply matrix algebra, and compute determinants.
2. Find eigenvalues and eigenvectors and use them to diagonalize a matrix.
3. Utilize complex numbers to obtain physically-relevant answers to real-valued problems, especially in the context of differential equations.
4. Interpret the solution to a differential equation to model a physical problem.
5. Identify and solve the most common types of first-order differential equations in physical systems.

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6. Solve higher order linear differential equations.
7. Determine the solutions to coupled differential equations by using techniques from linear algebra.
8. Apply Laplace transforms to solve forced linear differential equations.
9. Extract information from a function using Fourier techniques.

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

The content in the course will be significantly rearranged, to accommodate the desired blend of topics needed for students in multiple engineering disciplines as well as physics. The course will no longer contain multivariate calculus content, but now will contain some basic linear algebra, complex numbers, a range of topics from differential equations, and a small amount of Fourier series.

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.)

N/A

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)

This course meets full contact 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 course revision affects the Department of Physics as well as all programs in engineering. During the 2024-2025 academic year, Dr. Fuselier (who has been teaching this course when it is taught by math) had multiple meetings with faculty in these areas to gain information about their needs. On August 25, 2025, representatives from physics, math, mechanical engineering, and electrical and computer engineering met to discuss these changes, and consensus was reached on the topics and course description. Deans Oudshoorn and Fiser were kept up to date after this meeting. After that, Dr. Fuselier drafted learning outcomes, which were shared with Dr. Brooks (Interim Chair of Physics, also a prior instructor of the course), and Dr. Brooks was supportive of the LOs.

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

No.

Sample Syllabus

- [MTH PHY2050-Sample-Syllabus.pdf](#)