

A - New Course Proposal V. 7.2022 : Entry # 3082**DEAN Decision**

Approved

Date

09/18/2023

Is this course intracollegiate or intercollegiate?

Intracollegiate

DEAN Comments

Introducing 3 new programs: Mechanical, Mechatronic and General Engineering.

SCHOOL EPC Decision

Approved

Date

10/03/2023

Begin Form**Today's Date**

09/17/2023

Your Name:

Michael oudshoorn

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

Yes

By checking below, I certify that my department chair has seen and approved the new course that I am proposing.

Yes

Please select the appropriate school overseeing this proposal:

Engineering

Which semester is this course to be taught for the first time?

Fall 2026

Information for the Registrar

A - New Course Proposal V. 7.2022 : Entry # 3082**Choose the department designator from the list below.**

MME

Proposed Course Number?

3200

Is this course cross listed?

No

Does this course replace a current course?

No

What is the title of the new course?

Fluid Mechanics

Write the catalog description of your proposed course:

The physics governing the motion of fluids at an introductory level. We will familiarize with basic concepts in fluid mechanics, such as continuum, velocity field, and vorticity. We will apply the principle of the mass conservation and the Newton's law to describe the fluid motion and solve basic engineering problems. After studying simple cases of fluid motion for inviscid fluids, we will consider viscosity for internal flows (e.g. pipe flows), external flows (airfoils and bluff bodies), and flows with a free surface. Then dimensional analysis will be presented, which is very useful to understand the role of different parameters for complicated problems.

How many credit hours will this course be?

4

How will the course be graded?

Letter grade

Please select the course repeat option for this course:

Not repeatable for credit

What is the offering cycle for this course?

Fall semester

Does your course have any prerequisites?

Yes

Please list all prerequisites this course requires:

MTH2050 Mathematical Models for Engineering and Physics and PHY2020 Fundamentals of Physics II and MME1015 Programming in MATLAB

Is this new course being proposed because of a new or revised major or minor proposal?

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Majors:

Mechanical Engineering

Mechatronic Engineering

General Engineering

Submitted by:

Michael Oudshoorn

Submission date:

9/17/2023

Gen Ed and Academic Programs**Is this course part of Gen Ed?**

- No

Does this course count towards a major or a minor?

Yes

Please list the Major / Minor and if it is Required or Elective

Required: Mechanical/Mechatronic Engineering; Elective: General Engineering

Is this course part of an academic program?

- This course does not fulfill academic program requirements

Does this course include any community engagement?

No

Does this course participate in the GoGlobal Program?

No

Information for Curriculum Review**Rationale and evidence for new course's consistency with departmental mission:**

This course matches and supports the departmental/program mission by providing students with the necessary background in mechanical engineering in support of the newly proposed programs in Mechanical, Mechatronic and General Engineering. To achieve ABET accreditation for these programs, students must be exposed to breadth and depth within the discipline. All courses either provide foundational content upon which the depth will be built, or provide the depth by utilizing earlier courses. The courses provide students with in-demand skills and knowledge that will prepare them for the workforce.

List all student learning outcomes for this course.

Upon completion of the course, students will be able to:

- Describe the basic definitions and concepts of fluid mechanics
- Evaluate the hydrostatic forces on submerged flat and curved surfaces
- Apply the concepts of dimensional analysis

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- Apply the fundamental principles of physics in integral format
- Apply the fundamental principles of physics in differential format
- Perform analyses of laminar and turbulent flows in ducts
- Evaluate the fluid forces due to flow over submerged bodies
- Evaluate the performance characteristics of turbo-machinery in conjunction with piping systems

List any units or content areas that will be required for all sections of this course.

Concept of a fluid
 Pressure and pressure gradients
 Hydrostatic forces
 Basic laws of fluid mechanics
 Reynolds transport theorem
 Integral linear momentum equation
 Bernoulli's equation
 Buckingham pi theorem
 internal vs. external viscous flows
 head loss, the friction factor
 laminar pipe flow
 multiple-pipe systems
 flow past immersed bodies
 boundary layers with pressure gradients

List any assignments, tests, or other assessments that will be required for all sections of this course.

May vary

List any readings or other materials that will be required for all sections of this course.

May vary

List any course policies that will be required for all sections of this course.

May vary

If you would like to specify how requirements for 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)

3 hours of lecture per week
 2 hours of lab per week

Sample Syllabus

- [MME3200-Fluid-Mechanics.pdf](#)