

A - New Course Proposal V. 7.2022 : Entry # 3079**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?

Spring 2027

Information for the Registrar

A - New Course Proposal V. 7.2022 : Entry # 3079**Choose the department designator from the list below.**

MME

Proposed Course Number?

3150

Is this course cross listed?

No

Does this course replace a current course?

No

What is the title of the new course?

Heat transfer

Write the catalog description of your proposed course:

Conduction, radiation, and convection heat transfer; analytical, numerical, experimental results for solids, liquids, and gases; heat exchanger design.

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?

Spring semester

Does your course have any prerequisites?

Yes

Please list all prerequisites this course requires:

MME3100 Thermodynamics and MME 3200 Fluid Mechanics

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

Majors:
Mechanical Engineering
Mechatronic Engineering
General Engineering

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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 shall be able to:
- Understand the modes of heat transfer and thermo-physical properties
 - Application of energy conservation equation for thermal problems
 - Calculate temperature and heat flux in one and two-dimensional conduction
 - Calculate temperature and heat flux in unsteady conduction
 - Understand velocity and thermal boundary layers
 - Use boundary layer theory to determine velocity and temperature profile in external flows
 - Evaluate heat transfer in internal flows for both developing and fully developed regions
 - Calculate heat transfer rate and effectiveness of different heat exchangers

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- Understand radiation properties and surfaces for heat transfer
- Calculate radiative heat transfer rate among surfaces

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

1. Introduction and basic concepts
2. Introduction to conduction
3. One-dimensional, steady-state conduction
4. Two-dimensional, steady-state conduction
5. Transient conduction
6. Introduction to convection
7. External flow heat transfer
8. Internal flow heat transfer
9. Natural convection heat transfer
10. Heat exchangers
11. Radiation heat transfer

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

- [MME3150-Heat-Transfer.pdf](#)