

A - New Course Proposal V. 7.2022 : Entry # 3097**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 2027

Information for the Registrar

A - New Course Proposal V. 7.2022 : Entry # 3097**Choose the department designator from the list below.**

MME

Proposed Course Number?

4300

Is this course cross listed?

No

Does this course replace a current course?

No

What is the title of the new course?

Manufacturing Engineering

Write the catalog description of your proposed course:

Design for Manufacture and Assembly; Modern Philosophies and Practices including Lean Manufacturing; Quality control in Manufacturing Systems; Use of Software Tools for Analysis of Manufacturing Cost and Time and evaluation of alternatives.

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:

MME2300 Strength of Materials

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

Majors:
Mechanical Engineering
General Engineering

Submitted by:

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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 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.

By the end of the course, you should be able to:

1. Understand that Design for Manufacture and Assembly (DFMA) is an important aspect of product development and promotes early involvement of manufacturing in design
2. Learn a systematic procedure to analyze a proposed design from the point of view of assembly and manufacturing
3. Quantitatively evaluate the impact of design choices on manufacturing cost
4. Get familiar with key concepts in various new manufacturing paradigms and practices related to lean manufacturing
5. Use modern software tools to accurately model parts for specific manufacturing operations, model part costs, simplify products, find specific avenues to reduce manufacturing and assembly costs, benchmark products, and quantify improvements
6. Describe a feasible sequence of manufacturing processes for production of the component.

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7. Distinguish between different types of casting and differentiate between their output product characteristics.
8. Describe, in engineering sketch form, the bulk deformation processes of forging, rolling, extrusion, and drawing.
9. Characterize the major machining operations of turning, milling, and drilling via description of cutting tools used and basic components of the machine tools.
10. Relate the common mechanisms of cutting tool wear to desirable cutting tool material properties.
11. State the advantages and physical description of the nontraditional material removal processes of waterjet machining, electric discharge machining, and chemical machining.
12. Identify specific polymer processing methods based on material and component geometric properties

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

Selection of Materials and Processes
 Product Design for Manual Assembly
 Design for Injection Molding
 Design for Sheetmetal Working
 Design for Die-Casting, Sand Casting, and Investment Casting
 Design for Machining
 Design for other Misc Processes; Design for Human Factors; Design for X – Reliability, Serviceability, Environment, Disassembly
 Lean Manufacturing and Assembly
 Tolerances
 Rapid Prototyping; Product Architecture
 Process variability and control
 Casting of metals and alloys.
 Rolling, forging, extrusion, and drawing.
 Cutting, bending, and drawing of sheet metal.
 Traditional, shear process machining.
 Additive manufacturing methods

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

- [MME4300-Manufacturing-Engineering.pdf](#)