

## Clackamas Community College

### Online Course/Outline Submission System

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#### Section #1 General Course Information

**Department:** Manufacturing

**Submitter**

First Name: **Craig**  
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Email: **craiga**

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**Course Prefix and Number:** MET - 151

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**# Credits:** 6

**Contact hours**

Lecture (# of hours):  
Lec/lab (# of hours): 120  
Lab (# of hours):  
Total course hours: 120

For each credit, the student will be expected to spend, on average, 3 hours per week in combination of in-class and out-of-class activity.

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**Course Title:** Introduction to Engineering Design--Project Lead the Way

**Course Description:**

This course emphasizes problem-solving skills by using a design development process. Models of product solutions are created, analyzed and communicated using parametric computer-aided design software. This course is part of the national Project Lead the Way curriculum.

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**Type of Course:** Career Technical Preparatory

Is this class challengeable?

**No**

Can this course be repeated for credit in a degree?

**No**

Is general education certification being sought at this time?

**No**

Does this course map to any general education outcome(s)?

**No**

Is this course part of an AAS or related certificate of completion?

**Yes**

**Name of degree(s) and/or certificate(s):** Electronics Engineering Technology AAS

Are there prerequisites to this course?

**No**

Are there corequisites to this course?

**No**

Are there any requirements or recommendations for students taken this course?

**No**

Are there similar courses existing in other programs or disciplines at CCC?

**No**

Will this class use library resources?

**Yes**

**Have you talked with a librarian regarding that impact?**

**No**

Is there any other potential impact on another department?

**No**

Does this course belong on the Related Instruction list?

**No**

**GRADING METHOD:**

A-F or Pass/No Pass

**Audit: Yes**

When do you plan to offer this course?

**Not every term**

Is this course equivalent to another?

If yes, they must have the same description and outcomes.

**No**

Will this course appear in the college catalog?

**Yes**

Will this course appear in the schedule?

**Yes**

**Student Learning Outcomes:**

Upon successful completion of this course, students should be able to:

1. proficiently use solid modeling software to create models and engineering drawings,
2. apply an input-process-output-feedback diagram to model and compare the behavior of natural and engineered systems,
3. find and use mathematical models that behave in the same manner as the processes under investigation,
4. manage a group to engage in planning, designing, implementing, and evaluating an engineering solution;
5. analyze subjective decision making problems to explain the trade-offs that can be made to arrive at the best solution,
6. apply algebraic and geometric concepts and skills to solve problems,
7. use library resources and peer feedback to refine research ideas.
8. develop and present research proposals to test a hypothesis.

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***This course does not include assessable General Education outcomes.***

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**Major Topic Outline:**

1. Introduction.
  - a. History of Design.
  - b. Professional Organization.
  - c. Career Opportunities.
  - d. Educational Requirements.
2. Introduction to Design.
  - a. Design Process.
  - b. Principles and Elements of Design.
3. Student Portfolio Development.
  - a. Portfolio Development.
4. Sketching and Visualization.
  - a. Techniques.
  - b. Pictorial.
  - c. Annotated Sketches.
5. Geometric Relationships.
  - a. Forms and Shapes.
  - b. Geometric Constraints.
  - c. Cartesian Coordinate System.
6. Modeling.
  - a. Conceptual.
  - b. Graphical.
  - c. Physical.
  - d. Mathematical.
  - e. Computer.

**Does the content of this class relate to job skills in any of the following areas:**

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|--------------------------------|-----------|
| 1. Increased energy efficiency | <b>No</b> |
| 2. Produce renewable energy    | <b>No</b> |

- 3. Prevent environmental degradation **No**
- 4. Clean up natural environment **No**
- 5. Supports green services **No**

Percent of course: 0%

First term to be offered:

**Next available term after approval**

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