# Engineering Design & Development Course No. 21007 Credit: 1.0

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| **Student name:**  |  | **Graduation Date:** |  |

Pathways and CIP Codes: **Engineering & Applied Mathematics (14.0101)**; Business Management & Entrepreneurship (52.0799)

Course Description: An **application level** course providing students with the opportunity to apply engineering research principles as they design and construct a solution to an engineering problem. Students typically develop and test solutions using computer simulations or models but eventually create a working prototype as part of the design solution.

Directions:The following competencies are required for full approval of this course. Check the appropriate number to indicate the level of competency reached for learner evaluation.

**RATING SCALE:**

4. Exemplary Achievement: Student possesses outstanding knowledge, skills or professional attitude.

3. Proficient Achievement:Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.

2. Limited Achievement:Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.

1. Inadequate Achievement:Student lacks knowledge, skills or professional attitude.

0. No Instruction/Training:Student has not received instruction or training in this area.

## Benchmark 1: Click or tap here to enter text.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Develop a problem statement from research. |  |
| 1.2 | Justify a problem through academic research. |  |
| 1.3 | Justify a problem through market research. |  |
| 1.4 | Research and document prior solution attempts. |  |
| 1.5 | Analyze prior solution attempts with a matrix. |  |
| 1.6 | Develop and document design requirements based on research. |  |
| 1.7 | Brainstorm and document concepts that solve a problem. |  |
| 1.8 | Build a mock-up that communicates a solution. |  |
| 1.9 | Use a matrix to justify the best solution. |  |
| 1.10 | Create a set of technical drawings that fully explain a design. |  |
| 1.11 | Identify and apply STEM Principles to a design. |  |
| 1.12 | Document the Viability of a Design. |  |
| 1.13 | Document a prototype build procedure. |  |
| 1.14 | Build a testable prototype. |  |
| 1.15 | Develop and document ways to test design requirements. |  |
| 1.16 | Test a prototype and document an analysis of the results. |  |
| 1.17 | Document an external evaluation of a prototype. |  |

I certify that the student has received training in the areas indicated.

Instructor Signature:

For more information, contact:

CTE Pathways Help Desk

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