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

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

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

Course Description:

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: Problem Identification and Justification.

### 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. |  |

## Benchmark 2: Design Conceptualization and Justification

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Analyze prior solution attempts with a matrix. |  |
| 2.2 | Develop and document design requirements based on research. |  |
| 2.3 | Brainstorm and document concepts that solve a problem. |  |
| 2.4 | Build a mock-up that communicates a solution. |  |
| 2.5 | Use a matrix to justify the best solution. |  |

## Benchmark 3: Click or tap here to enter text.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Create a set of technical drawings that fully explain a design. |  |
| 3.2 | Identify and apply STEM Principles to a design. |  |
| 3.3 | Document the Viability of a Design. |  |
| 3.4 | Document a prototype build procedure. |  |
| 3.5 | Build a testable prototype. |  |
| 3.6 | Develop and document ways to test design requirements. |  |
| 3.7 | Test a prototype and document an analysis of the results. |  |
| 3.8 | Document an external evaluation of a prototype. |  |
| 3.9 | Create and deliver a final presentation. |  |

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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[pathwayshelpdesk@ksde.org](mailto:pathwayshelpdesk@ksde.org)



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