

Course discipline/number/title: CAD 2400: Reverse Engineering and Rapid Prototyping

**A. CATALOG DESCRIPTION**

1. Credits: 3
2. Hours/Week: 1 lecture, 4lab
3. Prerequisites (Course discipline/number): CAD 1039
4. Other requirements: Students must receive a grade of C or better in all CAD courses.
5. MnTC Goals (if any): NA

**B. COURSE DESCRIPTION:** This course will teach students how to gather data, disassemble, measure and model parts using Solidworks. Students will reverse engineer parts using measuring tools. This course will be taught using the latest release of SolidWorks.

**C. DATE LAST REVISED (Month, year):** February, 2024

**D. OUTLINE OF MAJOR CONTENT AREAS:**

1. Identifying the product or component which will be reverse engineered
2. Observing or disassembling the information documenting how the original product works
3. Implementing the technical data generated by reverse engineering in a replica or modified version of the original
4. 3D printing (Additive Manufacturing) introduction, advantages, and applications
5. Re-create product components using a 3D printer by individual or 3rd party
6. CAD file formats and data translation for additive manufacturing
7. Team projects reverse engineering products while interacting remotely

**E. LEARNING OUTCOMES (GENERAL):** The student will be able to:

1. Use a caliper and other measuring tools to measure and draw existing parts.
2. Create assembly drawings of existing parts.
3. Draw, dimension, and design prototype parts.
4. Recreate parts using a 3D Printer or other available equipment.
5. Demonstrate teamwork and collaboration in person or remotely.

**F. LEARNING OUTCOMES (MNTC):** NA

**G. METHODS FOR EVALUATION OF STUDENT LEARNING:** Methods may include but are not limited to:

1. Checking electronic drawing files
2. Lab assignments
3. Quizzes
4. Examinations

**H. RCTC CORE OUTCOME(S).** This course contributes to meeting the following RCTC Core Outcome(s): Personal and Professional Accountability. Students will take responsibility as active learners for achieving their educational and personal goals.

**I. SPECIAL INFORMATION (if any):** None