Computer-Aided Design

Last Updated: Wed, 11/19/2025

Course prefix: ME

Course number: 6104

Section: A, Q

CRN
28303 28304

Instructor first name: Yan

Instructor last name: Wang

Semester: Spring

Academic year: 2026

Catalog description:

The course will cover the fundamentals of CAD, including geometric and solid modeling, parametric representations, features, and human-machine interactions, as well as the applications to design, analysis, and manufacturing.

This class does not teach how to use commercial CAD software tools themselves, assuming students learned the basics in their undergraduate years. We focus more on geometric modeling (mathematical and computational foundation) which CAD tools are based upon.

Topics:

- Homogeneous Coordinates, Transformation
- Parametric Surfaces (Hermite, Bezier, B-spline)
- Solid Modeling (CSG, Euler-Poincare formula, Euler Operators)
- Implicit Surface Modeling (R-function, Offset, Metamorphosis)
- Artificial Intelligence for Design

Academic honesty/integrity statement:

Students are expected to maintain the highest standards of academic integrity. All work submitted must be original and properly cited. Plagiarism, cheating, or any form of academic dishonesty will result in immediate consequences as outlined in the university's academic integrity policy.