



## CAD 172: Mechanical Design Using Inventor

This course develops fundamental mechanical engineering design skills for the creative solution to problems associated with the production of useful devices. Application of Computer Aided Design software (AutoDesk Inventor) includes sketching, three-dimensional models and assemblies, drawing views, dimensioning, and both standard and geometric tolerancing. The course investigates the selection and modeling of common mechanical components and the use of finite element analysis. Students are required to complete an independent mechanical design project. Prerequisite: CAD 101 with a grade of C or better or equivalent. Two lecture hours and three laboratory hours per week. Instructional Support Fee applies. NOTE: Utilizes Windows based software only.

### Course Student Learning Outcomes

1. Perform the steps involved in the mechanical design process and importance of graphics and geometry to the solution. 2. Utilize Computer Aided Design (CAD) software to accomplish the following tasks to: 3. Model & view three-dimensional objects from any point of view (angle and scale). 4. Utilize three-dimensional models to create working manufacturing drawings including; Orthographic views with dimensions, Auxiliary, Detail, Section and other common drawing views and Annotated Assembly drawings. 5. Use design formulas & libraries of common mechanical components to generate mechanisms more efficiently. 6. Define dimensional tolerances (including geometric dimensioning & tolerancing) based on part function & economical manufacture. 7. Define Finite Element Analysis and the associated design processes used for to ensure safe & reliable component loadings & operation.

**Credits:** 3

**Program:** Computer Aided Drafting