Bemidji State University

TADD 4699: TAD LAB: Finite Element Analysis

A. COURSE DESCRIPTION

Credits: 2
Lecture Hours/Week: 0
Lab Hours/Week: 0
OJT Hours/Week: *.*
Prerequisites: None
Corequisites: None
MnTC Goals: None

Finite Element Analysis (FEA) is a tool that helps analyze a design using conditions that approximate real life. Students will use 3D CAD models to analyze displacement, strain, and stress under simulated mechanical stress. Prerequisites: TADD 3690.

B. COURSE EFFECTIVE DATES: 08/01/2024 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. FEA mathematical models
2. Element types and order to create a mesh
3. Simplifying parts to avoid stress and/or stress singularities
4. Assumptions and uncertainties in FEA
5. Modal analysis
6. Nonlinear analysis

D. LEARNING OUTCOMES (General)

1. understand the concepts behind FEA simulations.
2. setup the required parameters to simulate a loaded condition of a part or assembly in SolidWorks and run a finite element analysis.
3. apply finite element solutions to static and dynamic structural and thermal problems.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted