

# Spring 2024

## ME 699 – ME Topics Course Descriptions

### ME699, Section A, 16443 – Experimental Stress Analysis

Counts as 500-level MNE Tech Elective. Does not count towards 600-level MNE Tech Elective.

#### Prerequisites:

CHE 354 - Basic Concepts in Materials Science and Engineering, and  
CHE 355, - Fundamentals of Mechanical Properties, and  
CE 533 - Mechanic of Material

#### Recommended, but not required Prerequisites:

ME 400 - Computer Applications in Mechanical Engineering, or  
CC 210 - Fundamental Computer Programming Concepts, or  
CIS 209 - Computer Programming for Engineers

#### Course description:

This course is dedicated to the study of engineering materials used in the fabrication of products including metals, polymers, ceramics, composites and elastomers. The main objective of this course is to provide basic knowledge in material science and inherit material properties such as Elastic Modulus, Yield strength, Toughness and etc, so that the students can solve real engineering problems and design engineering structures/systems. The experimental component of the course prepares them to gain skills such as characterization methods and Design of Experiment (DOE). Students will learn about material structures, how structures dictate properties and how processing can change the properties/structures for some materials. Topics include physical, mechanical and electrical properties of materials, elements of strength of materials, failure criteria, and materials selection.