MIME 4230 Dynamics of Human Movement
The goal of this course is for students to be able to describe motions of the human body. Three-dimensional analysis and measurements of human body movements including kinematics, kinetics and energetics of human gait, anthropometry and application to bioengineering and orthopedics will be presented. Euler angles and the screw axis method will be used to describe three-dimensional motions.

MIME 4320 Fatigue Of Materials & Structures
Fatigue design methods; fatigue fracture mechanisms; cyclic deformation behavior and material cyclic properties; stress-based, and fracture mechanics-based methodologies to fatigue life prediction of smooth and notched members subjected to constant or variable amplitude loadings.

MIME 4510 Turbomachinery
Theory of energy transfer between fluid and rotor in turbomachines. Design of turbomachine components. Applications to pumps, compressors and turbines.

MIME 4530 Internal Combustion Engines
Study of Carnot, Otto, Diesel and Brayton Cycles, performance characteristics, combustion engines and construction details of internal combustion engines. Analysis of problems associated with carburetion, fuel injection, combustion, cooling, supercharging, emissions and emission control.

MIME 4820 Sustainability Analysis and Design
The course is intended to introduce students to sustainability analysis and design in manufacturing and service settings as related to mechanical and industrial engineering. It will cover solid waste minimization for manufacturers, life cycle analysis, and environmentally conscious design.

MIME 4920 Assembly and Joining
This course is comprised of two parts: joining processes and assembly systems. Commonly used joining methods, such as welding, mechanical fastening and adhesion are discussed. General principles of assembly are presented with extensive use of automobile assembly as an example.
MIME Technical Electives for spring 2021:
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MIME 4980 SpTp: Business Fundamentals for Engineers

Your BSME covered 1, 3, 5, and 7. A new experimental MIME course: MIME 4980 (Business Fundamentals for Engineers) will introduce you to the others: (2) Management Essentials, (4) Financial Accounting, and 6) Negotiations.

This course will require substantial amounts of outside work such as reading, preparing oral speeches, as well as team projects. Regular attendance will be expected at all classes.

MIME 4980 SpTp: Autonomous Vehicle Technology
This course will cover fundamental technologies used by autonomous vehicles and mobile robots including lidar sensing, vision, and simultaneous localization and mapping (SLAM). Students will use the turtlebot3 platform powered by the robot operating system (ROS) to gain hands-on experience with these technologies.

MIME 4980 ST- Micro - Electromechanical Systems (Distance Learning)
Application of solid-state phenomena in engineering structures such as microelectronic, magnetic and optical devices. Review of quantum mechanical descriptions of crystalline solids. Microelectronic, magnetic and optical properties of devices, fabrication and process methods

MIME 4980 ST- Six Sigma (Distance Learning)
The course is intended to introduce students to lean six sigma and design in manufacturing and service settings. It will cover the history of lean six sigma, benefits, cost reduction, quality improvement, metrics, deployment alternatives and case studies.

MIME 4980 ST- Additive Manufacturing (Distance Learning)
The rapidly evolving additive manufacturing technologies is a direct way of converting digital data into final parts. While rapid prototyping (RP) and rapid tooling (RT) are now accessible based on AM the next front is direct product manufacturing. Rapid manufacturing (RM) will make a significant difference in industries related to aerospace and biomedical devices. The forecast indicate that AM could reach $50 billion by 2030 and $100 billion by 2044. While in traditional manufacturing, the true costs are not transparent due to the supply chain, AM has the potential to significantly reduce the cost by modifying the design and production systems. This course is designed to provide an in depth understanding of the advantages as well as the limitations of AM technologies.

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