MECHANICAL ENGINEERING (M E)

11. Manufacturing Processes (2)
Processing techniques, including casting, welding, forming, and machining; capabilities and limitations of these techniques.

11L. Manufacturing Processes Laboratory (1)
Prerequisite: M E 11 (or concurrently). Examples of the application on manufacturing processes in industry. (3 lab hours; field trips required)

117. Instrumentation and Fluid Laboratory (2)
Prerequisite: Engr 116 (or concurrently). Study of instrumentation and experimental methods; applications; fluid mechanics laboratory. (2 3-hour labs)

131. Advanced Engineering Materials (3)
Prerequisite: M E 11, Engr 31, 121. Applications of the principles of materials science to the study of the mechanical behavior of metalic, polymeric, ceramic, and composite materials. Effects of stress and environmental variables. (2 lecture, 3 lab hours)

134. Dynamics in Machine Design (3)
Prerequisite: Engr 26, 112 (or concurrently), 121 (or concurrently), Math 81. Analytical and graphical solutions to design problems in machinery. Mechanisms, kinematics, dynamic forces, vibrations.

137. Pressure Flow and Turbomachinery (3)
Prerequisite: Engr 136, 136L (or concurrently). Applications of fluid mechanics and thermodynamics to pipe flow and rotor-fluid energy interchange. Steady and transient problems; real fluids in pipes; water hammer. Pumps, compressors, and turbines with incompressible and compressible fluids.

142. Mechanical Vibration (3)
Prerequisite: M E 134. Mathematical and physical basis of vibration theory with applications to engineering; design; transient and steady state phenomena; distributed and lumped parameters; coupled systems; computer solutions.

143. Mechanical Design Laboratory (1)
Prerequisite: M E 134. Theory and techniques of static and dynamic stress measurements. Experimental determination of dynamic strain, force, and displacement. Vibration analysis. Experimental stress analysis. (3 lab hours)

146. Air Conditioning (3)
Prerequisite: Engr 136 (or concurrently). Theory and practice in air conditioning including psychrometrics, load estimating, heating and cooling systems, fluid design and controls.

146L. Air Conditioning Laboratory (1)
Prerequisite: M E 146 (or concurrently). Practical laboratory work with commercial type units; test of components of air conditioning systems. (3 lab hours; field trips required)

151. Materials in Engineering Design (2)
Prerequisite: Engr 121, M E 11, 131. Evaluation of design requirements, economic considerations. Techniques for selecting suitable materials for specific applications; optimization. Case studies.

154. Design of Machine Elements (3)
Prerequisite: ME 11, 11L, 134; Math 81. Analytical study of principles of the design of machine components.

156. Advanced Thermodynamics—Fluid Mechanics (3)
Prerequisite: Engr 136. Advanced topics in thermodynamics, fluid mechanics, and heat transfer as applied to engineering problems.