138. Highway Engineering (2)

Prerequisite: Engr 2; 137 (or concurrently). Feasibility and economic considerations in location, design, construction, and maintenance of streets and highways.

139. Advanced Mechanics of Materials (3)

Prerequisite: Engr 70, 131; Math 81. Advanced topics in mechanics of materials.

141. Irrigation Engineering (2)

Prerequisite: Engr 131, 164. Flow of water in canals, design of canals and canal systems, measurements of water, surveys for irrigation systems. (1 lecture, 3 lab hours; field trips)

142. Water Supply and Sanitation (2)

Prerequisite: Engr 164. Water treatment plants, distribution systems, waste collection systems and disposal facilities; storm drainage systems. (2 lecture; field trips)

143. Concrete Laboratory (1)

Prerequisite: Engr 131L; 134 (or concurrently). Proportioning of concrete mixes; admixtures; test for entrained air; slump test; compressive and flexural strength tests; reinforced concrete. (3 lab hours; field trip)

144. Foundation Design (3)

Prerequisite: Engr 137, 134 (or concurrently). Theory and design of footings, piles, retaining walls, and other structures combining the use of soil mechanics and structural analysis.

145. Fluid Dynamics (3)

Prerequisite: Engr 70, 165, Math 81. Stream function, velocity potential function, conformal transformation with applications to engineering problems.

150. Magnetic and Electric Circuits (3)

Prerequisite: Physics 4B, Math 77 (or concurrently). Fundamentals of magnetic circuits; basic laws of direct-current and of single and polyphase alternating-current circuits; transient phenomena in simple circuits; principles of electrical instruments.

150L. Magnetic and Electric Circuits Laboratory (1)

Use of electrical instruments; experiments and computations on magnetic, direct- and alternating-current circuits, single and polyphase, and on transient phenomena in simple circuits. (3 lab hours)

151. Electrical Machinery (3)

Prerequisite: Engr 150, 150L. Principles of direct- and alternating-current machinery and of other energy-conversion devices and associated apparatus.

151L. Electrical Machinery Laboratory (1)

Experiments and computations on direct- and alternating-current machinery and on other energy-conversion devices and associated apparatus. (3 lab hours)

152. Electrical Circuit Analysis (3)

Prerequisite: Engr 150, 150L; Math 81. Complex circuits, locus diagrams, network theorems, coupled circuits, nonlinear circuit elements, non-sinusoidal waves, pulses, transients, unbalanced three-phase circuits, symmetrical components, synthesis and design of circuits; applications of matrix algebra, Fourier series and integral, Laplace transforms.

152L. Electrical Circuit Analysis Laboratory (1)

Experiments and computations on networks, bridge circuits, coupled circuits, non-sinusoidal waves, pulses, transients, unbalanced three-phase circuits, and sym-