metrical components; experimental data analyzed according to modern data-analysis techniques. (3 lab hours; field trips)

153. Electrical Transmission (3)

Prerequisite: Engr 152, 152L, 155, 155L. Principles of transmission of electrical energy over wires at power and communication frequencies and through wave guides and space at ultra-high frequencies; filter circuits; design of transmission systems.

153L. Electrical Transmission Laboratory (1)

Experiments and computations involving electrical transmission of energy, including filter circuits. (3 lab hours; field trips)

155. Electric and Magnetic Fields (3)

Prerequisite: Engr 150, 150L, Math 81. Advanced topics in electricity and magnetism; fields and waves; emphasis on applications to engineering.

155L. Electric and Magnetic Fields Laboratory (1)

Advanced experiments and computations in electricity, magnetism, and in electromagnetic fields and waves. (3 lab hours; field trips)

156. Electronics (2)

Prerequisite: Engr 150, 150L. Electron tube and semiconductor electronics; introduction to basic systems; engineering applications and considerations.

156L. Electronics Laboratory (1)

Laboratory experiments in electronics; engineering applications. (3 lab hours)

157. Electronic Devices and Circuits (3)

Prerequisite: Engr 156, 156L. Physical electronics, characteristics and properties of electronic devices, both thermionic and solid state; theory of electronic circuits; analysis of linear feedback systems.

157L. Electronic Devices and Circuits Laboratory (1)

Experimental studies of electronic devices, circuits, and commercial type apparatus. (3 lab hours; fields trips)

158. Electronic Systems and Controls (3)

Prerequisite: Engr 153, 153L, 157, 157L. Applications of electronic circuits to engineering systems including communication, control, computer, television, telemetry radar, and microwaves systems; high-frequency techniques; special applications, and design considerations.

158L. Electronic Systems and Controls Laboratory (1)

Electronic measurements; laboratory studies of electronic systems. (3 lab hours; field trips)

162. Air Conditioning (3)

Prerequisite: Engr 166, 166L (or concurrently). Theory and practice in air conditioning including psychrometrics, load estimating, heating and cooling systems, fluid design and controls.

162L. Air Conditioning Laboratory (1)

Practical laboratory work with commercial type units; test of components of air conditioning systems. (3 lab hours; field trips)