6. Photographic Processes in Engineering (3)
Use of photographic process in engineering drawing. Annotated photo-drawings. Use of special films in engineering reproduction. Use of microfilm in engineering drawings, storage, and reproduction. (2 lecture, 3 lab hours)

85. Introduction to Civil Engineering (1)
Introduction to the Civil Engineering Profession.

101. Route Surveying (2)
Prerequisite: C E 2L. Computation and field work covering surveys for highway, irrigation, construction, and other kinds of engineering projects. (1 lecture, 3 lab hours; field trips required)

101L. Route Surveying Laboratory (1)
Prerequisite: C E 101 (or concurrently). Survey for highway location, stakeout of roads and intersections from plans. (3 lab hours)

102. Geodetic Surveying (2)
Prerequisite: C E 2L, Math 76. Triangulation: adjustment of geodetic figures; base line measurement; map projection; precise leveling. (1 lecture, 3 lab hours; field trips required)

102L. Geodetic Surveying Laboratory (1)
Prerequisite: C E 102 (or concurrently). Field work for surveying and photogrammetry majors. (3 lab hours)

103. Advanced Photogrammetry (3)
Prerequisite: C E 5 or permission of instructor. Introduction to analytical photogrammetry; analog strip triangulation, independent model triangulation, block triangulation; analytical plotters. (1 lecture, 2 3-hour labs)

104. Boundary Control and Legal Principles (3)
Prerequisite: C E 2. Legal principles that control the boundary location of real property.

105. Advanced Survey Computations (3)
Prerequisite: C E 4 or Engr 70, C E 102. Statistics, propagation of errors, theory of least squares, observation and condition equations. Adjustments of traverse, level nets, triangulation, and trilateration; simultaneous block adjustment. (2 lecture, 3 lab hours)

106. Cartographic Techniques and Map Reproduction (2)
Prerequisite: C E 3, Chem 2B. Cartographic color separation, scribing; line and half-tone copy, theory of photographic processes, photographic optics, emulsions, developers, lenses; offset lithographic process, single- and multicolor photolithographic reproduction; modern edge enhancement and photo-tone techniques. (1 lecture, 3 lab hours)

107. Electronic Distance Measurements (3)
Prerequisite: C E 102, E E 104, or permission of instructor. Introduction to electronic surveying systems. Analysis of main elements in electronic surveying instruments; geometrical concepts in electronic measurements. Use of electronic distance measurements in surveying, traverse, and trilateration. Use of airborne systems. (2 lecture, 3 lab hours; field trips required)

108. Geodesy (3)
Prerequisite: C E 4, 102. Analytic geometry, three-dimensional coordinate system; introduction to geometric geodesy, geodetic astronomy, gravimetric geodesy and satellite geodesy; deviation of the vertical and Laplace stations; applications of map projections in surveying.

109. Subdivision Preparation (2)
Prerequisite: C E 104. Subdivision Map Act, title research, zoning study. Tentative and final subdivision layout, map drafting; environmental impact study. (1 lecture, 3 lab hours)