CHINESE

101*. Elementary Chinese I
Fall, 4(4-1)
Pronunciation, writing system, and basic vocabulary and sentence patterns, with emphasis on conversation. QA: CHS 101 CHS 102

102*. Elementary Chinese II
Spring, 4(4-1)
P: CHS 101 or R: approval of department. Further work on conversation, character writing, and comprehension, with increasing emphasis on vocabulary building and grammar. QA: CHS 102 CHS 103

201*. Second-Year Chinese I
Fall, 4(4-1)
P: CHS 102 or R: approval of department. Intermediate-level work on skills in conversation, comprehension, and grammar. Practice in composition. QA: CHS 201 CHS 202

202*. Second-Year Chinese II
Spring, 4(4-1)
P: CHS 201 or R: approval of department. Further intermediate-level work on skills in conversation, comprehension, and grammar. Continued practice in composition. QA: CHS 202 CHS 203

301*. Third-Year Chinese I
Fall, 4(4-0)
P: CHS 202
Advanced-level work on speaking, listening comprehension, reading, and writing skills, based on materials of cultural interest. QA: CHS 301 CHS 302

302*. Third-Year Chinese II
Spring, 4(4-0)
P: CHS 301
Advanced-level work on speaking, listening comprehension, reading, and writing skills, based on materials of cultural interest. QA: CHS 302 CHS 303

350*. Studies in the Chinese language
Fall, 3(3-0)
P: CHS 203
Chinese phonology, morphology, and syntax. QA: CHS 203

401*. Advanced Chinese I
Fall, 3(3-0)
P: CHS 302
Reading, discussion and writing on original materials, including classical texts. QA: CHS 401 CHS 411

402*. Advanced Chinese II
Spring, 3(3-0)
P: CHS 401
Continuation of CHS 401. Reading, discussion and writing on advanced materials, including classical texts of broad cultural interest. QA: CHS 401 CHS 420

499*. Senior Thesis Research
Fall, Spring, Summer. 1 to 4 credits. May enroll for a maximum of 4 credits. R: Approval of the Department
An individual research project supervised by a faculty member. Demonstrates the student's ability to do independent research and submit or present a major paper.

CIVIL ENGINEERING

271. Engineering Surveying
Fall, Spring. 4(3-0)
P: MTH 132.
Application of surveying and error analysis to civil engineering problems. Earthwork, calculations, layout and management of construction sites. QA: CE 252 CE 251

280*. Introduction to Environmental Engineering
Fall, Spring. 3(3-0)
P: CSM 141 or CSM 151, MTH 132, CFS 130 or CFS 131.
Elements of hydrology. Groundwater and surface water supply and contamination. Treatment systems for drinking water, wastewater, air, and solids and hazardous waste. Introduction to radiation and pollution. QA: CSM 151 CSM 151 MTH 129 CFS 112 QA: CE 280

305*. Structural Analysis
Fall, Spring. 3(3-0)
P: MTH 211, CE 290 or concurrently. R: Open only to Civil Engineering majors. Determinate and indeterminate plane structures. Linear, stability, determinacy. Virtual work calculations of forces and reactions. Flexibility and stiffness methods in plane structures. QA: MTH 211 QA: CE 305 CE 306

312*. Soil Mechanics
Fall, Spring, Summer. 3(2-3)
P: MTH 211. R: Open only to Civil Engineering and Agricultural Engineering majors.

321*. Introduction to Fluid Mechanics
Fall, Spring. 3(2-3)
P: MTH 306 or concurrently. R: Open only to Civil Engineering and Agricultural Engineering majors. Not open to students with credit in ME 209.

337*. Civil Engineering Materials I
Fall, Spring. 4(3-0)
P: MTH 211 or concurrently. R: Open only to Civil Engineering majors.
Common civil engineering construction and paving materials: aggregates, inorganic cements, asphalt, concrete, wood and steel. Composition, structure, physical and mechanical properties, testing and production mix design. QA: MTH 211 QA: CE 308

346*. Transportation
Fall, Spring. 3(3-0)
P: MTH 133. R: Open only to Civil Engineering, Engineering Arts, and Urban Planning students.
Planning, design, and evaluation of transportation systems. Transportation capacity, delay, and service quality. Elements of geometric design. QA: MTH 113 QA: CE 346

370*. Engineering Economics
Fall, Spring. 3(3-0)
P: MTH 133. R: Open only to College of Engineering students.

373. Construction Estimating and Scheduling
Fall. 3(3-0)
P: Open only to College of Engineering and Building Construction Management majors.
Estimating quantities and costs for construction projects. Optimal scheduling of personnel and equipment subject to constraints and uncertainty. QA: CE 372 CE 471

390*. Civil Engineering Analysis
Fall, Spring. 3(3-0)
P: CPS 130 or CPS 131, MTH 235, MMS 211 or concurrently. R: Civil Engineering majors.

400*. Structural Mechanics
Fall, Spring. 3(3-0)
P: CE 296, CE 390. R: Open only to Civil Engineering majors.

405*. Design of Steel Structures
Fall, Spring. 3(3-0)
P: CE 296. R: Open only to Civil Engineering majors.
Design of steel beams, columns, tension members and connections. Stability and plastic strength. QA: CE 306 CE 390 QA: CE 405

406*. Design of Concrete Structures
Fall, Spring. 3(3-0)
P: CE 306, CE 337. R: Open only to Civil Engineering majors.
Design of reinforced concrete beams, slabs, columns and footings. QA: CE 306 CE 338 CE 390 QA: CE 406

407*. Structural System Design
Fall. 3(3-0)
P: CE 405 or concurrently CE 406. R: Open only to Civil Engineering majors.
Building and bridge design using steel, concrete, wood, or other materials. Approximate methods. Wind and earthquake forces. QA: CE 405 CE 406 QA: CE 407

419*. Geotechnical Engineering
Fall, Spring. 4(4-1)
P: CE 312, CE 390. R: Open only to Civil Engineering majors.
Shallow foundation design including bearing capacity, stress distribution, and settlement analysis. Pile foundations. Design of retaining structures including rigid walls, braced excavations, and sheet-pile walls. Stability of slopes and embankments. QA: CE 312 CE 390 QA: CE 418 CE 419

421*. Engineering Hydrology
Fall. 3(3-0)
P: STT 351; CE 321 or concurrently. R: Open only to College of Engineering. College of natural Science, and Civil Engineering majors.