1. **CE 201 Statics 3(3,0)** Forces and force systems and their external effect on bodies, principally the condition of equilibrium. The techniques of vector mathematics are employed, and the rigor of physical analysis is emphasized. **Preq:** PHYS 122, MTHSC 206 (or concurrent enrollment).

2. **CE 206 Structural Mechanics 4(3,3)** Builds on statics to develop relationships between external loads on structural elements of civil engineering interest and the resulting internal loads and deformations. Students are exposed to the development of stress and deformation formulas and the identification and use of significant mechanical properties of civil engineering materials. **Preq:** CE 201.

3. **CE 208 Dynamics 2(2,0)** Study of kinetics and kinematics of particles and rigid bodies, work and energy, impact and momentum. **Preq:** CE 201 and PHYS 122. **Coreq:** MTHSC 206.

4. **CE 255 Geometrics 3(2,3)** Spatial data collection methods, including surveying, digital photogrammetry and remote sensing and global positioning systems. Methods and technologies used to manage, manipulate, and analyze spatial and associated attribute data, including geographic information systems. **Coreq:** EG 209.

5. **CE 301 Structural Analysis 3(3,0)** Calculation of design loads and load paths for buildings and other structures. Use of classical analysis techniques to determine support reactions, internal member forces, and structural displacements of statically determinate and indeterminate structural systems. **Preq:** CE 206 or consent of instructor.

6. **CE 311 Transportation Engineering Planning and Design 3(3,0)** Covers planning, design, and operation of transportation facilities, including highways and airports. Includes economic, safety, and environmental considerations. Public transit systems are covered. **Preq:** CE 255. **Coreq:** EX ST 301.

7. **CE 321 Geotechnical Engineering 4(3,3)** Mechanical and physical properties of soils and their relation to soil action in problems of engineering, such as classification, permeability, shearing strength, and consolidation; design of embankments and retaining walls with geotextiles. **Preq:** CE 206 and ENGR 130.

8. **CE 331 Construction Engineering and Management 3(3,0)** Considers construction contracts, technical specifications, cost estimating, project scheduling, cost control, materials management, quality control, and quality assurance. **Preq:** Junior standing.

9. **CE 341 Introduction to Fluid Mechanics 4(3,3)** Introduction to fluid mechanics, including hydrostatics and fluid flow. Includes principles of mass, momentum, and energy conservation. Other topics include conduit flow, pump systems, and open channel flow. Laboratory experiments familiarize students with laboratory techniques and instrumentation. The Effective Technical Communications Laboratory is used to prepare a presentation for a lab assignment. **Preq:** CE 208 or EM 202.

10. **CE 342 Applied Hydraulics and Hydrology 3(3,0)** Study of hydrologic cycle, including precipitation, evapotranspiration, infiltration, and runoff. Includes hydrograph analysis, gradually varied flow in open channel flow, design of stable channels, flood routing, groundwater hydraulics, flood frequency analysis, and hydrologic design. **Preq:** CE 341.

11. **CE 351 Civil Engineering Materials 4(3,3)** Introduces students to material science and basic properties of construction materials such as aggregate, Portland cement, asphalt cement, concrete, steel, ceramics, wood, and fibers. Experiments in lab and field trips to nearby plants are required. Oral and written communication skills are an integral part of this course. **Preq:** ENGR 130; **Coreq:** EX ST 301 or MTHSC 302.

12. **CE 352 Economic Evaluation of Projects 2(2,0)** Comparison of design alternatives based on engineering economic analysis. Introduces present worth, annual cost, rate of return, and benefit-cost ratio methods. Use of depreciation and taxation in project analysis.

13. **CE 353 Professional Seminar 1(1,0)** Discusses various professional topics related to skills and techniques for evaluating career opportunities, seeking and obtaining civil engineering employment, career development, professional registration, professional ethics, and other factors necessary for achieving success in a professional career. Enables students to make better decisions that will help them succeed in their careers. **Preq:** Junior standing.

14. **CE 459 Capstone Design Project 3(1,6)** Students apply creativity with their engineering knowledge in the solution of open-ended civil engineering problems. Problems are formulated and solutions are evaluated by faculty and practicing engineers. Communication skills are developed through presentations, correspondence and project reports. **Preq:** All required 300-level CE courses and a Technical Design Requirement.