Courses designated as Core I, II, III, IV, or Capstone are part of the General Education curriculum. Students must complete a minimum of 40 hours of General Education courses, chosen from the approved list.

1To be chosen from the University-Wide General Education Approved Course List. Three of these 12 hours must be upper-division (3000-4000). See list in the Class Schedule.

Students must successfully complete prerequisite courses (with a minimum C grade) before proceeding to the next course.

* Two college-level courses in a single foreign language are required; this may be satisfied by successful completion of 2 years in a single foreign language in high school. Students who must take foreign language at the University will have an additional 6-10 hours of coursework.

$Students must complete a minimum of four semesters of CEES 1000.

* MATH 1823, 2423, 2433, and 2443 sequence can be substituted for MATH 1914, 2924, and 2934.
Architectural Engineering — B035 — Page 2

COURSES IN AEROSPACE & MECHANICAL ENGINEERING (AME)

2213 Thermodynamics. Prerequisite: Mathematics 2433 or 2934; and Physics 2524, or concurrent enrollment (in both). First and second law of thermodynamics are developed and applied to the solutions of problems from a variety of engineering fields. Extensive use is made of differential and integral calculus, vector analysis, and modern thermodynamics. (F)

3173 Heat Transfer. Prerequisite: AME 2213 or Engineering 2213, and AME 3153. Heat transfer by conduction, convection, and radiation; mass transfer and combined modes of heat transfer. (Sp)

G4563 Air Conditioning Systems. Prerequisite: AME 3173. Theory and design of systems for controlling properties such as temperature, humidity, air purity, air distribution and noise in enclosures. (Irreg.)

COURSES IN ANTHROPOLOGY (ANTH)

4623 Approaches to Cross-Cultural Human Problems. Prerequisite: 1113 or junior standing. Introduces students to the complex problems of contemporary global-scale cultures and helps them better understand their place on this global arena. This course will look at specific perspectives on problems, and relate them to processes occurring in many parts of the world. (Irreg.) (IV-NW)

COURSES IN ARCHITECTURE (ARCH)

1112 Cultures of Collaborating, Creating and Constructing. Prerequisite: Architecture or Environmental Design major. Introduction to the foundations of the various planning, design, and construction disciplines. Focus on the collaborative process for creating and constructing the built environment. Histories of expertise areas such as planning, architecture, landscape architecture, interior design, construction science, engineering, and graphic environmental design will be explored and related to how these have evolved to their contemporary conditions. (F)

2243 History of Architecture I. Prerequisite: majors only or permission of instructor. Corequisite: ARCH 2123, ARCH 2354; for Interior Design majors: completion of A H 2213 and A H 2313. A historical examination of architecture, focusing on particular examples of historical and non-Western cultures and how these affected the built environment from pre-historic through the Renaissance. This course continues the development of critical writing skills and further develops analytic skills that act to inform design decisions related to studio projects. (F-IW-C)

2523 Methods III – Design Analytics. Prerequisite: ARCH 1223, ARCH 1254 with a grade of C or better. Corequisite: ARCH 2343, ARCH 2454. An introduction to the nature of building materials with regard to form, strength, durability, workability, structure, connections, surfaces, and edges. Analysis of architectural expression through the use of building materials including the effects of: light, air movement, humidity, and their relationships to both one another and formal and spatial expressions. Provides a phenomenological foundation for more technical development in Methods V. (Sp)

COURSES IN CIVIL ENGINEERING & ENVIRONMENTAL SCIENCE (CEES)

1000 CEES Seminar. Seminar provides a common meeting time for students and faculty for department and college presentations, educational surveys, cross-course project coordination, and policy announcements. Students must enroll every semester they are matriculated in CEES at OU after the freshman year, but in no case can a student graduate without successfully completing four seminars of semester. (F, Sp)

1213 Computing Applications in Civil Engineering and Environmental Science. Prerequisite: PHYS 2514 or enrollment in computer engineering program. Introduction to application software and computing tools relevant to civil engineering, environmental engineering and environmental science, including programming, spreadsheets and computer-aided design. (F)

2143 Statics. Prerequisite: Physics 2514 and Mathematics 2433 or 2934 or concurrent enrollment in Mathematics 2433 or 2934. Vector representation of forces and moments; general three-dimensional theorems of statics; centroids and moments of area and inertia. Free-body diagrams, equilibrium of a particle and of rigid bodies, distributed loads, friction and internal shear and moment loads. Analysis of trusses, frames, and machines. (F)

2153 Mechanics of Materials. Prerequisites: 2113 or Aerospace and Mechanical Engineering 2113 or Petroleum Engineering 2113. Basic principles of mechanics, including the definition of stress and strain, transformations and principal values for the stress and strain tensor. Kinematics of continuous media and constitutive relations. Study and application of constitutive laws for idealized materials. Elementary elastostatics utilizing Hooke’s law; constitutive relations for a linear-elastic continuum, including elastic parameters such as Young’s modulus, shear and bulk moduli and Poisson’s ratio. Solution of elementary one-dimensional problems involving thermal stresses, strains, beam flexure, shear and deflections, pressure vessels and buckling of columns. (Sp)

2223 Fluid Mechanics. Prerequisites: 2113 or Aerospace and Mechanical Engineering 2113 or Petroleum Engineering 2113, and Mathematics 3113 or concurrent enrollment. Coverage of the fundamentals of fluid statics and dynamics. Formulation of the equation of fluid flow, i.e., Navier-Stokes equations, conservation of momentum, continuity, energy, and equations of flow. Examples of ideal fluid flow and visous fluid flow, such as flow in open and closed conduits. (F)

2363 Introduction to Dynamics for Architectural and Civil Engineers. Prerequisite: CEES 2153 and MATH 3113. Kinematics and kinetics of rigid bodies; free and forced vibrations of undamped and damped single- and multi-degree-of-freedom systems; concept of mass, stiffness, and damping for typical structures; introduction to vibrations of two and more degrees-of-freedom systems; and determination of loads on structures from dynamic events such as earthquakes. (F)

3164 Soil Mechanics. Prerequisite: CEES 2153 or PE 2153. General treatment of the physical and mechanical properties of soils. Theories of effective stress, consolidation, lateral earth pressure, bearing capacity, slope stability and groundwater flow. Laboratory (F)

3141 Structural Analysis I. Prerequisite: CEES 2153 or PE 2153. Loads, reactions and force systems; introduction to design codes; analysis of frames and trusses; calculation of structural deformations; and analysis of indeterminate structures. Emphasis on classical solutions and computer analysis techniques of structural engineering. Introduction to structural analysis computer programs to solve complex problems. (F)

3663 Structural Design – Steel I. Prerequisite: 3414; and 3403 or concurrent enrollment in 3403. Design of steel structural members including tension elements, columns, beams, and connections. Analysis of welded connection design; composite beam design; introduction to plastic design. Laboratory (Sp)

3673 Structural Design – Concrete I. Prerequisite: 3403, 3414. Analysis and design of reinforced concrete beams, columns, slabs, footings, etc., along with discussion of current building practice. Laboratory (F)

4113 Building Lighting and Electrical Systems. Prerequisite: Mathematics, 2423 or 2924; Physics 2524, Engineering 2433 or equivalents. Fundamentals of building lighting and electrical systems. Lighting topics include the determination of appropriate lighting quantity and quality, luminaires and lighting design procedures for residential, commercial and industrial buildings. Electrical topics include the fundamentals of service and branch circuit analysis and branch circuit design for residential, commercial and industrial buildings. (Sp)

G4333 Foundation Engineering. Prerequisite: 3364. Substructure analysis and design to meet various soil conditions; footings and rafts, spreading and underpinning, piles, footers, caissons, sheeting, piles, piers, footings, and foundation design. (F)

4543 Geomatics Engineering. Prerequisite: CEES 1213 and MATH 2433 or 2934, or permission of instructor. Geomatics engineering deals with the science of determine relative positions of features for mapping, engineering and construction plans. Topics include digital leveling, orientation, distance measurement, traversing and control surveys, accuracy, error sources, precise horizontal and zenith angle measurements, and introduction of global navigation satellite system. Sp

G4753 Structural Design – Wood. Prerequisite: 3414 or equivalent. Material properties and behavior of wood. Analysis and design of solid and laminated structural members, connections, systems, trusses and arches. Current developments in structural wood design and research. (F)

4803 Civil Engineering Professional Practice. Prerequisites: senior standing in Civil or Architectural Engineering. Civil engineers must have Engineering 2433 or concurrent enrollment. Introduces students to both technical and non-traditional aspects of professional practice. Technical emphases include discipline-specific instruction on the design process. Architectural engineers are introduced to the process of construction documentation and foundation design. Both disciplines receive training on non-technical aspects of professional practice including organization, project management, ethics and communications. (F)

4993 Architectural Engineering Capstone. Prerequisite: CEES 3364, CEES 3663, CEES 3673, CEES 4113, CEES 4803 and AME 4631. A capstone course emphasizing design of structural components and layouts using a variety of building materials and construction methods and skills from prerequisite courses to address a real-world, open-ended design problem. Required for architectural engineering students. The capstone project will be under direct faculty supervision. (Sp)