GENERAL REQUIREMENTS

<table>
<thead>
<tr>
<th>Year</th>
<th>FIRST SEMESTER</th>
<th>Hours</th>
<th>SECOND SEMESTER</th>
<th>Hours</th>
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<tr>
<td>ENGL</td>
<td>1113, Prin. of English Composition (Core I)</td>
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<td>ENGL 1213, Prin. of English Composition (Core I), or</td>
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<td>GEOL</td>
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<td>EXPO 1213, Expository Writing (Core I)</td>
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<td>CEES</td>
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<td>ARCH</td>
<td>2363, Methods III – Materials and Form</td>
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<td>Majors (Core II)</td>
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<td>CEES 3403, Materials</td>
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<td>AME</td>
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<td>AME 3173, Heat Transfer</td>
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<td>CEES</td>
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<td>CEES 3453, Introduction to Construction Management</td>
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<td>CEES</td>
<td>3361, Soil Mechanics Lab</td>
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<td>CEES</td>
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<td>ENGR 2431, Electrical Circuits</td>
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<td>AME</td>
<td>4653, Air Conditioning Systems</td>
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<td>ANTH 4623, Approaches to Cross-Cultural Human Problems</td>
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<td>CEES 4493, Architectural Engineering Capstone</td>
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<td>CEES</td>
<td>4753, Structural Design — Wood</td>
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<td>CEES 4991, Professional Practice</td>
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<td>4991, Professional Practice</td>
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<td>$Approved Elective: Core III: Social Science</td>
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<td>HIST</td>
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<td>CEES</td>
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<td>CEES 5021, Special Topics or Graduate-level Elective</td>
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<td>CEES Graduate-level Elective</td>
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</table>

OU encourages students to complete at least 30-32 hours of applicable coursework each year to have the opportunity to graduate in five years.

<table>
<thead>
<tr>
<th>Year</th>
<th>TOTAL CREDIT HOURS</th>
<th></th>
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<tbody>
<tr>
<td>FRESHMAN</td>
<td>16</td>
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<td>SOPHOMORE</td>
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<td>FIFTH</td>
<td>12-15</td>
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Students are eligible for graduate status upon graduation with the Bachelor of Science in Architectural Engineering.

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.

**CHEM 1315 can be substituted with CHEM 1335 (Fall only).

†To 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. In the College of Engineering, in order to progress in your curriculum, and as a specific graduation requirement, a grade of C or better is required in each course in the curriculum. Please refer to the General Catalog for additional enrollment limitations. 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. Fourth- and fifth-year graduate courses must satisfy approved Civil Engineering requirements for the Master of Science.

** Professional Elective can be chosen from any 3000-level or higher course in CEES.
Accelerated Architectural Engineering/Civil Engineering BS/MS — A035/F190 Q116 — Page 2

2123 Thermodynamics I. Prerequisite: PHYS 2514; MATH 1823 or 1914; MATH 2423 or 2924; and CHEM 1315 all with a minimum grade of C or better with an overall average of 3.0 in these four courses. (AP credit accepted and weighted based upon score.) Mathematics 2433 or 2934; and Physics 2524, or concurrent enrollment in MATH 2433 or 2934 and PHYS 2524. First and second laws of thermodynamics are developed and applied to the solutions of problems from a variety of engineering fields. Extensive use is made of differential calculus to interrelate thermodynamics functions. (F)

3173 Heat Transfer. Prerequisite: AME 2113, AME 3153. Heat transfer by conduction, convection, and radiation; mass transfer and combined modes of heat transfer. (Sp)

G4653 Air Conditioning. Prerequisite: MATH 1914 and knowledge of HVAC systems for controlling properties such as temperature, humidity, air purity, air distribution and noise in enclosures. (Irreg.)

COURSES IN ARCHITECTURE (ARCH)

1263 Methods II. Pattern of Architecture. Prerequisite: ARCH 1121, ARCH 1163, ARCH 1153 with a grade of C or better. Co-requisite: ARCH 1255; or permission of director. An introduction to organizational strategies across a range of architectural scales. Ordering principles are investigated from micro through macro, from the materiality of details to urban patterns and processes of urban assembly. Application of technology to introduce structural systems and material characteristics. Massing and typology studies will introduce relationships of building to site and environment. (Sp)

2243 History of the Built Environment I. Prerequisite: majors only or permission of director. Co-requisite: DH 1251 or ARCH 2356; or permission of instructor. Introduction to the historical development of architecture, with regard to form, structure, function, material, massing, and typology. 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. (F)

COURSES IN CIVIL ENGINEERING & ENVIRONMENTAL SCIENCE (CEES)

1000 CEES Seminar. Seminar provides a common meeting time for students and faculty for discussion and analysis on current engineering issues through topics, presentations, cross-course project coordination, and policy announcements. Students must enroll every semester that they are matriculated in CEES at OU after the freshman year, but in no case can a student graduate without successfully completing four semesters of seminar. (F, Sp)

2113 Statics. Prerequisite: MATH 1823 or 1914, and knowledge of vectors. Co-requisite: ARCH 2153 or ARCH 2243; or permission of director. Introduction to the nature and properties of material with regard to form, strength, durability, workability, structure, connections, surfaces, and finishes. Analysis of architecture 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. (F)

2123 Thermodynamics I. Prerequisite: PHYS 2514; MATH 1823 or 1914; MATH 2423 or 2924. 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. Prerequisite: PHYS 2514 or MATH 2113. Basic principles of mechanics, including the definition of stress and strain, transformations and principal values for the stress and strain tensors, kinematic relations, review of conservation equations and the development and application of constitutive laws for idealized materials. Elementary elastostatics using Hook’s law; constitutive relations for a linear-elastic continuum, including elastic parameters such as Young’s modulus, shear and bulk modulus and Poisson’s ratio. Solution of elementary one- and two-dimensional mechanics problems, including thermal stresses and strains, beam flexure, shear and deflections, pressure vessels and buckling of columns. (Sp)

2223 CAD Fundamentals. Prerequisite: CIV 2152 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)

C5000 Special Topics in Civil Engineering. 1 to 6 hours. Prerequisite: senior or graduate standing and permission of instructor. May be repeated with change of topic; maximum credit 12 hours. Examines subject matter in civil engineering not covered by existing course offerings as a regular course. (F, Sp, Su)

5021 Technical Communications. Prerequisite: CEES graduate standing or permission of instructor. Focus on skills developed during student internships and job-related communications skills. Examines appropriate formats for various technical publications, as well as methods and practices for developing effective oral presentations. Each student will be required to develop an oral presentation about his/her written product. (F)

5090 Research for Master's Thesis. Prerequisite: enrollment to two nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

COURSES IN ENGINEERING (ENGR)

2002 Professional Development. Prerequisite: sophomore standing. Develop an understanding of engineering ethics, teamwork, leadership, and professional responsibility through the concepts of cost, schedule, social, and global issues. (F, Sp)

2431 Electrical Circuits. Prerequisite: Mathematics 2423 or 2924; and Physics 2524 or concurrent enrollment. Introduction to basic principles of electrical circuits. Topics include DC circuits analysis, DC transients, static electrical fields, static magnetic fields, capacitors, inductors, and filters. (F, Sp)

3401 Fundamentals of Building Lighting. Prerequisite: Mathematics 2423 or MATH 2433 or 2924 or MATH 3153. Topics include light sources, luminaires and lighting design procedures for residential, commercial and industrial buildings. Examination of interior lighting materials and the process of developing a project design problem that requires applying the skills and techniques acquired in earlier engineering coursework. This course will focus on introducing the project requirements; forming multi-disciplinary teams of students; developing team identities; assigning team roles; evaluating project constraints; and developing a project design schedule and time line. (F)

4993 Architectural Engineering Capstone. Prerequisite: CEES 3663, CEES 3673, CEES 4991 and AME 4653; CEES 4113 and CEES 4333 or concurrent enrollment. A capstone course emphasizing design of structural and environmental systems of buildings. Requires students to have knowledge and understanding of all engineering principles and to apply these principles to address design issues. Students will present and defend their design solutions. (F)

COURSES IN GEOLOGY (GEO)

1114 Physical Geology for Science and Engineering Majors. Prerequisite: equivalent knowledge of high school chemistry, algebra and trigonometry. Laboratory included. Plate tectonics, the makeup of continents and mountain building. Heat flow, magnetism, gravity, rock deformation, earthquakes and the earth’s interior. Surface processes including weathering, erosion, transport and deposition. Landforms, rivers, groundwater, glaciers, ocean processes and volcanoes. Minerals and rocks. Application of geology to land-use, groundwater, mineral and fossil fuel exploration. Laboratory (F, Sp) [III-LAB]

COURSES IN MATHEMATICS (MATH)

1914 Differential and Integral Calculus I. Prerequisite: satisfactory score on the placement test, or for incoming freshmen direct from high school, satisfactory score on the ACT/SAT. Duplicate three hours of 1823 and one hour of 2423. Limits and continuity, differentiation, applications of differentiation to optimization and curve sketching, integration, the fundamental theorem of calculus; the substitution rule and applications of integration to compute area, volume, arc length and work. (F, Sp, Su)

2924 Differential and Integral Calculus II. Prerequisite: 1914 with a grade of C or better. Duplicate two hours of 2423 and two hours of 2433. Further applications of integration, the natural logarithmic and exponential functions, indeterminate forms, techniques of integration, vectors, vector functions, functions of several variables, partial differentiation, gradients, multiple integration, line and surface integrals, Green’s, Gauss’ and Stokes’ Theorems. (F, Sp, Su)

+3G113 Introduction to Ordinary Differential Equations. Prerequisite: MATH 2423 or MATH 2924. Duplicate two hours of 3413. First order ordinary differential equations, linear differential equations with constant coefficients, two-by-two linear systems, Laplace transformations, phase planes and stability. (F, Su)

COURSES IN PHYSICS (PHYS)

2514 General Physics for Engineering and Science Majors. Prerequisite: Mathematics 1823 or Mathematics 1914 with a grade of C or better. Not open to students with credit in 1205. Vectors, kinematics and dynamics of particles, work and energy systems of particles, rotational kinematics and dynamics, oscillations, gravitation, fluid mechanics, waves. (F, Sp, Su) [II-NU]

4974 General Physics for Engineer and Science Majors. Prerequisite: MATH 2342 and MATH 2423 or 2924 with a grade of C or better. Not open to students with credit in 1215. Temperature, heat, thermodynamics, electricity, magnetism, optics. (F, Sp, Su)