DEPARTMENT OF ENGINEERING

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General Information

Engineering is a vibrant program that balances an outstanding academic curriculum with faculty working in state of the art research programs. It is founded upon multiple faculties and is geared to address individual student needs in preparation for careers in advanced engineering or related science areas.

Graduate

Engineering M.S. and Ph.D. programs are designed to provide students flexibility to pursue a multidisciplinary curriculum not available through a traditional departmental track.

- Engineering, Master of Science
- Engineering: Standard, Ph.D.
- Engineering: Engineering Education, Ph.D.

Courses

ENGR 1401 Dean's Leadership Council 1 Credit Hour
Prerequisite: must have submitted an application and be approved by the college. This course is required of all DLC mentors and lead mentors. The purpose of the Dean's Leadership Council is to engage with new students pursuing a degree in the Gallogly College of Engineering. DLC mentors provide support to assist students with the transition to college life at OU, increase student involvement in the engineering community, and increase academic student success. (F, Sp)

ENGR 1410 Freshman Engineering Orientation 0 Credit Hours
Prerequisite: declared major in engineering. All entering freshmen with a declared engineering major are required to enroll. One hour of this seminar a week is in a large group setting where all students meet and cover details on all engineering disciplines. Additional topics would be continuums of majors, success in the College of Engineering, success at the University of Oklahoma, study abroad programs, advising issues, graduate school opportunities, career planning, and information related to technical/honor societies and participation. A second hour a week is a required small group session with an upper-class mentor from the College of Engineering Dean's Leadership Council. This second hour will focus on basic enrollment and retention strategies such as adding and dropping classes and choosing electives in addition to a weekly topic area. (F)

ENGR 1411 Pathways to Engineering Thinking 1 Credit Hour
Prerequisite: Freshman standing or departmental permission. Students investigate and practice what it means to engineer. Students are empowered through building awareness of the breadth of engineering in everyday life and how engineering is embedded in society. Students engage in team-based engineering design projects at multiple scales, considering local engineering challenges. Excitement is fostered through design and creation of solutions in authentic, student-centered product development challenges. (F, Sp)

ENGR 1413 Pathways to Engineering Thinking 3 Credit Hours
Prerequisite: Freshman standing or departmental permission. Students investigate and practice what it means to engineer. They are empowered through engineering community building as they learn the impact and cultural connections of engineering in society. Students develop critical thinking and civil discourse skills in engineering design projects addressing authentic community-based engineering challenges, building excitement for their futures. Co-curricular engagements support students' transition to OU and GCoE. (F, Sp) [V-FYE].

ENGR 1421 Engineering Design in Action 1 Credit Hour
Prerequisite: ENGR 1411 and freshman standing, or departmental permission. Students apply engineering design under constraints addressing a relevant problem. Students address the needs of stakeholders as they design, build, test, and iterate solutions. The process requires developing relevant engineering or science knowledge and project management plans and applying ethical and societal considerations. The project and reflections will be documented in a comprehensive engineering design report and a design presentation. (F, Sp)

ENGR 1510 Selected Topics 3 Credit Hours
0 to 3 hours. Selected topics on current or special topics relating to engineering to be structured for students in engineering and other areas. (F, Sp, Su)

ENGR 1552 Math Catalyst 2 Credit Hours
Prerequisite: Corequisite: ENGR 1652; departmental permission and majors only; may be repeated up to 6 hours. The course guides Engineering Catalyst Scholars to build transferable problem-solving skills while developing engineering competency and confidence through applications of mathematics fundamentals. May be repeated up to 6 hours in support of different math courses (i.e., MATH 1503, MATH 1523, MATH 1823, MATH 2423). For Engineering Catalyst Scholars only. (F, Sp, Su)

ENGR 1652 Engineering Catalyst 2 Credit Hours
Prerequisite: Corequisite: ENGR 1552; departmental permission and majors only; may be repeated up to 6 hours. Prepares Engineering Catalyst Scholars to optimize their successful study of engineering. The course focuses on building academic success skills, engineering identity, and belonging in the Engineer Catalyst community and the OU Gallogly College of Engineering. May be repeated up to 6 hours. For Engineering Catalyst Scholars only. (F, Sp, Su)

ENGR 2002 Professional Development 2 Credit Hours
Prerequisite: ENGR 1410 or ENGR 1411, or ENGR 3511 or ENGR 3410 or concurrent enrollment; ENGL 1213 or EXPO 1213, and sophomore standing. Develop an understanding of engineering ethics, teamwork, leadership, and professional responsibility through the concepts of contemporary, social, and global issues. (F, Sp)

ENGR 2411 Applied Engineering Statics 1 Credit Hour
Prerequisites: Physics 2514 and Mathematics 2433 or concurrent enrollment in Mathematics 2433. Review of fundamentals of statics calculations and their applications to common engineering situations. (Sp)

ENGR 2431 Electrical Circuits 1 Credit Hour
Prerequisite: MATH 2423 or 2924; and PHYS 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)

ENGR 2461 Thermodynamics 1 Credit Hour
Prerequisite: MATH 2433 or 2934; and PHYS 2524 or concurrent enrollment. Introduction to basic principles of thermodynamics. Topics include density, pressure, and temperature, the first law of thermodynamics for a system, the first law of thermodynamics for a control volume, the second law of thermodynamics, and psychometrics. (F)

ENGR 2531 Electrical Circuits II 1 Credit Hour
Prerequisite: ENGR 2431 or concurrent enrollment. Introduction to intermediate principles of electrical circuits. Topics include amplifiers, filters, signal conditioning, A/D and D/A conversion, and common digital and analog circuits. (Sp)

ENGR 2652 Research Catalyst 2 Credit Hours
Prerequisite: ENGL 1213 or EXPO 1213; ENGR 1552; ENGR 1652; and departmental permission. This course guides student development of understanding of the research process through the design, research, collaborative authorship, and iterative review-based refinement of research ideas. Students will find and analyze primary literature, think creatively, author and communicate in a scholarly fashion, and work collaboratively to solve scientific and societal problems using technology, delegation, and productive team communication. (F)

ENGR 2970 Special Topics/Seminar 1-3 Credit Hours
1 to 3 hours. Prerequisite: Permission of instructor. May be repeated; maximum credit nine hours. Special topics or seminar course for content not currently offered in regularly scheduled courses. May include library and/or laboratory research and field projects. (Irreg.)

ENGR 3051 Experiential Leadership 1 Credit Hour
Prerequisite: Instructor permission and enrollment in Engineering Leadership Undergraduate Certificate. Participatory course with formal, extended activity that provides opportunity for leadership development. Includes written proposal describing the activity; creation of a personal leadership development plan (PLDP); periodic reflections regarding leadership learning and development; and coaching and/or mentoring. The leadership develop plan will align with the Leadership Capabilities espoused by the Jerry Holmes Leadership Program for Engineers and Scientists. (F, Sp)

ENGR 3401 Engineering Economics 1 Credit Hour
Prerequisite: MATH 1823 or 1914. Introduction to basic principles of engineering economics. Topics include value and interest, cash flow diagrams and patterns, equivalence of cash flow patterns, unusual cash flows and interest periods, evaluating alternatives (annual equivalent cost comparisons, present equivalent cost comparisons, incremental approach, rate of return comparisons, benefit/cost comparisons, MARR, replacement problems, always ignore the past, break-even analysis), income tax, depreciation, and inflation. (F, Sp)

ENGR 3410 Engineering Orientation for Transfer Students 0 Credit Hours
Prerequisite:transfer students majoring in Civil Engineering, Environmental Science, Environmental Engineering, or Architectural Engineering majors. Sophomore standing or above. Required orientation course for majors in the School of Civil Engineering and Environmental Science. The lecture hours cover a variety of topics including: major and minors; career planning; advising; and extra-curricular activities. Students also work on multidisciplinary engineering projects. To be taken during the first semester of enrollment in the College of Engineering at OU. (F, Sp)

ENGR 3431 Electromechanical Systems 1 Credit Hour
Prerequisite: ENGR 2431 or concurrent enrollment. Introduction to basic principles of electromechanical systems. Topics include physical principles of sensing and actuation, types of sensors and actuators, and interfacing and communication protocols. (F, Sp)

ENGR 3440 Mentored Research Experience 3 Credit Hours
0 to 3 hours. Prerequisites: ENGL 1113 or equivalent, and permission of instructor. May be repeated; maximum credit 12 hours. For the inquisitive student to apply the scholarly processes of the discipline to a research or creative project under the mentorship of a faculty member. Student and instructor should complete an Undergraduate Research & Creative Projects (URCP) Mentoring Agreement and file it with the URCP office. Not for honors credit. (F, Sp, Su)

ENGR 3441 Fluid Mechanics 1 Credit Hour
Prerequisite: Mathematics 2433 or 2934; and Physics 2524 or concurrent enrollment. Introduction to basic principles of fluid mechanics. Topics include fluid properties, fluid statics, dimensionless parameters and similitude, control volume equations, open channel flow, and external flow. (Sp)

ENGR 3511 Engineering Orientation Experience for Transfer Students 1 Credit Hour
Prerequisite: sophomore standing. Required of all incoming transfer students with a declared major in Engineering. The lecture hours cover a variety of topics including: majors and minors; career planning; advising; and extra-curricular activities. Students also meet with mentors and work on multidisciplinary engineering projects. Also open to students with an interest in engineering. (F, Sp)

ENGR 3611 Business Principles for Engineers and Scientists 1 Credit Hour
Prerequisite: Junior Standing and GCoE or MCEE major. This course will introduce engineering and science students to the basic business principles that they will encounter once they join the workforce. The aim is to expose students to the concepts and terminology of business to make them more effective immediately upon employment. This course will address leadership, change management, and organizational culture, business structure, capital and ethics. (F, Sp)

ENGR 3621 Finance and Accounting for Engineers and Scientists 1 Credit Hour
Prerequisite: Junior Standing and GCoE or MCEE major. This course introduces students to workforce principles of finance and accounting. The course addresses accounting methods and the requirements to report financial performance in a consistent manner. More specifically, the course will address income statements, balance sheets, cash flow statements and financial statement analysis. In addition, this course will address both the budgeting and forecasting process. (F, Sp)

ENGR 3631 Investment Decisions for Engineers and Scientists 1 Credit Hour
Prerequisite: Junior Standing and GCoE or MCEE major. This course introduces engineers to basic business workplace principles. This course covers macroeconomics of commodities including interactions between supply, demand and inventory and the related impact on price. Profit measures are introduced such as profit margins, break-even calculations and cost-volume profit analysis. This course also addresses microeconomics, investment metrics, and considerations of cost of capital. (F, Sp)

ENGR 3960 Honors Reading 1-3 Credit Hours
1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Cover materials not usually presented in the regular courses. (Sp)

ENGR 3970 Honors Seminar 1-3 Credit Hours
1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Projects covered will vary. Deal with concepts not usually presented in regular coursework. (Irreg.)

ENGR 3980 Honors Research 1-3 Credit Hours
1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted Honors candidate to work on a special project in the student's field. (F, Sp, Su)

ENGR 3990 Independent Study 1-3 Credit Hours
1 to 3 hours. Prerequisite: permission of instructor and junior standing. May be repeated once with change of content. Independent study may be arranged to study a subject not available through regular course offerings. (F, Sp, Su)

ENGR 4003 Engineering Practice 3 Credit Hours
Prerequisites: ENGR 2002 or 2003, junior or senior standing, and permission of the instructor. Focuses on real world application of the skills taught in major courses and the core course, professional development. Allows a student to earn credit toward degree requirements through the completion of an intense internship experience. A written report detailing the responsibilities and results of the experience is required upon completion along with an oral presentation. Other service experience learning may qualify. (F, Su)

ENGR G4013 Leadership and Management for Engineers 3 Credit Hours
Prerequisites: junior standing or senior standing; or graduate standing; or instructor permission. This course will help prepare students for leadership and management positions in a global culture. The course emphasizes team building attributes in a multi-cultural organization, how to build commitment among team members, and how to organize to compete in the global marketplace. Students will gain a better understanding of themselves and their personal and professional goals. (F, Sp)

ENGR G4023 Disruptive and Innovative Technology Ideation 3 Credit Hours
Prerequisites: sophomore standing, junior standing, or senior standing; or graduate standing; at least one semester of calculus, a working knowledge of basic statistics, and departmental permission. Ideation is the process of conceiving or forming ideas. In the context of this class, the process of ideation will be investigated with regard to both disruptive and innovative commercial technologies. (F, Su)

ENGR 4051 Lincoln, Leadership & Innovation 1 Credit Hour
Prerequisite: Junior standing or instructor permission. Students will learn from the example of Lincoln's leadership, his ability to be innovative and employ technology-driven solutions, and his methods of personal and professional development. Students will reflect on and develop their own personal leadership philosophy in response to Lincoln's example. The course will provide students the opportunity to delve into an area of Lincoln's leadership of personal interest. (Sp)

ENGR G4223 Fundamentals of Project Management 3 Credit Hours
Prerequisite: Senior standing or permission of instructor. Foundational survey course that considers both technical and sociocultural aspects of project management across the full project life cycle. (F, Su)

ENGR G4510 Selected Topics 1-6 Credit Hours
1 to 6 hours. Prerequisite: upper-division or graduate standing. Selected topics on current or special topics relating to engineering. May be structured for students in other areas. (Sp)

ENGR G4513 Introduction to Sustainable Engineering 3 Credit Hours
Prerequisite: upper-division or graduate standing in the College of Engineering or permission of the instructor. An introduction to the concepts of sustainable development, sustainable engineering, global resource reserves, and global environmental concerns. The main focus of the class will be application of life cycle assessment to minimize the adverse environmental impacts of products (e.g., a pencil) or processes (e.g., wastewater treatment). Tools for life cycle assessment will include public domain software and SimaPro. (Sp)

ENGR 4960 Directed Readings 1-4 Credit Hours
1 to 4 hours. Prerequisite: good standing in University; permission of instructor and dean. May be repeated; maximum credit four hours. Designed for upper-division students who need opportunity to study a specific problem in greater depth than formal course content permits. (Irreg.)

ENGR 4970 Special Topics/Seminar 1-3 Credit Hours
1 to 3 hours. Prerequisite: Senior standing or permission of instructor. May be repeated; maximum credit nine hours. Special topics or seminar course for content not currently offered in regularly scheduled courses. May include library and/or laboratory research and field projects. (Irreg.)

ENGR 4990 Independent Study 1-3 Credit Hours
1 to 3 hours. Prerequisite: Senior standing and permission of instructor. May be repeated; maximum credit nine hours. Contracted independent study for a topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (Irreg.)

ENGR 5122 Entrepreneurship for Science and Technology 2 Credit Hours
(Crosslisted with ENT 5122) Prerequisite: Graduate standing and departmental permission. This course will introduce entrepreneurship from the science and technology perspective. We will start with ideas, analyze them, and see how they could grow into a business. The course will cover areas such as innovation, prototyping, competition, customer discovery, business model canvas, networking, funding, and legal issues, including patents and intellectual property. (F, Sp)

ENGR 5900 Engineering Professional Practice 1-6 Credit Hours
1-6 hours. Prerequisite: Graduate standing and departmental permission. May be repeated; maximum credit six hours. Participation in a professional experience with an approved project sponsor and topic. A written report detailing the responsibilities and results of the experience is required upon completion along with an oral presentation. (F, Sp, Su)

ENGR 5960 Directed Readings 1-3 Credit Hours
1 to 3 hours. Prerequisite: graduate standing and permission of department. May be repeated; maximum credit twelve hours. Directed readings and/or literature reviews under the direction of a faculty member. (F, Sp, Su)

ENGR 5970 Special Topics/Seminar 1-3 Credit Hours
1 to 3 hours. Prerequisite: Graduate standing or permission of instructor. May be repeated; maximum credit nine hours. Special topics or seminar course for content not currently offered in regularly scheduled courses. May include library and/or laboratory research and field projects. (Irreg.)

ENGR 5980 Research for Master's Thesis 2-9 Credit Hours
Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

ENGR 5990 Independent Study 1-3 Credit Hours
1 to 3 hours. Prerequisite: Graduate standing and permission of instructor. May be repeated; maximum credit nine hours. Contracted independent study for a topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (Irreg.)

ENGR 6960 Directed Readings 1-3 Credit Hours
1 to 3 hours. Prerequisite: graduate standing or permission of instructor. May be repeated; maximum credit six hours. Directed readings and/or literature review under the direction of a faculty member. (Irreg.)

ENGR 6970 Special Topics/Seminar 1-3 Credit Hours
1 to 3 hours. Prerequisite: graduate standing or permission of instructor. May be repeated; maximum credit 12 hours. Special topics or seminar course for content not currently offered in regularly scheduled courses. May include library and/or research and field projects. (Irreg.)

ENGR 6980 Research for Doctoral Dissertation 2-16 Credit Hours
2 to 16 hours. Prerequisite: Graduate standing and permission of instructor; may be repeated. Directed research culminating in the completion of the doctoral dissertation. (F, Sp, Su)

ENGR 6990 Independent Study 1-3 Credit Hours
1 to 3 hours. Prerequisite: Graduate standing and permission of instructor. May be repeated; maximum credit nine hours. Contracted independent study for a topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (Irreg.)

Faculty

Last Name	First/Middle Name	Middle init.	OU Service start	Title(s), date(s) appointed	Degrees Earned, Schools, Dates Completed
Harvey	Tierney		2022	ASSISTANT PROFESSOR ENGINEERING PATHWAYS, 2022	PhD, Duke Univ, 2015; BS, Univ of Virginia, 2009
Haskins	Casey	V	2022	MATH RETENTION SPECIALIST ENGINEERING PATHWAYS, 2022	MA, Univ of Oklahoma, 2017; BS, Univ of Oklahoma, 2015
Kittur	Javeed		2022	ASSISTANT PROFESSOR ENGINEERING PATHWAYS, 2022	PhD, Arizona State Univ, 2022; M.Tech, Natl Inst of Eng, Mysore, India, 2014; BVB, Coll of Eng and Tech, Hubballi, India, 2011
McSkimming	Brian	M	2022	ASSISTANT PROFESSOR ENGINEERING PATHWAYS, 2022	PhD, Univ Calif, Santa Barbara, 2015; BS, BA, Univ of Buffalo, 2009
Neeman	Henry	J.	2012	ASSOCIATE PROFESSOR OF ENGINEERING, 2012; EXECUTIVE DIRECTOR OF RESEARCH COMPUTING; DIRECTOR OF OU SUPERCOMPUTING CENTER FOR EDUCATION & RESEARCH (OSCER)	PhD, Univ of Illinois, 1996; MS, Univ of Illinois, 1990; BA, BS, SUNY Buffalo, 1987
Okolie	Jude	A	2022	ASSISTANT PROFESSOR ENGINEERING PATHWAYS, 2022	PhD, Univ of Saskatchewan, 2021; MS, Tallinn Univ, Estonia, 2018; MS, Imperial Coll London, 2016; B.Eng, Univ of Benin, Nigeria
Pittenger	Dominique	M	2008	DIRECTOR, WOMEN IN ENGINEERING, 2022; ASSISTANT PROFESSOR ENGINEERING PATHWAYS, 2022; INTERIM DIRECTOR, WOMEN IN EINGINEERING, 2018; ADJUNCT ASSISTANT PROFESSOR OF ENGINEERING, 2013; RESEARCH ASSISTANT PROFESSOR OF ENGINEERING, 2013	PhD, Univ of Oklahoma,2012; MS, Univ of Oklahoma, 2010; BS, Univ of Oklahoma 2002
Quiroga	Allison		2017	ASSISTANT PROFESSOR ENGINEERING PATHWAYS, 2022; ADJUNCT INSTRUCTOR, GALLOGLY COLLEGE OF ENGINEERING, 2021; SUMMER BRIDGE PROGRAM COORDINATOR, 2020; LECTURER, SCHOOL OF CIVIL ENGINEERING AND ENVIRONMENTAL SCIENCE, 2017	Ph.D., Univ of Oklahoma, 2018; M.S., Univ of Oklahoma, 2013; B.S., Univ of Oklahoma, 2012
Walden	Susan	E	2008	EXECUTIVE DIRECTOR OF ENGINEERING PATHWAYS, 2022; DIRECTOR, UNDERGRADUATE RESEARCH PROGRAM FOR VICE PRESIDENT FOR RESEARCH, 2017; ADJUNCT ASSOCIATE PROFESSOR OF WOMEN'S AND GENDER STUDIES, 2013; ADJUNCT PROFESSOR OF ENGINEERING, 2011; ASSOCIATE DIRECTOR, ENGINEERING OUTREACH, SOONER ENGINEERING EDCATION CENTER, 2008; RESEARCH ASSOCIATE PROFESSOR OF ENGINEERING, 2008	Fellow, American Society of Engineering Education, 2017; PhD, Univ of Oklahoma, 1997; MS, Univ of Oklahoma, 1995; BS, Arkansas State, 1984

Wolfinbarger Kim	G	2005	ASSISTANT PROFESSOR ENGINEERING PATHWAYS, 2022; INTERIM DIRECTOR, ENGINEERING STUDENT LIFE, 2018; DIRECTOR OF JERRY HOLMES LEADERSHIP PROGRAM FOR ENGINEERS & SCIENTISTS, 2015; INDUSTRIAL ENGINEERING LEADERSHIP PROGRAM COORDINATOR, 2010; RECRUITMENT COORDINATOR, ISE, 2006; INSTRUCOR AND ACADEMIC ADVISOR, ISE, 2005	PhD, Univ of Oklahoma, 2015; MS, Univ of Oklahoma, 2000; BBA, Univ of Oklahoma, 1996