

Term Information

Effective Term Autumn 2022

General Information

Course Bulletin Listing/Subject Area Engineering
Fiscal Unit/Academic Org Engineering Administration - D1400
College/Academic Group Engineering
Level/Career Undergraduate
Course Number/Catalog 2301
Course Title Exploring Diversity, Equity & Inclusion in Engineering Contexts: Integrative Designation
Transcript Abbreviation DEInEngineering
Course Description students will use the engineering design and writing processes to define a meaningful problem within specific local or global communities and formulate and propose a solution to that problem. Students will explore themes of diversity and inclusion in engineering and citizenship in a just and diverse world through a comprehensive, semester-long proposal project
Semester Credit Hours/Units Fixed: 4

Offering Information

Length Of Course 14 Week
Flexibly Scheduled Course Never
Does any section of this course have a distance education component? Yes
Is any section of the course offered Greater or equal to 50% at a distance
Less than 50% at a distance
Grading Basis Letter Grade
Repeatable No
Course Components Lecture
Grade Roster Component Lecture
Credit Available by Exam No
Admission Condition Course No
Off Campus Sometimes
Campus of Offering Columbus, Lima, Mansfield, Marion, Newark, Wooster

Prerequisites and Exclusions

Prerequisites/Corequisites Writing and Information Literacy Foundation
Exclusions Not open to students with credit for 2300
Electronically Enforced Yes

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code 14.0101
Subsidy Level Baccalaureate Course

Intended Rank

Freshman, Sophomore, Junior, Senior

Requirement/Elective Designation

Citizenship for a Diverse and Just World

Course Details

Course goals or learning objectives/outcomes

- Design and conduct semester-long research projects to develop a deep and interdisciplinary understanding of technical or social problems in-context and propose specific solutions to specific problems.
- Engage in an advanced, in-depth scholarly exploration of diversity, equity, and inclusion in engineering/STEM cultures, especially how race, ethnicity, gender, sexuality, age are experienced and intersect.
- Engage in critical and logical thinking about engineering and how engineers engage with and impact communities and society at the local, state, national, and global level, with a focus on equity and justice
- Identify, evaluate, use, and share credible and relevant sources of information, relying on the Frameworks for Information Literacy, to explore the course themes, define problems, and use evidence effectively to support the proposed solution
- Reflect critically on experiences, behaviors, processes, and learning (metacognition).
- Understand the importance of rhetorical communication and writing for technical and non-technical contexts and audiences.
- Understand processes for composing informative and persuasive documents, and plan and deliver presentations for a variety of audiences and purposes.
- Collaborate effectively in teams and develop collaborative composing, team management, and communication skills

Content Topic List

- Introduction to the RFP/Grant, individual exploration of main themes (what is citizenship, justice)
- Problem definition
- Refining the problem, understanding the community, and developing solutions
- Refining solutions, developing the proposal, and sharing out

Sought Concurrence

No

Attachments

- ENGR 2300 and 2301 Citizenship Readings Resource Database.xlsx: readings resource database
(Other Supporting Documentation. Owner: Casado, Ana Maria)
- ENGR 2301 GE Citizenship Theme Submission Form.pdf: citizenship theme submission form
(Other Supporting Documentation. Owner: Casado, Ana Maria)
- ENGR 2301 syllabus.pdf: syllabus
(Syllabus. Owner: Casado, Ana Maria)
- ENGR 2301 Research and Creative Inquiry Designation Inventory.pdf
(Other Supporting Documentation. Owner: Casado, Ana Maria)

Comments

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Casado,Ana Maria	01/31/2022 07:35 PM	Submitted for Approval
Approved	Quinzon-Bonello,Rosario	02/23/2022 05:20 PM	Unit Approval
Approved	Quinzon-Bonello,Rosario	02/23/2022 05:20 PM	College Approval
Revision Requested	Vankeerbergen,Bernadette Chantal	04/06/2022 10:51 AM	ASCCAO Approval
Submitted	Casado,Ana Maria	04/07/2022 01:15 PM	Submitted for Approval
Approved	Quinzon-Bonello,Rosario	04/07/2022 01:17 PM	Unit Approval
Approved	Quinzon-Bonello,Rosario	04/07/2022 01:17 PM	College Approval
Pending Approval	Cody,Emily Kathryn Jenkins,Mary Ellen Bigler Hanlin,Deborah Kay Hilty,Michael Vankeerbergen,Bernadette Chantal Steele,Rachel Lea	04/07/2022 01:17 PM	ASCCAO Approval

ENGR 2301: Exploring Diversity, Equity & Inclusion in Engineering Contexts: Integrative Designation

(Research & Creative Inquiry Designation / 4 Credit Hours)

Course Syllabus

Course Description

Engineers are problem solvers, and both engineers and the problems they solve exist in complex and diverse social worlds. In this course, students will use the engineering design and writing processes to define a meaningful problem within specific local or global communities and formulate and propose a solution to that problem. Students will explore themes of diversity and inclusion in engineering and citizenship in a just and diverse world through a comprehensive, semester-long proposal project.

Driving Questions:

- What do citizenship, diversity, equity, inclusion, justice mean in the United States and globally? What do these concepts mean in an engineering context?
- How do our experiences with citizenship, diversity, equity, inclusion, and justice impact how we define and solve problems?

Major areas of focus for the course include explorations of meaningful inquiry and information literacy, engineering and general research writing conventions, community outreach models, team project management and communication, and effective communication with a variety of audiences.

Course Overview

Students will work both individually and in small teams on activities and assignments that develop knowledge and support their explorations of the course themes, the research and writing processes, and the conventions of technical communication in different contexts. We will begin by defining the course's key themes—citizenship, diversity, equity, inclusion, justice—and in particular, we will consider these concepts within engineering and community contexts.

Throughout the semester, students will use online discussion boards and individual Research Journals to explore the course themes and identify topical areas of interest for the proposal project. Students will use a Lightning Talk to form small teams (2–3 students) around a common or related problem(s), further defining and developing their understanding of the problem or opportunity by creating annotated bibliographies and building toward a final Funding Proposal document. Teams will create public-facing websites and will present their proposed solutions in both a formal in-class pitch presentations and in a public showcase.

Research & Creative Inquiry Integrative Practice and Course Philosophy

This integrative, high impact 4-credit course meets the goals and learning outcomes for Research & Creative Inquiry by asking students to self-direct research into an area of interest (a real, meaningful problem they will identify and explore) and engage in a long term, multi-phased project that will evolve throughout the semester. This approach allows students to gain a complex and nuanced understanding of the course content that develops over time through synthesizing readings, self-reflection, instructor and peer interactions and feedback, and group planning and negotiation.

Both individually and in collaboration with a project team, students will practice a range of written and verbal communication skills, and they will be asked to communicate information with multiple audiences who have differing needs and priorities. Students will focus on composing from a rhetorical perspective, which means we will always consider the relationships between rhetorical elements (audience, subject, purpose) and their roles in the choices we make as communicators. Students will ask ourselves how, what, when, and especially why we use language in particular ways in our communications. In pursuit of these goals, we will focus on honing information literacy skills, including all aspects of information discovery and creation and research processes.

In addition to practicing effective communication in formal proposal documentation, presentations, and a public-facing website, students will also have the opportunity to share their projects with a broader audience in an end-of-semester showcase event.

Course Goals & Expected Learning Outcomes

As a Citizenship for a Just & Diverse World theme course at OSU, this course focuses on the below-listed goals and expected learning outcomes (ELOs) for the GE, for the Citizenship for a Just & Diverse World theme course, and for advanced writing embedded literacies. as well as specific elements of ABET Criterion 3, detailed below.

Course-Specific Goals

ENGR 2301 meets the GEC Course Goals and ELOs for the Citizenship for a Diverse & Just World Theme, and embedded literacies: advanced writing goals and outcomes. Additionally, assignments and policies in this course work toward the following course goals:

1. **Design and conduct semester-long research projects** to develop a deep and interdisciplinary understanding of technical or social problems in-context and propose specific solutions to specific problems.
2. **Engage in an advanced, in-depth scholarly exploration** of diversity, equity, and inclusion in engineering/STEM cultures, especially how race, ethnicity, gender, sexuality, age are experienced and intersect.
3. **Engage in critical and logical thinking** about engineering and how engineers engage with and impact communities and society at the local, state, national, and global level, with a focus on equity and justice.
4. **Identify, evaluate, use, and share credible and relevant sources of information**, relying on the Frameworks for Information Literacy, to explore the course themes, define problems in meaningful ways, and use evidence effectively to support the proposed solution.
5. **Reflect critically** on experiences, behaviors, processes, and learning (metacognition).
6. Understand the importance of rhetorical communication and writing for technical and non-technical contexts and audiences.
7. Understand processes for composing informative and persuasive documents, and plan and deliver presentations for a variety of audiences and purposes.
8. Collaborate effectively in teams and develop collaborative composing, team management, and communication skills.

GE GOALS

1. **INTELLECTUAL and COGNITIVE SKILLS:** Successful students will demonstrate the intellectual and cognitive skills that prepare them to be engaged citizens and leaders for life.
2. **MODES OF INQUIRY:** Successful students will engage with and apply a range of important modes of thought, inquiry and expression.
3. **EDUCATED GLOBAL CITIZENSHIP:** Successful students will be interculturally competent global citizens who can engage with significant aspects of the human condition in local, state, national and global settings.
4. **EMOTIONAL, SOCIAL and PROFESSIONAL ABILITIES:** Successful students will demonstrate skills and abilities needed for engaged citizenship and personal and professional growth.

OSU Citizenship for a Just & Diverse World Theme Course Goals

Successful students will:

1. **Analyze** concepts of citizenship, justice and diversity at a more advanced and in-depth level than in the Foundations component;
2. **Integrate** approaches to understanding citizenship for a just and diverse world by making connections to out-of-classroom experiences with academic knowledge or across disciplines and/or to work they have done in previous classes and that they anticipate doing in future;
3. **Explore** and analyze a range of perspectives on local, national or global citizenship and apply the knowledge, skills and dispositions that constitute citizenship; and
4. **Examine** notions of justice amid difference and analyze and critique how these interact with historically and socially constructed ideas of citizenship and membership within society, both within the United States and around the world.

Citizenship for a Just & Diverse World Theme Course ELOs

Successful students are able to:

- 1.1 Engage in critical and logical thinking about the topic or idea of citizenship for a just and diverse world.
- 1.2 Engage in an advanced, in-depth, scholarly exploration of the topic or idea of citizenship for a just and diverse world.
- 2.1 Identify, describe and synthesize approaches or experiences as they apply to citizenship for a just and diverse world.
- 2.2 Demonstrate a developing sense of self as a learner through reflection, self-assessment and creative work, building on prior experiences to respond to new and challenging contexts.
- 3.1 Describe and analyze a range of perspectives on what constitutes citizenship and how it differs across political, cultural, national, global and/or historical communities.
- 3.2 Identify, reflect on and apply the knowledge, skills and dispositions required for intercultural competence as a global citizen.

4.1 Examine, critique and evaluate various expressions and implications of diversity, equity and inclusion, and explore a variety of lived experiences.

4.2 Analyze and critique the intersection of concepts of justice, difference, citizenship, and how these interact with cultural traditions, structures of power and/or advocacy for social change.

Advanced Writing Goals

1. Successful students develop advanced skills in inquiry, critical thinking, composing and communicating for a specific purpose, context and audience using an appropriate genre and modality.
2. Successful students apply knowledge of writing and research to specific contexts.

Advanced Writing ELOs

Successful students are able to:

1.1 Investigate and integrate knowledge of the subject, context and audience with knowledge of genres, conventions and rhetorical choices to advance a particular writing objective.

1.2 Use credible and relevant sources of information, evaluate assumptions, and consider alternative viewpoints or hypotheses to express ideas and develop arguments.

2.1 Reflect on how they adapt rhetorical and research strategies they have learned to new contexts.

2.2 Develop scholarly, creative or professional products that are meaningful to them and their audience.

2.3 Evaluate social and ethical implications of writing and information literacy practices.

ABET Criterion 3 Student Outcomes

ENGR 1300 supports ABET's Student Outcomes for Engineering programs including:

Outcome 3: an ability to communicate effectively with a range of audiences

Outcome 4: an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

Outcome 7: an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Required Course Materials

Course material will consist of Open Educational Resources, public online resources, and materials provided by the instructor or available through University Libraries. This course does not require purchased materials. All readings, handouts, and resources will be provided via Carmen.

Course Assignments & Activities

Students will engage in a variety of individual and team assignments to support a significant investigation of the course themes, practice critical inquiry and literacy skills, and progress towards the comprehensive funding proposal deliverables.

Sample Assignments Outline

1. **Readings and In-class Discussion (individual and team):** In-depth, critical engagement with assigned and student-identified readings and participation in guided discussions, in large and small group settings; may also include individual reflection and written responses.
2. **Discussion Boards (individual and team):** Exploring course themes, synthesizing readings, and examining project-related questions in teams; *possible topics include the following:*
 - a. What is an engineer? What roles do engineers play in society?
 - b. What role does writing/communication play in engineering or in being an engineer?
 - c. What does being a citizen and citizenship mean to you? How do you understand your role as a citizen?
3. **Class-built glossary of terms (individual/class):** Students will contribute to a class-composed glossary of terms throughout the semester (expected to make X number of substantial edits) where each student helps build both the concepts and words to be included and the contextualized definitions with cited sources.
4. **Research Journal (individual):** Students will compose brief summaries and analyses and practice composing citations of sources relevant to the course theme and final project. The sources are identified by the student and may take various forms (news, journal articles, videos, podcasts, professional publications, and so on). Students will combine journals composed throughout the semester into a single file Research Journal that includes a meta-analysis of the work completed.
5. **Annotated Bibliographies (individual/team):** Formal documentation of research findings in the following contexts:
 - a. individual exploration during the early problem definition phase
 - b. combined/refined bibliography to document that will also be presented as a public-facing “Resources & Information” page on the Public Website
6. **Progress Reports and Meetings with Instructor (individual/team):** Brief written reports and small group meetings at regular intervals throughout the semester
7. **Meta-cognitive Reflections (individual):** Shared with the instructor; prompted at key points in the project and in various formats, including mid-term and end-of-semester self assessments and reflections.
8. **Lightning talk/pitch (individual):** Sharing problem and desired outcomes for a potential solution with classmates with the goal of forming groups based on research intersections and shared interests
9. **Culminating Proposal Communications (team):** The following deliverables will present the group’s proposed solution to several different audiences for varying purposes
 - a. *Formal Presentation:* Formal group pitch presentation supported with visuals in which the group defines the need/opportunity and pitches their solution to an audience of potential funding grantors.
 - b. *Funding Proposal:* Comprehensive documentation of the group’s research-based solution, including graphics and adhering to a set of standard requirements (modeled after NSF proposals).

- c. *Public Website*: Designed and developed public-facing website to raise awareness of the issue and educate a public audience about the problem and potential solution (will meet a list of content requirements and include written, visual, and video communications appropriate for a public audience).
- d. *Public Showcase*: Hosted event where students can informally share and discuss their projects with guests (invited from within the university community).

Course Schedule (Sample)

Weeks 1–4:

Introduction to the RFP/Grant, individual exploration of main themes (what is citizenship, justice)

- Thinking – Writing – Thinking
- Introduce Research Journal and Discussion Boards
- Introduce the final project
- Begin with basic research skills: asking questions
- Collaborative class glossary: citizenship, diversity, justice, equity/equality, problem-solving, communities, engineering, and other determined by class
- Progress Report/Check-In

Weeks 5–7

Problem definition

- Lightening pitch / talk → forming groups
- More exploration of research skills (Research Journals; question development; methodologies)
- Synthesizing information → Annotated bibliography
- Peer Review: Feedback on the problem, community, context
- Progress Report/Check-In

Weeks 8–10

Refining the problem, understanding the community, and developing solutions

- Team communication and team work skills
- Research Journals
- Annotated bibliography
- Team Discussion Boards
- Peer Review: Internal Team
- Progress Report/Check-In

Weeks 11–15

Refining solutions, developing the proposal, and sharing out

- Proposal
- Pitch Presentation
- Peer Review: External Team
- Website with short video and visualizations (public-facing component)
- Showcase
- Progress Report/Check-In

GE THEME COURSES

Overview

Courses that are accepted into the General Education (GE) Themes must meet two sets of Expected Learning Outcomes (ELOs): those common for all GE Themes and one set specific to the content of the Theme. This form begins with the criteria common to all themes and has expandable sections relating to each specific theme.

A course may be accepted into more than one Theme if the ELOs for each theme are met. Courses seeking approval for multiple Themes will complete a submission document for each theme. Courses seeking approval as a 4-credit, Integrative Practices course need to complete a similar submission form for the chosen practice. It may be helpful to consult your Director of Undergraduate Studies or appropriate support staff person as you develop and submit your course.

Please enter text in the boxes to describe how your class will meet the ELOs of the Theme to which it applies. Please use language that is clear and concise and that colleagues outside of your discipline will be able to follow. You are encouraged to refer specifically to the syllabus submitted for the course, since the reviewers will also have that document. Because this document will be used in the course review and approval process, you should be *as specific as possible*, listing concrete activities, specific theories, names of scholars, titles of textbooks etc.

Course subject & number

General Expectations of All Themes

GOAL 1: Successful students will analyze an important topic or idea at a more advanced and in-depth level than the foundations.

Please briefly identify the ways in which this course represents an advanced study of the focal theme. In this context, “advanced” refers to courses that are e.g., synthetic, rely on research or cutting-edge findings, or deeply engage with the subject matter, among other possibilities. (50-500 words)

Course subject & number

ELO 1.1 Engage in critical and logical thinking about the topic or idea of the theme. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

ELO 1.2 Engage in an advanced, in-depth, scholarly exploration of the topic or idea of the theme. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

Course subject & number

GOAL 2: Successful students will integrate approaches to the theme by making connections to out-of-classroom experiences with academic knowledge or across disciplines and/or to work they have done in previous classes and that they anticipate doing in future.

ELO 2.1 Identify, describe, and synthesize approaches or experiences as they apply to the theme.

Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

ELO 2.2 Demonstrate a developing sense of self as a learner through reflection, self-assessment, and creative work, building on prior experiences to respond to new and challenging contexts. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met.

(50-700 words)

Course subject & number

Specific Expectations of Courses in Citizenship

GOAL 1: Successful students will explore and analyze a range of perspectives on local, national, or global citizenship, and apply the knowledge, skills, and dispositions that constitute citizenship.

ELO 1.1 Describe and analyze a range of perspectives on what constitutes citizenship and how it differs across political, cultural, national, global, and/or historical communities. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

ELO 1.2 Identify, reflect on, and apply the knowledge, skills and dispositions required for intercultural competence as a global citizen. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

Course subject & number

GOAL 2: Successful students will examine notions of justice amidst difference and analyze and critique how these interact with historically and socially constructed ideas of citizenship and membership within societies, both within the US and/or around the world.

ELO 2.1 Examine, critique, and evaluate various expressions and implications of diversity, equity, inclusion, and explore a variety of lived experiences. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

2.2 Analyze and critique the intersection of concepts of justice, difference, citizenship, and how these interact with cultural traditions, structures of power and/or advocacy for social change. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)