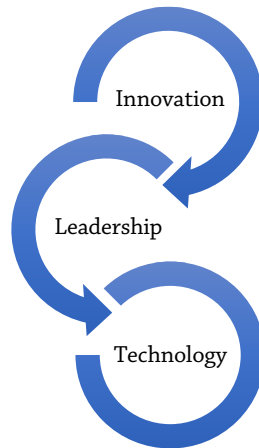


## Innovation in Technology

*Working Syllabus/Draft Subject to Change: Version 202410*

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**Welcome to our course!** Glad we have the opportunity to participate together in this adventure. Let's commend you on enrolling for this course.

In engineering and science, we tend to focus on our technical research; yet engineering and science education research can be equally rewarding and have as much or more impact on our fields. A well-rounded professional engineer and scientist will provide service as both a researcher, and educator; and these fields of endeavor come together in engineering and science education research – we might call it STEAM Education or STEAM-E research, since it involves *sciences, technology, engineering, arts and mathematics educational practices*.

*Overview:* This course develops design skills for advanced students in engineering and computer science, building on the students' technical knowledge to help them identify and find novel solutions for difficult design problems. To do this, the course enables students to improve their innovation skills and to understand the role of innovation in technology-based enterprises. Working with the innovation techniques of Liberating Structures as a central theme, the course integrates improvisation and story-telling to build creativity. Students will apply these techniques to develop mobile applications, and, more broadly, ideas for technology-based business and public-sector start-ups. Students will also develop perspective on how design affects translation to commerce or other use.

*Texts:* [www.liberatingstructures.com](http://www.liberatingstructures.com)

*About the Course:* This course is appropriate for students in the College of Engineering, in the College of Liberal Arts (especially Communications), and the College of Business Administration. Students will build upon the foundations of their respective disciplines to developed advanced skills in system design that enhance their capacity both to develop

systems that meet users' needs and to interact effectively with other members of cross-functional teams.

The class will meet one afternoon a week F2F . Class sessions will include improvisation games and exercises, development of story-telling skills, and learning and application of techniques from the catalog of liberating structures.

Project assignments will include proposing new mobile applications and proposing new technology-based business and public-sector start-ups. Short daily writing assignments will also be required. The final exam will consist of project presentations. Graduate students will conduct and write a report on an in-depth project analyzing student reflections from the course.

**Catalog Course Description:** In this course, we will learn about the necessary tools used in research, primarily through hands-on activities. The course is an introduction to the different research methods and will be a very 'experiential' endeavor. We will be selecting a topic of your own interest for research and will target research assignments to learning more about that topic. This course will help analyze and evaluate research reports, and if you are in honors undergraduate or graduate studies this provide you with an excellent opportunity to advance progress towards your proposal, dissertation or thesis, and help you prepare for future research in general.

**Learning Objectives/Competencies and Assessment Methods:** By the end of the semester, students will be able to:

- Upon successful completion of this course, students will be able to demonstrate accomplishments of knowledge and comprehension, application and analysis, and synthesis and evaluation:

1. Knowledge and Comprehension

Explain the elements and applications of the following principles and techniques useful in the design of technology:

Liberating structures

Basic principles of improvisation

Basic principles of story-telling

2. Application and Analysis

Apply the following skills to developing and defining system requirements:

- Improvisation
- Story-telling

- Critical thinking: 1-2-4-all, heard seen respected, TRIZ, simple ethnography, critical uncertainties, 15% solutions, group-normal process
- Creativity: Altering clichés, brainwriting (6-3-5), six hats, association, lateral thinking, random words, talking pictures, RoarStack, new-useful-feasible test, PINC Filter, morning pages

Apply the following skills to the communication of system design:

- Presenting a project pitch

### 3. Synthesis and Evaluation

Demonstrate balanced understanding of system design requirement by completing the following projects:

- Write a report proposing an innovative mobile application
- Write a report proposing an innovative business or public-sector start-up

**Course Organization:** The course content is divided into units, and this content will be covered in 15 weeks. There will be weekly discussions, individual and group activities, a final project, project presentation, and presentation feedback.

Detailed information about each activity will be provided within each unit at the beginning of each week. New units will be available to students on Saturdays and will remain open until Sunday night of the following week. Assignments are typically due Sundays at the end of the day [11:59 PM] unless otherwise noted.

**Standards of Conduct.** You are expected to conduct yourself in a professional and courteous manner, as prescribed by the UTEP Standards of Conduct. Graded work, such as homework and tests, is to be completed independently and should be unmistakably your own work, although you may discuss your project with other students in a general way. You may not represent as your own work material that is transcribed or copied from another person, book, or any other source, e.g., a Web page. The instructor is required to—and will— report academic dishonesty and any other violation of the Standards of Conduct to the Dean of Students.

**Disabilities.** If you have a disability and need classroom accommodations, please contact the Center for Accommodations and Support Services (CASS) at 747-5148, or by email to [cass@utep.edu](mailto:cass@utep.edu), or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at [www.sa.utep.edu/cass](http://www.sa.utep.edu/cass).

**Assignments.** Reading and homework assignments will be announced in class. If you miss a class, it is your responsibility to find out what you missed. You should expect to spend at least seven hours per week outside of class on reading and homework.

**Grading.** This course does not have examinations. The semester grade will be based on a combination on class participation, daily writing assignments, homework assignments, project assignments, and project presentations. The percentages are as follows:

- 30% Class participation
- 20% Reflection assignments
- 20% Mobile application development project report
- 20% Individual development project
- 10% Final project sharing

**Additional Requirements for Online Discussions:**

1. Take time to think, reflect, and critically analyze questions and postings.
2. Simply agreeing or disagreeing with classmates using one sentence responses will NOT count as participation. Whether you agree or disagree, you must elaborate as to HOW and WHY you agree or disagree.
3. Be sure to proofread your writing before posting, reading the statement aloud to yourself before posting helps.
4. Be precise, concise, and clear on your postings.
5. Assertions must include at minimum a supportive argument and/or reference.
6. Limit your postings to a brief paragraph which is approximately five sentences or 10 lines of text or what usually fits in a screen.
7. Avoid asking “yes or no” discussion questions. Instead, ask questions of degree, questions of how, or why.
8. If you are addressing a question or response to a specific student or the instructor be sure to indicate so. Likewise, if you are directing your question or response to the instructor AND the whole class, indicate that, too.
9. Avoid use of jargon, acronyms, colloquialisms, hyperbole, insults, and personal attacks in your questions and responses. It is expected that there will be disagreement; however one does not need to be disagreeable. Participation must be centered on the readings and other course material.

**Note on Assignments:**

Assignments may be individual or group activities. Specifics on each assignment will be provided in each unit as needed. Make sure to write documents utilizing APA style and give credit to sources utilized.

**Quizzes:**

At the end of each course segment, there may on occasion be a Quiz. Quizzes are multiple choice. Questions are randomized.

**Notes:**

- The dates for research analyses, presentations, and the due date for report submission will

be provided at least two weeks in advance.

- Communicating in written communications (reports) is critical
- Due referencing is an important aspect of graduate studies. When using articles, texts, websites of agencies or looking for information on the internet, reports, or any publication; written responses need to include references. Use *Times New Roman* font style, 12-point font size and double space.

**Incompletes:** An incomplete (“I”) will be given only when there is a documented medical or family emergency and only if the student has passed the first half of the course. If an incomplete is given, the student must make arrangements to complete the course with the instructors within five working days after the end of the term. If the student does not make arrangements with the instructors within five working days after the end of the term, an “F” for the course will be submitted.

**Drop Deadlines:** The last day to drop the course is November 3, 2023. Students are responsible for dropping the course or withdrawing from the university.

**Academic Integrity:** Cheating and plagiarism are grave breaches of standards of academic integrity. Any use of unauthorized assistance on exams, papers, homework assignments, or other course work constitutes cheating. Knowingly allowing other students to copy one's work is also a severe form of academic dishonesty.

Plagiarism consists of submitting written work that has been developed wholly or partially by someone else. Submitting written work in which the ideas of others have been duplicated or even paraphrased without proper reference to the author is also a form of plagiarism. The acquisition of term papers or other assignments from another source and subsequent presentation of these materials as the student's work is also considered plagiarism.

### **Acceptable and Unacceptable Use of AI**

The use of generative AI tools (e.g. ChatGPT, Dall-e, etc.) is permitted in this course for the following activities:

- Brainstorming and refining your ideas;
- Fine tuning your research questions;
- Finding information on your topic;
- Drafting an outline to organize your thoughts; and
- Checking grammar and style.

The use of generative AI tools is not permitted in this course for the following activities:

- Impersonating you in classroom contexts, such as by using the tool to compose discussion board prompts assigned to you or content that you put into a discussion board or chat.
- Completing group work that your group has assigned to you, unless it is mutually agreed upon that you may utilize the tool.
- Writing a draft of a writing assignment.

- Writing entire sentences, paragraphs or papers to complete class assignments.

You are responsible for the information you submit based on an AI query (for instance, that it does not violate intellectual property laws, or contain misinformation or unethical content). Your use of AI tools must be properly documented and cited in order to stay within university policies on academic honesty. For example, [https://owl.purdue.edu/owl/research\\_and\\_citation/apa\\_style/apa\\_formatting\\_and\\_style\\_guide/reference\\_list\\_basic\\_rules.html](https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/reference_list_basic_rules.html) for our disciplines. See these resources for APA guidance, and for other citation formats. Any assignment that is found to have used generative AI tools in unauthorized ways will lead to being dropped from this course. When in doubt about permitted usage, please ask for clarification.

The use of generative AI tools (such as ChatGPT, DALL-E, etc.) are not permitted in this class; therefore, any use of AI tools for work in this class may be considered a violation of Temple University's Academic Honesty policy and Student Conduct Code, since the work is not your own. The use of unauthorized AI tools will result in [insert the penalty here\*].

**Late Work Statement:** Every day that an assignment is late, the assignment may be reduced by a letter grade until the grade of "F" is reached. Late assignments may not be revised and resubmitted for a better grade.

**Course Evaluations:** Both a mid-course and final course evaluation will be conducted. Themed-course evaluation will be used to enable the instructors to make adjustments to the remainder of the course. The final evaluation is to evaluate the instructors and enable them to improve the course in subsequent semesters. Please, take the time to provide sufficient and constructive feedback. Thank you for your help!

**Grades at Midterm:** Students will be given an indication of their standing in the course on a regular basis via Blackboard and through the return of graded work on a timely basis, usually within seven days of a due date. Grades via Blackboard are only visible to the individual student, the instructors, and authorized graduate assistants.

**Technical Requirements:** For technical requirements for this course, please refer to the Getting Started link in the left side navigation. Technical Support For technical assistance, or support, for this course, please refer to the Technical Support link in the left side navigation.

**Course Copyright Notice:** Many of the materials that are posted within this course are protected by copyright law. These materials are only for the use of students enrolled in this course and only for this course. They may not be further retained or disseminated.