

Innovation in Technology

ENGR 4320/CS 4390/COMM 4350

Syllabus

Web site: <http://piazza.com/utep/fall2017/engr4320cs4390comm4350>

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 computer-game scenarios, 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
- Brooks, Larry. *Story engineering: Mastering the six core competencies of successful writing*. Writer's Digest Books. First edition, 2011.

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 develop 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 evening a week. 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 developing new scenes for an immersive computer game, 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 pitches.

About the Instructor: Dr. Novick is a professor in the Department of Computer Science. He founded and served as co-director of the Mike Loya Center for

Innovation and Commerce and is the advisor/coach for UTEP's Miners Improv League. He claims, although sensible people dispute this, to have a sense of humor.

Outcomes

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
- Liberating structures: Shift & share, critical uncertainties, heard seen respected, TRIZ, simple ethnography, 25-10 crowd sourcing, min specs, discovery & action dialog, improv prototyping, 1-2-4-all, design storyboards

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:

- Develop a scene for a video game
- Write a report proposing an innovative mobile application
- Write a report proposing an innovative business or public-sector start-up

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, 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.

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:

- 20% Class participation
- 10% Daily writing assignments
- 10% Video-game scene development project report
- 15% Mobile application development project report
- 25% Start-up development project report
- 10% Final project presentations
- 10% Course notebook