

MECH 4395: Special Topics in Mechanical Engineering (CRN 28712)
MECH 5390: Special Topics in Mechanical Engineering (CRN 27306)

Course Title: Engineering Entrepreneurship - Building a 3D Printing Business

Spring 2021
Thursday, 3:00-5:50 p.m.

INSTRUCTOR(S): Ryan Wicker (e-mail: rwicker@utep.edu)
Chris Danek (e-mail: cjdanek@utep.edu)

OFFICE HRS: by appointment

COURSE DESCRIPTION AND GOALS:

This course will cover many aspects of creating a technology based business, focused on some aspect of 3D printing technology. The course will begin with an overall review of 3D printing, covering a wide variety of technologies and applications. After selecting a particular technology to explore further, students will iterate business concepts, applying customer discovery and agile engineering methods from the Lean Startup framework (Steve Blank) and use the Business Model Canvas as a framework. Projects will culminate in an investor presentation and explainer video. Students will also be introduced to many aspects of protecting intellectual property, including the patent process.

Upon completion of the course, students should be capable of understanding patents, the process for pursuing patent protection, and strategies for protection of intellectual property. In addition, students will understand the different types of businesses, the elements of business plans, and strategies for business development and raising capital to launch a start-up company. To accomplish these educational objectives, the class will have three distinct sections: introduction to 3D printing/additive manufacturing and its applications, intellectual property, and business creation and development.

ORGANIZATION AND METHOD OF INSTRUCTION:

Lectures will be used to successfully guide the students through the course. As the three main subjects of the course are presented (introduction to 3D printing and its applications, intellectual property, and business creation and development), several expert guest lecturers will be invited to class to provide additional useful information. Videos that introduce Lean Startup (Steve Blank) will be assigned to students as pre-work to prepare for lectures. The majority of this course will involve student presentations, occurring each week of the course. Each week will involve student presentations covering the required topics from the previous week followed by the next topic introduction provided by the instructor (which may also include guest lecturers).

TEXT:

Lecture material and material available on-line will be provided in lieu of providing a required textbook. Much relevant information will be conveyed during lectures and the course material including required pre-work will be provided to the students electronically as required. The students are also encouraged to secure additional references that may benefit understanding of the myriad issues involved in building a technology based business.

ATTENDANCE AND CLASS PARTICIPATION:

Attendance in class is required because the required information for the course will be delivered during regular class time. No make-up classes will be offered so it is important that students attend every class. Attendance will be taken at the beginning of each class, and in order to receive the participation grade for that day, the student must be in attendance during roll call.

ASSIGNMENT DEADLINES:

All assignments must be submitted and delivered on time. There will be no late projects or make-up opportunities.

ACADEMIC DISHONESTY:

Scholastic dishonesty is the attempt of any student to present the work of another as his or her own work, any work which he or she has not honestly performed, or attempting to pass any examination by improper means. Scholastic dishonesty is a serious offense and will not be tolerated. Appropriate University policies and procedures will be followed for suspected scholastic dishonesty. You are encouraged to discuss any aspect of the course with classmates and project team members, but do not plagiarize the work of others by copying from the web, other students, articles, or other sources without properly referencing your sources.

CENTER FOR ACCOMMODATIONS AND SUPPORT SERVICES (CASS):

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.

METHOD OF EVALUATION:

The final grade will be determined from class attendance (on time) and evaluation of homework, project deliverables (including oral and written deliverables for the company you propose to form) and a final project/presentation/exam. Contributions to your final grade are as follows: class attendance (on time, 10%), homework (40%), company projects/presentations (30%), and one final project/presentation/exam (20%).

Grading:

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| Attendance | 10% |
| Homework/Weekly Presentations | 40% |
| Project/Company Presentations | 30% |
| Final Project/Presentation | 20% |
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| Total | 100% |

Your final grade will be calculated based on the points you have accumulated as follows:

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| A | ≥ 90 |
| B | ≥ 80 but < 90 |
| C | ≥ 70 but < 80 |
| D | ≥ 60 but < 70 |
| F | < 60 |

The instructor reserves the right to revise this grading plan. However, students will be informed of any changes during the semester.

See also Mechanical Engineering Department Addendum to Syllabus for additional departmental policies. This addendum will be provided to students electronically (course electronic communication method will be discussed during first class meeting).