MECH 3382 – Additive Manufacturing, Spring 2026 Syllabus

Course Information

Course Number	MECH 3382
Term	Spring 2026
Lecture Time	T, Tr 4:00 PM – 5:15 PM
Lecture Classroom	ECSS 2.306

Contact Information

Professor	Connor Armstrong
Office Phone	(972) 883-3122
Office	ECSW 4.355F
Instructor Email	Connor.armstrong@utdallas.edu
Office Hours	**By appointment**
Teaching Assistant	Hossein Akherati
TA Email	Hossein.Akherati@UTDallas.edu
TA Office Hours	**Friday (11:00 AM – 12:30 PM), or by appointment**

Course Description

This course serves as a general introduction to the concepts underlying state-of-the-art 3D printing technologies including material extrusion, vat photopolymerization, powder bed fusion, and material jetting methods. Students will cultivate a "design-for-additive-manufacturing" skillset that leads to successful 3D prints. This includes identifying design requirements as well as selecting an appropriate additive manufacturing approach and material. Students will apply these skills in team design projects.

Student Learning Outcomes & Objectives

1. Introduce students to a variety of additive manufacturing technologies.
2. Think critically about the design-for-manufacturing process with respect to non-traditional additive manufacturing technologies (identify design constraints, selecting technique, and material selection).
3. Apply fundamental knowledge to optimize the manufacturing process.
4. Work in teams to use additive manufacturing to solve real-world problems.
5. Communicate technical concepts effectively.

Required Textbooks and Materials

There is no required textbook for this course. Students will investigate academic journal publications for a deeper understanding of course concepts and state-of-the-art.

COURSE CONTENT

Introduction, basic tenants, and history
Extrusion based:
- Fused Deposition Modeling (FDM)
- Direct Ink Writing (DIW)

Vat polymerization:
- Stereolithography (SLA)
- Digital Light Processing (DLP)

Powder bed fusion:
- Selective laser melting (SLM)

Exam 1, Tentative Date: 3/10 (Tuesday) 4:00 PM – 5:15 PM

Powder bed fusion:
- Electron Beam Melting (EBM)

Directed Energy Deposition (DED)
Material Jetting
- Polyjet
- Binder jetting

State-of-the-art materials
AI/ML for additive manufacturing

Exam 2, Tentative Date: 5/07 (Thursday) 4:00 PM – 5:15 PM

Grading Policy

Midterm exam 1	25 %
Midterm exam 2	25 %
Project 1: Benchy challenge	20 %
Project 2: Material design	30 %

Grade components

- There will be two midterm exams during the semester.
- Specific details regarding design projects will be given during the semester.

Course Policies

Make-up exams

Make-up test/exam will be given only for special situations (upon verifying documentation).

Extra Credit

Instructor may include special assignment(s) to complement any of the above grade components.

Late Work Policy

- Late work submission will only be considered in special situations and will be dealt with on a case-by-case basis by the instructor.
- If a student must turn in work late due to unavoidable circumstances (health, family & other emergencies), the instructor may waive the penalty for late work upon verifying supporting documents attesting to said emergency.
- Missed tests due to health reasons or family/other emergencies must be supported by acceptable documentation to be considered for make-up arrangements. It will be dealt with on a case-by-case basis by the instructor.

Class Participation

Students will have to attend lecture sessions. Exams will include material covered during lectures. During a lecture, the instructor will assume that students had been present for previous lectures as it relates to continuity of discussions. Students are expected to be present for lectures on time (**4:00 PM**).

Suggestion for success

The course will be packaged in modules based on different additive manufacturing techniques. Develop a habit of keeping up on a weekly basis - there is no room for getting "left behind" and "catching up". If you have difficulties, identify them early and bring it to the attention of the instructor immediately so remedial measures can be suggested.

Academic Honesty

Academic dishonesty will be handled per the guidance provided in this link https://www.utdallas.edu/conduct/manage-dishonesty/

Class Materials

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course; however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Attendance

The University's attendance policy requirement is that individual faculty set their course attendance requirements. Regular and punctual class attendance is expected. Students who fail to attend class regularly are inviting scholastic difficulty. In some courses, instructors may have special attendance requirements; these should be made known to students during the first week of classes.

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course.
Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

Academic Support Resources

The information contained in the following link lists the University's academic support resources for all students.

Please see http://go.utdallas.edu/academic-support-resources.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please review the catalog sections regarding the credit/no credit or pass/fail grading option and withdrawal from class.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.