

Spring 2023

Instructor: Sergio Luna, Ph.D.

Course Web Address: [Link to Blackboard shell](#)

Course Schedule: Tuesday (6:00 pm – 8:50 pm MST)

Contact Information: salunafong@utep.edu

Live session: [zoom session](#)

Office Hours: Thursday 3:00pm - 4:30 p.m. MST or by appointment

Office session URL: [Office hours session](#)

Teaching Assistant Hours: Ms. Mireya Jimenez

Office Hours: Tuesday 4:0pm - 5:00 pm MST or by appointment

Email: mjimenez10@miners.utep.edu

We will be reviewing and clarifying concepts. This course is online; thus, participation is not mandatory nor penalized.

COURSE DESCRIPTION

The Systems Engineering Project Practicum course provides to students the opportunity to apply Systems Engineering principles, methodologies, and processes in customer projects. The class is project based and students are members of self-directed teams where they implement soft skills to manage system development and customer participation. Students play the role of systems engineering consulting experts who manage the implementation of engineering principles to understand multiple phases of the system development lifecycle such as customer needs, system requirements, proposed system solutions, implementation, maintenance, among others. To manage the evolution of the course project, teams generate systems engineering documents including problem definition, stakeholder requirements, system requirements, system engineering project management plan, design, and test plans. To contribute to the body of knowledge while developing technical SE competencies, teams develop a conference-level manuscript where they discuss the stakeholder’s problem, the proposed approach, implementation, and results.

STUDENT LEARNING OUTCOMES

After successful completion of this course, students will be able to:

- Understand, critically derive, and apply systems engineering principles to approach stakeholder’s needs while proposing and developing a systems approach that address the need.
 - The students will be able to use systems thinking to derive, develop a system that addresses a real-life need.
- Develop public speaking and project management experience by creating a systems engineering management plan (SEMP), and a team presentation to disseminate key insights to technical and non-technical audiences.
 - Students will develop 3 major projects that will need to be managed in collaboration with team members. Text artifacts and oral presentation skills are being practiced and evaluated.

COURSE FORMAT AND STRUCTURE

- Our weeks will run from Monday to Sunday. I will post information (online activities, discussion starters, etc.) in Blackboard for the upcoming week by Sunday evening, so that when you log in on Monday, you can begin the new week.
 - Course Web Address:

○ Virtual session URL:

- Virtual office hours will be held Thursday 4:00 p.m. - 5:30 p.m. MST or by appointment. Please email me at salunafong@utep.edu to schedule a meeting.
- Assignments are due by 11:59 p.m. MST on the due date listed in the course schedule. Late submissions will be accepted, up 24 hours after the due date. However, a 50% of the maximum will be deducted from the assignment score, No exceptions. **No assignments will be accepted after 24 hours from the due date.**

TENTATIVE COURSE SCHEDULE

The schedule below is subject to change. If for any reason I am required to make any amendments, I will be informing you via Blackboard, email, and MS Teams.

Tentative Schedule

Module	Date	Topic(s)	Assignment
Week 01	Jan 17 th – 22 nd , 2023	Introductions and dynamics	Activity #1 deadline: 1/22nd, Syllabus, dynamics and introduction.
Week 02	Jan 23 rd – 29 th , 2023	Systems Engineering	Activity#2 deadline 1/29th, Article critical review INCOSE SE Handbook: Ch. 1, 2
Week 03	Jan 30 st – Feb 5 th , 2023	Development Lifecycles	Quiz#1: Week 2 and 3 – deadline: 2/5th INCOSE SE Handbook: Ch. 3
Week 04	Feb 6 th – 12 th , 2023	Understanding Stakeholders	Activity#3 deadline 2/12th: Project presentation – introductions INCOSE Handbook: Ch. 4.1 - 4.2 Extended submission to 2/21
Week 05	Feb 13 th – 19 th , 2023	Review Requirements	INCOSE Handbook: Ch. 4.3
Week 06	Feb 20 nd – 26 th , 2023	Allocating Functions to Components	Quiz#2: Week 4, 5 and 6 – deadline: 2/26th INCOSE Handbook: Ch. 4.4 – 4.6
Week 07	Feb 27 th – March 5 th , 2023	System Design	Activity# 4 deadline 3/5th: Project presentation – progress I INCOSE Handbook: Ch 4.5, 9.3
Week 08	March 6 th – 12 th , 2023	SYSML 1	Release midterm project
Week 09	March 13th – 19th, 2023	SYSML 2	Quiz #3: Week 7, 8 and 9, deadline: 3/19th
Week 10	March 20 nd – March 26 th , 2023	Review: Project Update	Midterm SEMP UPDATE, deadline: 3/26th Progress II
Week 11	March 27 th – April 2 nd , 2023	Implementation, Integration, & Transition, Interface Analysis	INCOSE Handbook: Ch. 4.7, 4.8, 4.10, 5.8, 9.6-9.7
Week 12	April 3 rd – 9 th , 2023	Verification, Validation, Quality, Test	Quiz #4: Week 11 and 12, deadline: 4/9th INCOSE Handbook: Ch. 4.9, 4.11
Week 13	April 10 th – 16 th , 2023	Specialty Engineering	Activity# 5 deadline: 4/16th - Project presentation – progress III

		Decision Analysis and Value Functions	
Week 14	April 17 th – April 23 rd , 2023	Operation, Maintenance, Disposal	Quiz #5: Week 13 and 14 th , deadline: 4/23 rd
Week 15	April 24 th – April 30 th , 2023	Project review	SEMP Final Manuscript and Presentation – deadline 4/30 th

COURSE MATERIALS

Primarily, you will be searching for authoritative sources, to support the conference-level manuscript.

Example of authoritative sources:

- IEEE Journals
- INCOSE Symposium
- Institute of Industrial and Systems Engineers
- CSER (Conference on Systems Engineering Research Center)
- American Society Mechanical Engineers
- American Institute of Aeronautics Astronautics
- Conference proceedings, journal articles, news articles, government documents, among others.

You may need the following reading materials throughout this course:

- International Council on Systems Engineering. (2015). *INCOSE systems engineering handbook: A guide for system life cycle processes and activities*. Fourth edition. Eds. Forsberg, K. Roedler, G., Walden, D. et. al. Hoboken, NJ: Wiley.
 - (please see the [UTEP Library Guide for MSSE 5345](#) for instructions on creating an INCOSE account to download the handbook)
- BKCase. (2015). *Guide to the systems engineering body of knowledge (SEBoK)*. SEBoK Wiki. SeBokWiki.org. Version 1.4 (available from the [SEBoK website](#))

COURSE REQUIREMENTS

- **Attendance:** Attendance is not mandatory but recommended.
- **Assignments:**
 - 5 quizzes are available based on the respective INCOSE Handbook chapter. See calendar to discuss relevant chapter
 - SEMP updates
- **Project(s):**
 - 1 Midterm Project – From concept definition to SE architecture
 - 1 Final Project - From concept definition to disposal and -ilities

GRADING PROCEDURES

Grades will be based on the following weights:

Quizzes	15%
Activities	30%
Midterm Report	25%
Final Report	25%
Final Presentation	5%

Final grading rubric will be as followed:

A	90 - 100
B	80-89
C	70 - 79
D	60 – 69
F	< 60

TECHNOLOGY REQUIREMENTS

Required Software:

- Microsoft Word
- Microsoft Excel
- Microsoft PowerPoint
- Cameo Systems Modeler

Learning Accommodations

The Center for Accommodations and Support Services (CASS) aspires to provide students with disabilities, accommodations and support services to help them pursue their academic, graduation, and career goals. For more information concerning services for students with disabilities, please contact the Center for Accommodations and Support Services at <https://www.utep.edu/student-affairs/cass/>

INCLUSIVITY

Name and Pronoun Usage

As this course includes group work and class discussion, it is vitally important for us to create an educational environment of inclusion and mutual respect. This includes the ability for all students to have their chosen gender pronoun(s) and chosen name affirmed. If the class roster does not align with your name and/or pronouns, please inform the instructor of the necessary changes.

You are expected to treat your instructor and all other participants in the course with courtesy and respect. Disrespectful conduct and harassing statements will not be tolerated and may result in disciplinary actions