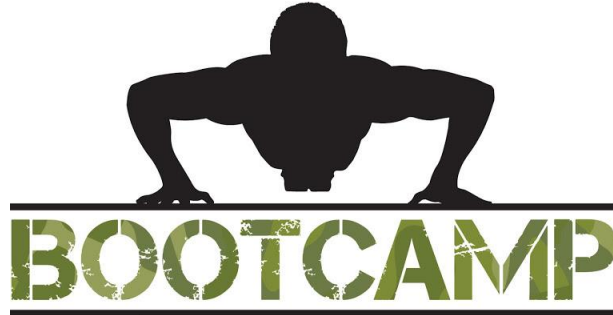


Systems Engineering



SE 5390 Special Topics: Systems Engineering Boot Camp
(graduate level),
cross-listed with
IE 4395 Special Topics: Systems Engineering Boot Camp
(undergraduate level)

Course Overview

The Systems Engineering (SE) Boot Camp (BC) provides engineers with a no-nonsense, back to basics experience by immersing them in a workshop of unique and highly interactive training. During the SE BC, engineers learn about and participate in the extensive breadth/depth of SE activities and products. One fundamental goal is to train engineers in the concept of Adaptive Systems Engineering - the application of SE principles and practices to projects of varying length and type without the need for rewriting processes. The class is project based and develops skills for effective team work. Attendees are placed in teams and expected to continue working in their team during the afternoon assignment (homework).

Topics covered in this class are: Basics of SE, Mission Analysis, Requirements Engineering, Architecture/Design, Affordability, SE Product Lifecycle, System Integration, Cost of Quality, Reviews, Verification, and Quality Analysis.

The Systems Engineering Boot Camp (SE BC) is the result of a collaboration between Lockheed Martin Aeronautics - System Engineering and The University of Texas at El Paso - Department of Industrial, Manufacturing and Systems Engineering (IMSE).

Textbooks and References:

INCOSE Systems Engineering Handbook v4.
(SE BC attendees can download this reference by creating an INCOSE CAB limited account. Instructions given during the first day.)

Standard ISO/IEC/IEEE 15288: Systems and software engineering: System life cycle processes. (SE BC attendees can download this standard from the IEEE Xplore DB at the UTEP Library)

Course Notes provided in Blackboard

Project

Project work is integrated into class time and homework.

Schedule

| TIME | Description |
|----------------------|----------------------------------------------------|
| 8:00 am to 01:00 pm | SE BC sessions |
| 02:00 pm to 05:00 pm | Team homework: attendees continue working in teams |

Full attendance to both sessions is mandatory. If you attend morning session and do not attend the afternoon sessions, your grade will be an F.

Class start at 8:00 am. Quizzes are given at 8:00 am just before a round table for the summary of the previous day. You cannot makeup a quiz.

Course content

| Week 1 | Jan 02 to 05, 2018 |
|-----------|----------------------------------------------------------------------------------------------------------------------|
| Monday | January 01, 2018. No class. |
| Tuesday | Introduction, The Essence of SE, Effective work meetings, SE Lifecycle ConOps, Op Cons |
| Wednesday | Problem opportunity statement, Mission Analysis, Ground Rules, Assumptions, Stakeholder, Scenarios, Context Diagrams |
| Thursday | Cost of Quality, Checklists, Defect Logs, Quality Metric, Quality Dashboard |
| Friday | Use Cases, Requirements Definition |

| Week 2 | Jan 08 to 12, 2018 |
|-----------|--------------------------------------------------------------------------|
| Monday | Planning for IVV, Intro to Architecture |
| Tuesday | INCOSE SE Handbook v4.0, Technical Processes, Personality, Certification |
| Wednesday | Affordability, Retirement |
| Thursday | Putting it all together, Capstone Project |
| Friday | Outbrief, Quality Analysis, Final Exam (from 02:00 to 04:00 pm) |

Exams

There will be a final exam based on course material.

Homework

Homework will be assigned daily, based on covered material. During the afternoon session, attendees continue working in teams. Afternoon session is also mandatory.

Grading

Grades will be determined based on your homework, quizzes, exam scores, daily participation, and your team project. Final grades will be based on your overall performance.

The grading scale is *approximately*.

| | |
|------|---|
| >90% | A |
| >80% | B |
| >70% | C |
| >65% | D |
| >60% | F |

| Activity | Weight |
|-----------------------------------|--------|
| Homework | 30 |
| Quizzes | 10 |
| Midterm | 10 |
| Individual and team Participation | 10 |
| Final Presentation | 25 |
| Final exam | 15 |

Academic Dishonesty

Student Academic Handbook describes the student standard of conduct, and provides descriptions of academic dishonesty including cheating or plagiarism.

Absence and Tardiness Policy

Excessive absence or tardiness subject one to administrative drop.

Disability and Classroom Accommodations

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.

Instructor Information

Email: Gary R Mitchell
Lockheed Martin Aeronautics
gary.r.mitchell@lmco.com

Email: Octavio Castellanos
Lockheed Martin Aeronautics
octavio.o.castellanos@lmco.com

Email: Dr. Oscar Mondragon
Dept. of Industrial, Manufacturing and Systems Engineering (IMSE)
oamondragon@utep.edu

Email: Dr. Mike Yokell
Lockheed Martin Aeronautics
mike.r.yokell@lmco.com