Fall Semester 2024

# INSTRUCTOR:

James C. Helm

Wednesdays, 7:00 p.m. to 9:50 p.m. and Online in Canvas

Check Class Schedule

helm@uhcl.edu (UHCL email contact also available in Canvas)

**VERY IMPORTANT**

1. Please use your UHCL e-mail for communication
2. Please include your name and last name in the end.
3. Please make sure you start the Subject with SENG 5232
4. You will need to use Blackboard. Please make yourself familiar with it.

# COURSE DESCRIPTION AND OBJECTIVES:

The goal is to introduce the student to the essential principles, processes, and practices associated with the application of Systems Engineering, and introduce the engineering specialties and how these specialties can be integrated within a system engineering framework. Emphasis will focus on defining the problem to be solved, modeling and analyzing the problem, understanding the role of system life cycles, and verification and validation of the realized system. Following this basic introduction to Systems Engineering principles, the Engineering Specialties and how they are integrated within the SE discipline will be analyzed. Specialties covered will include Reliability, Maintainability, Availability, Quality and Safety, among others.

# SYLLABUS:

Every attempt is made to provide a syllabus that is complete and that provides an accurate overview of the courses. However, circumstances and events may make it necessary for the instructor to modify the syllabus during the semester. This may depend, in part, on the progress, needs, and experiences of the students. The instructor has the right to modify the syllabus at any given time during the semester.

# COURSE PREREQUISITES:

Proficiency in the use of electronic tools (MS Word, MS Excel, MS PowerPoint or equivalent tools) and web browsers (Internet Explorer, Fire Fox, Opera, etc.) is required.

# COURSE GRADING:

10% Class Exercises and Participation

40% 4 Quizzes

25% Mid-Term

25% Final

# GRADING SCALE:

The following grading scale will apply:

FINAL GRADE PERCENT

|  |  |
| --- | --- |
| A | >93% |
| A- | 88-92.9% |
| B+ | 86-87.9% |
| B | 83-85.9% |
| B- | 80-82.9% |
| C+ | 77-79.9% |
| C | 73-76.9% |
| C- | 70-72.9% |
| F | <69.9% |

# COURSE ACTIVITIES AND ASSIGNMENTS:

1. **CLASS EXERCISES AND PARTICIPATION (10%):** This class will include individual and group exercises in class and online. All participation will be included in the grade.
2. **QUIZZES (40 %):** There will be 4 in-class (or online) quizzes. Questions will be multiple choice, fill in the blanks, short essay, etc.
3. **MIDTERM (25%):** There will be one in-class (or online) Mid-Term exam from the material covered until the scheduled date.
4. **FINAL GROUP PROJECT (25%):** There will be one final group project. Students will enroll themselves into groups. Each group will be assigned a case study to analyze. More details will be available later on Bb. Class presentations and peer evaluations will be part of the project grade.

# REQUIRED RESOURCES AND REFERENCES:

Textbook: Slides and Author Manual from:

* Blanchard and Fabrycky. Systems Engineering and Analysis, Published by Pearson, 5th Edition

Additional material will be available Online in Canvas.

The following resource(s) maybe used by the student as supplementary material and additional reading:

* Falconbridge and Ryan (2003). Managing Complex Technical Projects: A Systems Engineering Approach. Published by Artech House, Inc.
* Argos Press <https://www.argospress.com>

**STUDENT RESPONSIBILITIES:**

# CLASS ATTENDANCE:

# Class attendance is expected, though not mandatory. If for some reason a student should miss a class, it is the *student’s* responsibility to:

* Inform themselves (through slides, Canvas, classmates, etc.) of any administrative announcements (e.g. schedule changes) discussed during a session.
* “Make-up” any of the course material covered in the session. Note that work presented in class may not be covered adequately in the textbook.

It is not necessary to inform me of an absence should a situation arise where attendance is not possible. Please note however, that I reserve the right not to provide extensive information about what transpired in a class.

# TIME COMMITMENT:

Students should expect to spend 3-4 hrs. per week with the courseware. This is not to include the time spent reading material or researching material on the internet. The time spent on preparing assignments and discussion posts depends upon each student’s ability. In total, students should expect to spend between 10-12 hours per week on course activities and assignments. Spending less time would be insufficient for success in this course.

DUE DATES, LATE WORK and MAKE-UP:

* Assignments will be due 12 pm of due date.
* ***No late assignments will be accepted***.
* There will be no Make-up Exams.

# INCOMPLETE POLICY:

Incomplete grades may be given at the discretion of the instructor to students who fail to complete necessary work for final evaluation. When assigning the Incomplete (“I”), instructors should provide students with an outline of the work to be accomplished before the “I” can be converted to a final mark and should specify a deadline date; the outline constitutes an agreement between the instructor and the student. Students are encouraged to read the “Incomplete policy” at 11.3 Grading Procedures in the Faculty Handbook.

# ACADEMIC HONESTY:

The University of Houston Clear Lake has a zero-tolerance policy for academic dishonesty and if the student is in violation an “F” the course will be apply. Please refer to the UHCL academic honesty policy online.

# COURSE WITHDRAWAL:

Students may drop a course through the registration process and may receive a refund during the first week of classes. After the first week students need to notify the instructor and then withdraw from the course as faculty will not drop or withdrawal students. Please refer to the academic calendar for the exact dates and also review the withdrawal policy online.

# STUDENTS WITH DISABILITIES:

If you believe that you have a disability requiring an academic adjustment/auxiliary aid, please contact Disability Services by phone at 281-283-2648, or email disability@uhcl.edu, or go to the office in the Student Services Building (SSCB), Room 1.302.

The University of Houston System complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, pertaining to the provision of reasonable academic adjustments/auxiliary aids for students with a disability. In accordance with Section 504 and ADA guidelines, each University within the System strives to provide reasonable academic adjustments/auxiliary aids to students who request and require them

# TECHNICAL ASSISTANCE:

Help Desk Hours:

Monday through Thursday: 8 am to 10.30 pm Friday: 8 am to 5 pm

email:supportcenter@uhcl.edu phone: (281) 283-2828

# COURSE OUTLINE:

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| --- | --- | --- |
| Week | **Fall****2024** | **Session Topics, Assignments and References** |
| 1 | Aug18-24 | **Topics:** | * Course Overview and Syllabus Review
* Module 1: *Introduction to Systems Engineering*
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| **Canvas Files:** | * Syllabus
* Session Slides
 |
| **2** | 1. **25-31**
 |  | * Module 1: *Introduction to Systems Engineering*
 |
| **3** | **1-7** |  | * Module 2: *Principles of Reliability*
 |
| **Canvas Files:** | * Session Slides
 |
| **4** | **8-14** | **Canvas Files:** | * Module 3: *Design of Experiments, Part 1*

Session Slides |
| **5** | **15-21** | **Topics:** | * Module 4*: Design of Experiments, Part 2*
 |
| **Canvas Files:** | * Session Slides
 |
| **6** |  22-28 | **Topics:** | * Module 5: *Availability and Maintainability*
 |
| **Canvas Files:** | * Session Slides
 |
| **7** | **29-Oct 5** | **Topics:** | * Module 6: *Human Factors and Safety*
* ***QUIZ #2***
 |
| **Canvas Files:** | * Session Slides
 |
| **8** | **6-12** | **Topics:** | * *Module 7: Logistics, Supportability and Supply Chain*
 |
| **Canvas Files:** | * Session Slides
 |
| **9** | **13-19** | **Topics:** | * *Module 8: Quality Assurance*
 |
| **Canvas Files:** | * Session Slides
 |
| **10** | **20-Nov 2** | **Topics:** | * Module 9: *MIDTERM EXAM*
 |
| **Canvas Files:** | * Session Slides
 |
| **11** | **3-9** | **Topics:** | * Module 10: *Producibility, Disposability and Sustainability*
* ***QUIZ #3***
 |
| **Canvas Files:** | * Session Slides
 |
| **12** | **10-16** | **Topics:** | * Module 11: *Affordability*
 |
| **Canvas Files:** | * Session Slides
 |
| **13** | **17-23** | **Topics:** | * Module 12: *Integrating Engineering Specialties*
* ***QUIZ #4***
 |
| **Canvas Files:** | * Session Slides
 |
| **14** | **24-30** | **NO CLASS**  | **THANKS GIVING BREAK** |
|  |  |
| **Assignment(s) due****Next Week:** | * Final Project Presentations (Due December 1st)
* Project Reports (Due December 5th)
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| **15** |  **Dec 1-7**  Canvas Files:  |
| **16** |  **Dec 8-14** Canvas Files |
| **17** |  **Dec 15- 22**  Canvas Files |