# ENME 607 / ENRE 671 Engineering Decision Making and Risk Management
# Spring, 2020, Syllabus

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## Course Administration

**Class Meeting Times:** Tuesday, Thursday 2:00 - 3:15.
**Room:** J.M. Patterson (JMP) Room 2222
**Office Hours:** Tuesday, Thursday 12:30 - 2:00, and by appointment.

### Texts

1. Engineering Decision Making and Risk Management, John Wiley and Sons, 2015.
2. Course readings, available on the course web site.
3. Columbia's Final Mission, Multimedia Case, 9-305-032, Harvard Business School Publishing. Details on ordering to be announced.

**Instructor:**
Professor Jeffrey W. Herrmann
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## Course Goals

The objective of this course is for students to learn the key topics in engineering decision-making and risk management so that they can improve decision-making and reduce risk in their engineering activities and organizations.

**Course Learning Objectives.** At the completion of this course, students will be able to do the following:

- Find the best alternative in a decision with multiple objectives and uncertainty;
- Describe the process of making a decision;
- Analyze a risk management process;
- Model an organization's decision making system.

## Course Content

In the course of engineering design, project management, and other functions, engineers have to make decisions, almost always under time and budget constraints. Managing risk requires making decisions in the presence of uncertainty. This course will cover material on individual decision making, group decision making, and organizations of decision-makers. The course will present techniques for making better decisions, for understanding how decisions are related to each other, and for managing risk.

**Course Outline**

- Fundamentals of decision analysis
- Multi-attribute decision making
- Group decision making
- Decision making under uncertainty
- Game theory
- Value of information
- Risk management
- Risk communication
- Decision making systems

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## Expectations

Ethical behavior is important to society, and it is the right thing to do. We are all expected to behave ethically.

Academic integrity is an important value for our community. Because of this, students are expected to have high standards for behavior in this course. **All homework assignments must be done individually; students must do their own work on assignments and examinations.** If you have any questions about what is acceptable, please ask the instructor.

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. Every student is responsible for upholding these standards for this course and should be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the University of Maryland Honor Pledge, the Student Honor Council, and the Office of Student Conduct, visit http://shc.umd.edu/SHC/Default.aspx and http://osc.umd.edu/OSC/Default.aspx.

To further exhibit your commitment to academic integrity, remember to sign the Honor Pledge on all examinations and assignments: I pledge on my honor that I have not given or received any unauthorized assistance on this examination (assignment).

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## General Policies

Students are responsible to be familiar with and uphold the Code of Academic Integrity and the Code of Conduct, as well as for notifying your course instructors in a timely fashion regarding academic accommodations related to absences and accessibility, and all other course policies.

## Course Schedule

The course schedule can be found on ELMS under Pages.

## Grading

Student grades will be based upon three reports and a series of examinations (including the final exam) that provide the opportunity to demonstrate mastery of the 40 course learning outcomes. The list of skills can be found on ELMS under Pages Students will have multiple opportunities to demonstrate mastery of each learning outcome subject to posted deadlines. See the course schedule for details.

### Letter Grades

There are 40 learning outcomes, and the final grade is based on the number of learning outcomes that have been mastered. Each learning outcome is worth one point. Each letter grade (with a plus or minus) requires the following number of points.

- 38 = A+
- 37 = A
- 36 = A-
- 34 = B+
- 33 = B
- 32 = B-
- 30 = C+
- 29 = C
- 28 = C-
- 26 = D+
- 25 = D
- 24 = D-
- 23 or fewer = F