SYSE 575

Reducing Risk In Decision Making

1. Basic Information:
   a. Course Number: SYSE 575
   b. Course Title: Reducing Risk In Decision Making
   c. Credit Hours: 4
   e. Class Location: Online
   f. Class Hours: Online – New “Week” begins on Mondays
   g. Texts:
      - Risk Assessment and Decision Making in Business and Industry (2nd Ed) [Koller]
        ISBN 1584884770
        Referred to as RAD in Reading Lists and Presentations
      - NASA SE Handbook
        Available In Course Online
        Referred to as NASA-SE in Reading Lists and Presentations
      - NASA PRA Handbook
        Available In Course Online
        Referred to as NASA-PRA in Reading Lists and Presentations
      - Other Journal Readings
        Available typically through the PSU Library’s Online Electronic Journals System, you will need your ODIN account name and password [same as D2L]
        Referred to as EJS in Reading Lists and Presentations
   h. Office Hours: By appointment
   i. Phone: 503-422-6022
   j. Email address: wde@pdx.edu or through Direct2Learn
   k. Mailbox: CECS Dean's Office, Engineering Building. Building Suite 500
   l. Final Exam: Online Direct2Learn Exam – Self Schedule During Exam Week

2. Course Description
   a. This course provides introduction to the assessment and management of risk in decision making that occurs in the system engineering process; including risk in the decision, as well as risk in the choice of method to decide.
3. **Specific Goals and Objectives:**
   The student will gain knowledge and skills necessary to:
   a. Assess risk, quantitatively and qualitatively
   b. Model Risk through various methods
   c. Understand the concept of valuation of risk [i.e. utility] and its inherent subjectivity
   d. Evaluate the value of information to enable the assessment of consultants and advice
   e. Probabilistic and stochastic representations of risk and how to utilize these concepts
   f. Develop multiple, potential conflicting, objective models for decision making

4. **Logistics:**
   Success in this course will require:
   a. Reading and completing weekly assessments by the assigned date
   b. Posting assignment results on, or before, the assigned date
   c. Successful completion of Mid-Term and Final Examinations
   d. Successful completion of a Risk based project in a domain area of your choice

5. **Metrics for Student Progress**
   a. Total of 400 points
      i. Written Assignments [5] (200 points total)
      ii. Mid-Term Exam (100 points)
      iii. Final Exam (100 points)
      iv. Project (100 points)
   b. Grades will be assigned as follows (this is the minimum guaranteed distribution, the instructor reserves the right to adjust the lower thresholds as needed to ensure adequate representation of effort)
      i. 400-372 : A
      ii. 371-360 : A-
      iii. 359-348 : B+
      iv. 347-332 : B
      v. 331-320 : B-
      vi. 319-308 : C+
      vii. 307-292 : C
      viii. 291-000 : F
   c. Refer to Direct2Learn for due dates. *There is a 5 point penalty per day late*.

6. **Tentative Week Plan [Deliverables are Due by 8AM PST on Monday of Following Week]**
   a. Week 1 [Apr 2]: Reading / Written Assignment #1
   b. Week 2: [Apr 9]: Reading / Project Plan
   c. Week 3: [Apr 16]: Reading / Written Assignment #2
   d. Week 4: [Apr 23]: Reading / Project Update
   e. Week 5: [Apr 30]: Reading / Written Assignment #3
   f. Week 6: [May 7]: Reading / Mid Term
   g. Week 7: [May 14]: Reading / Project Update
   h. Week 8: [May 21]: Reading / Written Assignment #4
   i. Week 9: [May 28]: Reading / Written Assignment #5
   j. Week 10: [Jun 4]: Reading
   k. Week 11: Finals Week / Final Project Report

7. **Tentative Week Topics [Reading Specifics will be given each week]**
   a. Week 1 Decision Making, Risk, and Uncertainty
   b. Week 2 Methods of Risk Assessment and Identification
   c. Week 3 Communicating and Documenting Risk in System Engineering Domain
   d. Week 4 Quantitative Uncertainty
   e. Week 5 System Failure and Risk Analysis
   f. Week 6 Sensitivity and Subjectivity in Risk Assessment
   g. Week 7 Assessing Naïveté and How to Update Information
   h. Week 8 Risk Planning
   i. Week 9 Risk Management
   j. Week 10 Special Topics