SYSE 567 Systems Engineering Management

1. Basic Information:

   1. Course Number: SYSE 567
   2. Course Title: Systems Engineering Management
   3. Credit Hours: 4
   4. Pre-Requisites: Basic engineering or project management
   5. Instructor: John E. Blyler, BS Engineering Physics, MS EE
   6. Class Location: Online
   7. Class Hours: Online – New “Week” begins on Mondays
   8. Office Hours: Email, phone, online
   9. Phone: 503-614-1082
   10. Email address: blylerj@pdx.edu or j.blyler@ieee.org
   11. Final Exam: Online Exam – Self Schedule During Exam Week
   12. Texts:
      a) Essentials of Project and Systems Engineering Management (3rd Ed)
         by Howard Eisner
      b) Systems Engineering Management (4th Ed) by Benjamin S. Blanchard
         Order online, e.g., Amazon.com, Powells, etc.

2. Course Description

This course provides comprehensive knowledge and real-world case studies in the critical domains of project management (for cost and schedule) and system engineering management (for technical evaluation and implementation). In addition, we will focus on the interrelationships between these two domains by explicitly considering integrative management as an emerging approach. Students will gain detailed knowledge in management techniques applicable to activities within Systems Engineering, including evaluating new technologies and integrating with legacy systems, technical performance measures (TPM), process tailoring, SEMP/SEWP planning, effect of software engineering, maturity assessment models like CMMI, conducting technical reviews and audits, and more. Several case studies from a wide range of projects will be presented to illustrate key concepts and management techniques with the goal of demonstrating how projects can succeed with the proper implementation of systems engineering management.

The audience for this course is chief systems engineers, system architects, technical project/program managers in projects involving hardware, software, electronic, mechanical and manufacturing engineers. This course can be taken as part of the master’s degree, certification program or for continuing education.
3. Specific Goals and Objectives:
Key objectives are:

1. Introduction to systems engineering, including categories, life cycles, and related terms and definitions.
2. Learn the problems in managing engineering projects, organizational factors, project management essentials and the interaction between systems engineers and project-program managers.
3. Understand systems engineering program planning, including early planning, SEMP and the basics of schedule, cost and situation analysis.
4. Learn how to integrate other plans into the SEMP, include design specialty, risk and other program activities.
5. Understand how systems engineering fits into and is affected by the organization.
6. Introduction to the principals of system architecting and there interaction with PM, including trade-off, modeling and other processes-tools.
7. Software engineering’s metrics input to systems engineering management, plus the evaluation and benchmarking of SE.
8. Addition management and metrics trends in SW and SE.
9. Learn the integrative management of technical people, processes and tools to maximize efficiency and effectiveness.

4. Logistics:
Success in this course will require:

1. Reading and completing weekly assessments by the assigned date
2. Posting assignment results on, or before, the assigned date
3. Successful completion of Mid-Term and Final Examinations
4. Active participation in online discussions in the forums and weekly goals assessment

5. Metrics for Student Progress
a. Total of 400 points
   i. Written Assignments [10] (100 points total)
   ii. Mid-Term Exam (100 points)
   iii. Final Exam (100 points)
   iv. Discussion Participation (100 points) [10 per week]
      1. 5 for responding to the discussion question of the week
      2. 5 for responding to the weekly goals assessment
      3. 2 bonus points for meaningful journal entries each week
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. 291-280 : C-
ix. 279-268 : D+
x. 267-240 : D
xi. 239-000 : F

Refer to D2L 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]

1. Week 1 Reading / Written Assignment #1
2. Week 2: Reading / Written Assignment #2
3. Week 3: Reading / Written Assignment #3
4. Week 4: Reading / Written Assignment #4
5. Week 5: Reading / Mid Term / Written Assignment #5
6. Week 6: Reading / Written Assignment #6
7. Week 7: Reading / Written Assignment #7
8. Week 8: Reading / Written Assignment #8
9. Week 9: Reading / Written Assignment #9
10. Week 10: Reading / Written Assignment #10
11. Week 11: Finals Week

7. Tentative Week Topics and General Reading [Specifics will be given each week]

  o Week 1
    ▪ (Blanchard) Ch 1: Intro to Systems Engineering Systems (This chapters ends with a brief section on systems engineering management, which serves as a good lead into Eisner’s Ch 1 (next week.))
  o Week 2
    ▪ (Eisner) Ch 1 – Systems, Projects and Management (Good introduction into differences between SE management and PM.)
    ▪ (Eisner) Ch 2 – Overview of Essentials (up to section 2.5)
  o Week 3
    ▪ (Blanchard) Ch 6 (up to section 6.3) – Systems Engineering Program Planning
    ▪ (Eisner) Ch 4 – Schedule, Cost, and Situational Analysis (Eisner does a good job of covering EVP.)
  o Week 4
    ▪ (Blanchard) Ch 6 (Section 6.3 to 6.9) – Systems Engineering Program Planning
  o Week 5
- (Blanchard) Ch 7: Organization for Systems Engineering (This covers much of the material (Theory X, Y and Z) found in Eisner, Ch6: Team Building)
  - Week 6
    - (Eisner) Ch 9 – Systems Architecting – Principals
    - (Eisner) Appendix – Systems Architecting – Case Studies
  - Week 7
    - (Eisner) Ch 10 – Software Engineering (This chapter finishes with SW metrics, a good lead into Blanchard, Ch 8, which cover system engineering management metrics.)
    - (Blanchard) Ch 8 – Systems Engineering Program Evaluation
  - Week 8
    - (Eisner) Ch 12 – Systems/Software, Engineering and Project Management Trends
  - Week 9
    - (Eisner) – Chapter 14: Integrative Management
  - Week 10
    - Project completion and final.