SE 530 Systems Engineering Management

Course Objective:
The systems engineering (SE) management team is responsible for planning and managing all systems engineering activities that are required to successfully develop complex products and systems. They are in charge of ensuring that all system elements are compatible, available on-schedule and on-budget, work together seamlessly, and satisfy customer requirements.

This course will address the role and activities of the system engineering team in managing and coordinating product development. Topics will include systems engineering planning, management of scope, risk and cost, configuration, interfaces and human resources, project control, reviews, performance measures, standards and documentation.

This course is a core requirement for the Systems Engineering focus in the IPFW Master of Science in Engineering degree.

Credits: 3
Professor: Dr. Steve Walter
Homework: Homework will be assigned weekly.
Evaluation: 30% Homework
30% Midterm Exam
40 % Final Exam

Tentative Class Schedule

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<th>Class</th>
<th>Topic</th>
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<td>1</td>
<td>Overview of SE Management and CMMI</td>
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<td>2</td>
<td>Systems Engineering Plans</td>
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<td>3</td>
<td>Make/Buy Decisions and Subcontracting</td>
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<td>4</td>
<td>Performance and Progress Measures</td>
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<td>5</td>
<td>Technology Management</td>
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<td>6</td>
<td>Verification and Validation / Technical Reviews</td>
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<td>Change Control</td>
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<td>8</td>
<td>Project Organization and IPDT / Exam #1</td>
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<td>9</td>
<td>Human Resources / Communications / Motivation</td>
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<td>10</td>
<td>Team Building and Dynamics</td>
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<td>11</td>
<td>Negotiation / Conflict Resolution</td>
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<td>12</td>
<td>Project Management Overview</td>
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<td>Project Execution and Control</td>
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<td>Managing and Controlling Risk</td>
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<td>15</td>
<td>Cost Management and Control</td>
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<td>16</td>
<td>Final Exam</td>
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Course Outcomes:
A student who successfully completes the course will have demonstrated:
1. An understanding of role of the system engineering team in product development
2. Knowledge of systems engineering practice and its integration into the product development lifecycle.
3. An understanding of system engineering balance functions that span the project lifecycle: management of scope, requirements, interfaces, configuration, risk, cost and data.
4. Techniques for planning the technical effort
5. Techniques for integrating technology into product development
6. The use of program phased gates and reviews to verify and validate progress
7. Techniques for quantifying and reducing development risk.
8. Ability to assess the advantages and challenges associated with the method for integrating engineering functions into companies and projects organizations
9. Techniques for managing cost during product development

Books:
Readings will be assigned from:

Textbook

Material available on-line or from the professor


**Student Conduct**

**Student Conduct:**
These policies are proposed to ensure compliant with IPFW policies and procedures, to minimize disruptions to your classmates and ensure the integrity of the classroom experience.

**A. Cell phone/Blackberry**
1. **Cell phones should be set to either vibrate or silent**
   - Do not answer a cell phone in the classroom – If you must answer it, answer it in the hall.
   - Frequent phone disruptions are unacceptable
2. **Blackberries**
   Should be set on silent and not used in the classroom.

**B. Be on time:** A pattern of tardiness will merit discussion. Enough said.

**C. Food/Drink**
- Coffee, soda and water are acceptable
- No food is allowed in the classroom

**D. Smoking**
Smoking is not allowed in IPFW buildings

**E. Missing an Exams or Late Homework**
You must contact me prior to missing an exam or turning in homework late so that alternative arrangements can be made. Please let me know about planned absence as soon as you know that there will be an issue. This will help facilitate a mutually agreeable solution. Contacting me after the fact may result in your not being given an opportunity to retake an exam or receive homework credit.

**F. Missing a Class**
Missing an occasional class for professional reasons is allowable. However, you should contact me as soon as you know that you will be unable to attend the class so that alternative arrangements can be made to provide you with access to the class material and make arrangements for assignments.

**G. Academic Integrity**
Cheating and plagiarism will not be tolerated and consequences will be severe. In the absence of instructions to the contrary, students should assume that homework should be done alone and is not designed to be a group exercise. The university policy on academic honesty and rights and responsibilities can be found at: [http://www.ipfw.edu/academics/regulations/honesty.shtml](http://www.ipfw.edu/academics/regulations/honesty.shtml) and [http://www.ipfw.edu/academics/regulations/code/](http://www.ipfw.edu/academics/regulations/code/)

**H. Disabilities**
If you have a disability and need assistance, special arrangements can be made to accommodate most needs. Contact the Director of Services for Students with Disabilities (Walb Union, Room 113, 481-6658) as soon as possible to work out the details. Once the Director has provided you with a letter attesting to your needs for modification, bring the letter to me. For more information, please visit the web site at [http://www.ipfw.edu/ssd/](http://www.ipfw.edu/ssd/), also see [http://www.ipfw.edu/ssd/text-version/academics.shtml](http://www.ipfw.edu/ssd/text-version/academics.shtml)

**I. Diversity and nondiscrimination**
IPFW is committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the university seeks to develop and nurture diversity. The university believes that diversity among its many members strengthens the institution, stimulates creativity,
promotes the exchange of ideas, and enriches campus life. IPFW prohibits discrimination against any member of the university community on the basis of race, religion, color, sex, age, national origin or ancestry, marital status, parental status, sexual orientation, disability, or status as a disabled or Vietnam-era veteran.

J. Military Service
If you are a student in the military with the potential of being called to military service and/or training during the course of the semester, you are encouraged to contact both me and your advisor immediately.

K. Proprietary Information
Do not bring proprietary or company-sensitive information into the classroom. If you have any questions about the proprietary nature of the information you might use in your homework, please talk to your supervisor or the office responsible for releasing data. Any issues should be directed to my attention.

L. Classified Data
Do not discuss reference or hint at classified programs or data!