Instruction Team:

Instructor: **William B. Wood**, PMP (ret), CSU On-Line, WBWood.CSU@Comcast.net, (303)-771-9421
Teaching Assistant: **Pranav Damale**, Pranav.Damale@ColoState.edu or PDamale@RAMS.colostate.edu; (970) 214-4768. Scott Bioengineering Building, GA Suite 321, Desk#133.

Office Hours: TA: M-W, 1:00 - 2:00 PM**; Instructor:** Mon/Tues, 1:00-4:00 PM Mountain Time and/or by appointment.

Book: *Systems Engineering and Analysis*, Fifth Edition, Blanchard and Fabrycky

Grading and Exams: (Tentative)
Midterm Exam: 25%
Final Exam: 25%
Project & Presentation 25% (may be Individual or Team)
Homework Assignments 20%
Instruction Team Discretion: 5%

Grade	Course Credit	Numerical Equivalent	Indicates
A+	4.3	97-100	**Excellent**
A	4.0	93-96.9	
A-	3.7	90-92.9	
B+	3.3	87-89.9	**Above Average**
B	3.0	83-86.9	
B-	2.7	80-82.9	
C+	2.3	77-79.9	**Average**
C	1.7	70-76.99	
D	1.0	60-69.9	**Below Average**
F	0	0-59.9	**Failure**

Course Description: The course presents a conceptual understanding of a non-DoD specific systems engineering life-cycle process and develops familiarity with analytical techniques used in any SE life cycle. It investigates concepts of reliability and robustness, and rigorous tools for analysis and design with those concepts in mind. It illustrates real-world experience and case studies working with a system through all phases of the system design process.

Student Learning Objectives: Successful students will develop a conceptual understanding of the systems engineering life-cycle process and its components. They will develop analytical skills utilizing robust techniques and optimization-based methods. They will also broaden their perspective with the real-world experience of working with a system through all phases of the system design process.

Course Work: Homework will usually be assigned every week. Lesson chapter(s) are to be read by the students *prior each class session*, and lesson homework questions are to be completed during the week following each lesson. Students are expected to work on all these problems individually, using the TA as the sole resource. *Reasonable* collaboration on understanding *methods* in the text is allowed between students, but only prior to any homework or test periods. **Use of solution sets from any source or collaborating on specific homework questions is not allowed!**

Class presentations on each of the projects will be required to improve each student's SE presentation skills. Students will be expected to evaluate and grade presentations by other students, with those evaluations viewable only to the TA and Instructor.

Main Topics:

1. Introduction and Background
2. Conceptual & Preliminary System Design
3. Detail Design and Development; and System Test, Evaluation & Validation
4. Alternatives and Models in Decisions Making
5. Models for Economic Evaluation
6. Optimization in Design and Operations
7. Influential SE Organizations, Elements & Concepts (Fall, Denver) or
   [Overview of Classical Numerical Optimization (Spring, Ft. Collins)]
8. Review of Chapters 1-9 and Appendices
9. Queuing Theory and Analysis; and Control Concepts and Methods
10. Design for Reliability
11. Design for Maintainability
12. Design for Logistics, Supportability, Producibility, Disposability, Sustainability and Affordability