

GEORGE MASON UNIVERSITY

VOLGENEAU SCHOOL OF INFORMATION TECHNOLOGY AND ENGINEERING

SYST 490/495 Senior System Design Project (2008/2009)

1/21/2009

Instructor: Dr. George L. Donohue

Office: Rm 121 S&T II

Lecture/Lab: Robinson B118 S&T II Rm 18

Time: TTh 10:30 – 11:45

**Office Hours: Tuesday 13:30 to 15:30,
Thursday 13:30 to 15:30**

Suggested Reading:

Thomas L. Friedman, *The World is Flat: A Brief History of the Twenty-First Century*, 2006 Farrar, Straus and Giroux Publishers

Ref: SEIDS 09 call for papers <http://www.sys.virginia.edu/sieds09/>

USMA 09 call for presentations <http://www.se.usma.edu/>

Objective: Systems 490/495, together, provide the Capstone experience to the Systems Engineering undergraduate program. In addition to providing students the opportunity to utilize the systems engineering processes (e.g. requirements determination, work-breakdown structures, Pert Charts, test and evaluation, life cycle costing, etc.) it requires them to use their analytical skills in system modeling, simulation and decision making. SYST 495 places the primary emphasis on conducting trade-off analysis. Emphasis in these courses is also placed on written and verbal communication skill development and the creative process of engineering design. The students are asked to determine whether a Business Case exists for their designs in the Final Report that they submit in early May. Students are required to manage a complex, 9 month long, unstructured project using the management and teamwork skills that they have developed. The class has been divided into seven project teams, each working on a real problem. Each student **MUST** maintain a personal log of all design activity, to be inspected upon demand. Each student **MUST** submit a weekly time sheet to their team timekeeper. This team timesheet is to be submitted to Dr. Donohue **monthly** (via e-mail) and is open for discussion at all major program reviews as part of the EVM review. Qualifying teams will be entered into inter-scholastic senior design competitions at the end of this semester.

SIEDS 09 TRACKS (IEEE Systems and Information Engineering design Symposium)

- Data Mining and Statistics
- Simulation and Stochastic Modeling
- Human Factors and Cognitive Modeling
- Mathematical modeling and Optimization
- Risk Analysis, Technology Management and Policy
- Life Cycle Analysis
- System Economic Analysis

USMA 09 TRACKS

- Decision Analysis
- Process Modeling and Analysis
- Modeling & Simulation
- M&S for Military Applications
- Project Management
- Reengineering Systems
- Statistical Analysis/Stochastic Modeling
- Problem Solving in Systems Engineering

Grading: Each student's final grade will be determined as follows:

30% Team Individualized Mid Term Exam

30% Final Project report and UVA paper (written)

25% Faculty / Sponsor Evaluation of Team Presentation

10% Team Project productivity self evaluation

5% Timesheets/Notebooks (to be submitted on demand)

Semester Schedule:

January 22. Review Spring Semester Schedule

January 27. Individual team discussions as required & set appointment schedule

January 29. Individual team discussion by appointment

Feb. 3. Individual team discussion by appointment (USMA registration period open)

Feb. 5. submit UVA abstract (200-500 words) for review prior to Feb 16 submission deadline

Feb. 10. UVA abstract pass-back with suggested changes

*****Feb. 12. submit final abstract and receive approval to submit abstract to UVA electronically**

Feb. 17. Detailed Presentation on Simulation and Analysis Status (1&2)*

Feb. 19. Detailed Presentation on Simulation and Analysis Status (3&4)*

Feb 24. Detailed Presentation on Simulation and Analysis Status (5&6)*

Feb. 26 Detailed Presentation on Simulation and Analysis Status (7)*

- First Draft of UVA paper due

March 3. no class, individual team work

March 5. no class, individual team work (March 9 paper acceptance notification)

March 10-12 Spring Break

March 17. Mid Term Exam Discussion and Preparation

(1st draft UVA pass back & paper approval)

March 19. Mid Term Exam (in-class, no notes, 5 question essay exam)

March 24-31. work on analysis and paper

March 31 2nd draft UVA paper draft to Donohue and Faculty for review and comment.

USMA Abstract due and registration deadline ?

*****April 2. MTE Pass-Back.** 2nd draft UVA paper review pass-back for corrections prior to submission – *submission permission required (April 6 Paper & registration deadline, \$75 fee)*

April 7. Individual team discussions of project status

Discussion of **UVA Manuscript sent to UVA for peer review**

April 9. Individual team discussions of project status

April 14. DRY RUN for UVA presentation*

April 16. DRY RUN for UVA presentation *

USMA Abstract due for review and submission ?

April 21. DRY RUN for UVA presentation*

April 23. DRY RUN for UVA presentation*

April 24. UVA IEEE Capstone Conference (lv. GMU approx 06:00, ret. 16:00 to 22:00)

April. 28 DRAFT Final Report due for sponsor review

April 29 leave for West Point conference (approx 10:00 to 12:00, 6 hour transit time)

April. 30 USMA Capstone Conference

May 1 Return from West Point (ar. Approx noon)

May 4. Reports submitted for Faculty and Sponsor evaluation, Final Presentation to Faculty and Sponsors, senior graduation lunch

May 7. Course and Team Final Evaluation, Lessons Learned (10:30-11:00)

* presentation order random selection