SYST 572 – **Introduction to Systems Integration Engineering** (3:3:0)
Lifecycles in systems engineering. Large systems comprised of heterogeneous components. The human, organizational, and technological basis for integration. Societal and cultural basis for systems integration. Conceptual frameworks for systems integration. Structure, function, and purpose of the systems integration industry. Risk management and systems integration. User requirements and functional specifications in systems integration. The bid and proposal process for systems integration. Systems integration and the Federal government. Integrated process and product development, and systems integration. Systems integration architectures. Systems management and cost estimation in systems integration. Systems integration reengineering. Quality management for systems integration. Increasing returns to scale, network effects, and path dependency issues in systems integration. Systems integration ecology and evolutionary systems integration. Prerequisite SYST 301 or 510 or SYST 520.

References:

Sage, A. P. and Rouse, W. B. (Eds.), ***Handbook of Systems Engineering and Management***, John Wiley and Sons, New York, 1999.

Sage, A. P., ***Systems Management for Information Technology and Software Engineering***, John Wiley and Sons, New York, 1995.

Sage, A. P., ***Systems Engineering***, John Wiley and Sons, 1992.

Keeping the U.S. Computer Industry Competitive: Systems Integration, National Academy Press, 1992.

Grady, J. O., ***Systems Integration****,* CRC Press, 1994.

Mische, M. (Ed.), ***Reengineering: Systems Integration Success***, CRC Press, Boca Raton FL, 1998.

Wyzalek, J. (Ed.), ***Systems Integration Success***, CRC Press, Boca Raton FL, 1999.

Wyzalek, J. (Ed.), ***Enterprise Systems Integration,*** CRC Press, Boca Raton FL, 2000.

A plethora of contemporary available on the Internet concerning systems integration and related issues in architecting for systems integration will be of much use, and experience will be gained in the Internet as a research tool during the course. A course web site on WebCT will be operational and put to much use.

Instructor: Andrew P. Sage Office: STII, Room 311
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Course Call Number 06342, Fall 2001 Tuesday from 4:30 PM to 7:10 PM in Room STI-110.

Grades: 50% - examinations, 20% - project presentation, 30% - home assignments. Two take home exams will be given, one approximately at the middle of the semester and one at the end of the semester. There will be a term paper assignment on systems integration engineering, including a written report and oral presentation, and weekly assignments. Presentation: Each student will give a seven (7) minute formal oral presentation and prepare a term paper in the general area of systems architecting and integration.

SYST 572 - Detailed Syllabus and outline, by dates (subject to change) – Fall 2001

1. An Overview of Systems Engineering and Management, Introduction to WebCT – 27 August
2. Human, organizational, societal cultural, and technological basis for systems integration, 4 September
3. Systems Integration Standards and Capability Maturity Models, Part I – 11 September, Part 2 – 18 September, Part III – 25 September.
4. The role of architecting in systems integration, Part I – 2 October, Part II – 16 October, Part III - 23 October, Mid Term exams due 23 October
5. COTS and cost estimation in systems integration, 27 March.
6. Integration in a System of Systems and Federation of Systems, Part I - 30 October, Part II - 6 November
7. Path dependence, network effects, and complex adaptive effects in system integration, Part 1 – 13 November, Part II – 20 November.
8. Evolutionary and adaptive approaches to systems integration, 27 November.
9. Term paper presentations/reports, 4 December. Final exam papers due 11 December..

APS. 6 August 2001