George Mason University
Graduate Course Approval/Inventory Form

Please complete this form and attach a copy of the syllabus for new courses. Forward it as an email attachment to the Secretary of the Graduate Council. A printed copy of the form with signatures should be brought to the Graduate Council Meeting. Complete the Coordinator Form on page 2, if changes in this course will affect other units.

Please indicate:  ___X__ NEW       ___ MODIFY       ___ DELETE

Local Unit:  IT&E                   Graduate Council Approval Date:

Course Abbreviation: SYST / ECE   Course Number:  619 / 672

Full Course Title: Introduction to Architecture Based Systems engineering

Abbreviated Course Title (24 characters max.): Intro Arch Syst Engr

Credit hours: 3                     Program of Record:  MS in SE, MS in EE

Repeatable for Credit?  ___ D=Yes, not within same term Up to hours  ___ T=Yes, within the same term Up to hours  ___ N=Cannot be repeated for credit

Activity Code (please indicate):  ___ X__ Lecture (LEC) ___ Lab (LAB) ___ Recitation (RCT)  ___ Studio (STU) ___ Internship (INT) ___ Independent Study (IND) ___ Seminar (SEM)

Catalog Credit Format  3 : 3 :0       Course Level:  GF(500-600) ___X__ GA(700+)

Maximum Enrollment: 50            For NEW courses, first term to be offered: Fall 2004

Prerequisites or corequisites: SYST 510 or SYST 520 or permission of instructor

Catalog Description (35 words or less)  Please use catalog format and attach a copy of the syllabus for new courses: Lifecycles in systems engineering and the role of systems integration and architecting in these. Conceptual frameworks for systems architecting. Structure, function, and purpose of systems architecting and integration. Risk management and systems architecting and integration. User requirements and functional specifications in systems architecting

For MODIFIED or DELETED courses as appropriate:

Last term offered:                  Previous Course Abbreviation:  Previous number:

Description of modification:

APPROVAL SIGNATURES:

Submitted by:  ________________________________ email: __________________

Department/Program:  ________________________________ Date: __________________

College Committee:  ________________________________ Date: __________________

Graduate Council Representative:  ________________________________ Date: __________________
**GEORGE MASON UNIVERSITY**  
**Course Coordination Form**

**Approval from other units:**

Please list those units outside of your own who may be affected by this new, modified, or deleted course. Each of these units must approve this change prior to its being submitted to the Graduate Council for approval.

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Graduate Council approval: ____________________________ Date: __________

Graduate Council representative: ______________________ Date: __________

Provost Office representative: ________________________ Date: __________
SCHOOL PROPOSAL TO THE GRADUATE COUNCIL
BY
SCHOOL OF INFORMATION TECHNOLOGY AND ENGINEERING

1. CATALOG DESCRIPTION
(a) SYST 619 / ECE 672 Introduction to Architecture-Based Systems Engineering (3: 3: 0)
(b) Prerequisites: SYST 510 or SYST 520 or Permission of Instructor
(c) Catalog Description:

2. JUSTIFICATION
(a) Course Objectives
Introduce the fundamental concepts of a system of systems and federation of systems. Define the role of architectures in the systems engineering process and introduce various architectural frameworks. Develop the foundations for architecture design, system integration and architecture evaluation.
(b) Course Necessity
Establish the foundations for architecture based systems integration. This is the introductory course for the architecture based systems engineering concentration area.
(c) Relationship to Existing Courses
There is no similar course, especially with the proposed renumbering and modification of the present SYST 572. This course will replace SYST 571.

3. APPROVAL HISTORY
SEOR Department Date:
ECE Department Date:
IT&E Graduate Committee Date:
IT&E Dean Date:

4. SCHEDULING:
The course will be offered every fall semester as part of the SYST and ECE programs.
Proposed Instructors: Prof. Andrew P. Sage, Prof. Alexander H. Levis, Dr. Lee W. Wagenhals or other faculty and adjunct professors, who are qualified in this area.

5. COURSE OUTLINE:
(a) Syllabus
1. System of Systems; Federation of Systems, Coalition of Systems (System Families)
2. Architecture Frameworks
3. Enterprise Architectures  
   a. IT Architectures  
   b. Enterprise Application Integration  
   c. B2B Application Integration
4. Architecture and Integration Lifecycles in SE
5. DOD Series 5000 and JCS 3170
6. DODAF – the three views
7. Joint Technical Architecture (JTA) and the technical architecture view; the Global Information Grid (GIG)
8. Legacy system issues
10. System Integration – problem formulation
11. Architectural risk management
12. Analysis of Alternative (definitions and foundations) architecture and integration strategies

(b) Reading and reference material
   Extensive course notes, a web site, and an evolving text by A. P. Sage and A. H. Levis.

(c) Student Evaluation Criteria

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<td>Midterm</td>
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