

GEORGE MASON UNIVERSITY
Graduate Council NEW Certificate, Concentration, Tack or Degree Program
Coordination/Approval Form

(Please complete this form and attach any related materials. 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. If no coordination with other units is requires, simply indicate “None” on the form.

Title of Program/Certificate,etc: Certificate in Architecture-Based Systems Integration

Level (Masters/Ph.D.): Masters

Please Indicate: _____ **Program** **Certificate** _____ **Concentration** _____ **Track**

Description of certificate, concentration or degree program:

Please attach a description of the new certificate or concentration. Attach Course Inventory Forms for each new or modified course included in the program. **For new degree programs,** please attach the SCHEV Program Proposal submission.

The GMU Architecture-Based System Integration Certificate was created to prepare system engineers for these new demands. Studies cover: formulation of the system integration problem, definition of architecture frameworks, use of structured analysis and object oriented methodologies for the design of architectures, modeling and simulation for evaluation of architectures and approaches to integration. Both defense and industrial applications are considered.

Please list the contact person for this new certificate, concentration, track or program for incoming students:

Dr. K.C. Chang

Approval from other units:

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

Unit:	Head of Unit’s Signature:	Date:
Unit:	Head of Unit’s Signature:	Date:
Unit:	Head of Unit’s Signature:	Date:
Unit:	Head of Unit’s Signature:	Date:

Submitted by: _____ Email: _____

Graduate Council approval: _____ Date: _____

Graduate Council representative: _____ Date: _____

Provost Office representative: _____ Date: _____

Proposal for Certificate in Architecture-Based Systems Integration

Motivation. There is much interest today in the engineering of systems that are themselves comprised of other component systems, and where each of the component systems serves organizational and human purposes. These systems families are often categorized as systems-of-systems, or federations of systems. The design of architectures is a major ingredient in the design of systems families and provides the conceptual basis for achieving system integration. Towards this end, the Department of Defense has issued new regulations for acquisition of systems. These require an architecture-based approach and focus on how a proposed system will be integrated with other existing or planned systems. Industry is expected to follow the new guidelines.

The GMU Architecture-Based System Integration Certificate was created to prepare system engineers for these new demands. Studies cover: formulation of the system integration problem, definition of architecture frameworks, use of structured analysis and object oriented methodologies for the design of architectures, modeling and simulation for evaluation of architectures and approaches to integration. Both defense and industrial applications are considered.

Admissions. Students must meet the standard admissions requirements for the MS/SE program.

Course Requirements. Students must complete six courses (18 credits) with an average grade of B or better. Five of these courses (15 credits) must be the following:

- SYST 611 System Methodology and Modeling
or ECE 521 Modern Systems Theory
- SYST 619 Introduction to Architecture-based Systems Engineering
- SYST 620 Discrete Event Systems.
- SYST 621 System Architecture Design
- SYST 622 System Integration and Architecture Evaluation

In addition, students must choose one elective course (3 credits) from the following list:

- SYST 513 Total Systems Engineering, Reengineering and Enterprise Integration
- SYST 571 Systems Engineering Management
- SYST 573 Decision and Risk Analysis
- SYST 683 Modeling, Simulation and Gaming
- SYST 692 Decision Support for Enterprise Integration
- SYST 694 E-Commerce Architectures

Students who have already taken the equivalent of SYST 611 or ECE 521 may, with permission of the department chair, complete the certificate with only 15 credits

Courses taken for this certificate program may count toward a master's degree in systems engineering, or a Ph.D. in Information Technology. One must be concurrently enrolled in the degree program for courses to count toward both the certificate and the degree.

Status: Approved by the SEOR department on 3/28/04.