GEORGE MASON UNIVERSITY
Graduate Council MODIFIED/DELETED Certificate, Concentration, Track, 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 required, simply indicate “None” on the form.

Title of Program/Certificate, etc: M.S. in Software Engineering (SWE)

Level (Masters/Ph.D.): Masters

Please Indicate: ___X___ Program ______ Certificate _______ Concentration _______ Track

Description of the change in the certificate, concentration or degree program:

See attached documentation

Approval from other units:

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

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Submitted by: ____________________________  Email: __________

Graduate Council approval: ______________________  Date: __________

Graduate Council representative: ______________________  Date: __________

Provost Office representative: ______________________  Date: __________
Proposal for an Upgraded SWE degree
Update October 2004

Approved by ISE Department: May 5, 2004
Approved by IT&E Graduate Committee: September 23, 2004

Rationale

The Master of Science in Software Engineering (SWE) program has been in existence for more than 15 years, with little change. In that time, the field of Software Engineering has grown substantially, in both size and amount of knowledge. It is no longer possible for a student to learn all aspects of Software Engineering, so the lifecycle model of our current curriculum is no longer adequate.

The proposed upgrade for 2005 changes the structure of the program from teaching the entire software lifecycle to a three-tiered structure. In the first, breadth tier, all Software Engineering students will study topics that are considered to be essential for all Software Engineers. In the second, depth tier, students will select three courses from among several concentrations. In the third tier, students will complete their MS degrees by selecting free electives from the remaining Software Engineering courses and other graduate courses within the school of Information Technology and Engineering.

Proposed Catalog Description.

FOUNDATION (no change)
Computer Organization
Data Structures
Discrete Math

Degree Requirements
In addition to the general requirements of the university, the M.S. in Software Engineering requires a minimum of 30 graduate credits. The coursework is divided into three categories: a breadth requirement of 12 hours of core courses, a depth requirement of 9 hours of concentration courses, and 9 hours of elective courses.

1. Core courses (12 credits) are required of all SWE graduates:
   * SWE 619 Software Construction
   * SWE 620 Software Requirements Analysis and Specification
   * SWE 621 Software Design
   * SWE 622 Distributed Software Engineering

2. Concentration courses (9 credits). Students may choose a concentration by taking three courses from one of the concentrations defined by the ISE Department.

   * Software Design
     Three of the following four courses:
     1. SWE 626 Software Project Laboratory
     2. SWE 632 User Interface Design and Development
     3. SWE 721 Reusable Software Architectures
     4. SWE 781 Secure Software Design and Programming
* Software Assurance
  Three of the following four courses:
  1. SWE 623 Formal Methods and Models in Software Engineering
  2. SWE 637 Software Testing and Quality Assurance
  3. SWE 723 Precise Modeling
  4. SWE 781 Secure Software Design and Programming

* Software Management
  Three of the following four courses:
  1. SWE 625 Software Project Management
  2. SWE 626 Software Project Laboratory
  3. SWE 630 Software Engineering Economics
  4. SWE 637 Software Testing and Quality Assurance

* Web Applications
  Three of the following four courses:
  1. SWE 632 User Interface Design and Development
  2. SWE 642 Software Engineering for the World Wide Web
  3. SWE 645 Component-Based Software Development

With permission from the advisor, a student may choose not to take a concentration.

3. Elective courses (9 credits). Students may select the remaining courses from the list of approved courses, including other concentrations, available from the ISE Department and the ISE Web site (www.ise.gmu.edu). Students may choose other graduate electives with the consent of their faculty advisers.

In addition, students may choose between the professional option, consisting of three electives, and the research option, consisting of one elective and a six-credit thesis.