

DEPARTMENT OF ELECTRICAL ENGINEERING & COMPUTER SCIENCE
SUMMARY OF REQUIREMENTS FOR MASTER OF SCIENCE DEGREE IN
COMPUTER ENGINEERING
EFFECTIVE FALL 2008

A minimum of 30 credit hours of graduate work beyond the BS degree is required.

The student must maintain a cumulative total GPA of at least a 3.0 in those courses to be credited towards the MS degree, and a minimum cumulative total GPA of 2.8 in all graduate courses taken at Syracuse University.

Each student's program must **include CIS 675: Design and Analysis of Algorithms and CSE 661: Advanced Computer Architecture**. These courses represent the student's core program and are to be taken as early as possible in the program.

Tracks of specialization are used to regulate elective courses that students must take to complete their graduate work. They are intended to provide a cohesive set of graduate courses. Students must satisfy at least one track by taking at least **four courses** (12 credit hours) specified by the track; two courses must be taken by all students following the specific track and two other courses are elective but specified by the Track. There are three Tracks, namely: Software Systems Track, Security and Assurance Systems Track, and Hardware Systems Track. The Tracks are:

Software Systems Track

- Students must take the following two courses:
 - ❖ CSE 681: Software Modeling and Analysis
 - ❖ CSE 687: Object Oriented Design
- Students select at least two of the following:
 - ❖ CIS 623: Structured Programming and Formal Methods
 - ❖ CIS 625: Computer Graphics
 - ❖ CIS 631: Compiler Design
 - ❖ CIS 632: Modeling Concurrent Systems
 - ❖ CIS 657: Principles of Operating Systems
 - ❖ CSE 643: Computer Security
 - ❖ CSE 644: Internet Security
 - ❖ CSE 682: Software Engineering
 - ❖ CSE 684: Introduction to Artificial Intelligence
 - ❖ CSE 686: Internet Programming
 - ❖ CSE 775: Distributed Objects
 - ❖ CSE 776: Design Patterns
 - ❖ CSE 778: Advanced Windows Programming
 - ❖ CSE 781: Database Management Systems
 - ❖ CSE 782: Models and Metrics in Software Engineering
 - ❖ CSE 784: Software Studio
 - ❖ CSE 787: Analytical Data Mining

CSE 687 is a prerequisite for CSE 775, CSE 776, and CSE 778. CSE 682 is a prerequisite for CSE 782, and either CSE 681 or CSE 687 may be used as the required prerequisite for CSE 784.

Security and Assurance Systems Track

- Students must take the following two courses:
 - ❖ CSE 643: Computer Security
 - ❖ CSE 644: Internet Security
- Students select at least two courses from the following list:
 - ❖ CIS 628: Introduction to Cryptography
 - ❖ CIS 632: Modeling Concurrent Systems
 - ❖ CIS 657: Principles of Operating Systems
 - ❖ CSE 607: Mathematical Basis for Computing
 - ❖ CSE 681: Software Modeling and Analysis
 - ❖ CSE 687: Object Oriented Design
 - ❖ CSE 765: Functional Verification of Digital Circuits
 - ❖ CSE 774: Principles of Distributed Access Control

Hardware Systems Track

- Students must take the following two courses:
 - ❖ CSE 664: VLSI Design Methods
 - ❖ CSE 687: Object Oriented Design
- Students select at least two courses from the following list:
 - ❖ CSE 731: Synthesis of High Performance Integrated Circuits
 - ❖ CSE 764: Advanced Topics in Synthesis of VLSI Design
 - ❖ CSE 765: Functional Verification of Digital Circuits
 - ❖ CSE 771: Sequential Machine Theory
 - ❖ CSE 772: Testing of Digital Circuits
 - ❖ CSE 773: CAD-Formal Hardware Specification, Design, and Verification
 - ❖ CSE 788: Computer Aided Design of Digital Systems: Physical Design
 - ❖ CSE 789: Computer Aided Design of Digital Systems: Logic Design
 - ❖ CSE 864: Topics in VLSI Design
 - ❖ ELE 643: Theory of Semiconductor Devices

Independent Study courses cannot be used to satisfy a track.

Special Topics courses 600-level and above and Masters Thesis may be included in a specific track if approved by the CE Program Committee.

A maximum of 9 credit hours of transfer credit of graduate coursework taken at another university with a grade of B or better may be included in MS programs. **Transfer credit must be approved by petition before the Program of Study is filed.**

A maximum of 12 credit hours taken at Syracuse University before the semester of admission may be included in an MS program provided they are relevant to a program in Computer Engineering and have a grade of B or better.

Late in the first semester, student fills out a preliminary program of study. Early in a student's final semester, a ***Program of Study*** must be submitted on forms available from the department. A ***Diploma Request Card*** must also be submitted at that time.

To maintain full-time status in the EECS Department, students must register for 9 credit hours per semester. Part-time students must complete at least 6 credit hours per academic year.

Programs must include a minimum of 18 credit hours of CSE courses.

Students may select a thesis option or a project option. Thesis students must include in their programs at least one 700-level (or higher) course. Non-thesis students must include at least three 700-level (or higher) courses. **These must all be ELE or CSE courses except that at most one may be a 700-level (or higher) CIS course. *Independent Study courses cannot be used to satisfy this requirement.***

Students electing the thesis option must include CSE 997: Masters Thesis (normally 6 credit hours) in their Programs of Study. Students electing the non-thesis option must include CSE 996: Master's Project (0 credit hours) in their Programs of Study.

The Master's Project must be completed no later than the last semester of full-time coursework.

Not more than 6 credit hours of 500-level courses may be included in the MS program. However, CIS 575: Introduction to Analysis of Algorithms **cannot** be counted as a course in the Master's degree program in Computer Engineering. Students interested in taking a course in algorithms may want to take CIS 675: Design and Analysis of Algorithms.

The Master's Thesis must be prepared in accordance with the Graduate Enrollment Management Center's Instructions for the ***Preparation of Theses and Dissertations*** and must be approved by the thesis adviser. Theses must be presented orally and defended before a faculty panel. The Master's Project summary and report must be prepared in accordance with department requirements (available from the department) and must be approved by the project adviser.

Students may select the remaining courses from the graduate offerings of the Department of EECS or other departments of Syracuse University. Up to two graduate level courses from other departments may be included in the Program of Study if they are approved by the CE Program Committee, by petition, prior to taking the courses.

Students who do not hold a B.S. degree in Computer Engineering or a related field may be admitted to a 60 credit hour program. This program includes the following 30 credit hours of remedial **undergraduate** courses that may be completed in one year:

ELE 231, ELE 232: Electrical Engineering Fundamentals I, II	CSE 381: Computer Architecture
CSE 261: Digital Logic Design	CSE 382: Algorithms & Data Structure
CSE 281: Computer Organization & Assembly Language	CSE 397: CSE 398 Computer Lab I, II
CSE 351: Mathematical Analysis of Digital Systems	CIS 586/CSE 585: Design of Operating Systems

Students who have demonstrated competence in any of the above subjects may request a waiver of the corresponding courses. The remaining 30 credit hours must satisfy the requirements for the MSCE stated earlier.

For more information, the reader is referred to the following web site:

<http://www.eecs.syr.edu/>