MS IN COMPUTING:
COMPUTER ENGINEERING

A student may pursue an MS with (1) a thesis option, or (2) a project option, or (3) a course-only option. The MS program requires 30 total semester hours of graduate coursework (including thesis hours for the thesis option).

TRACK FACULTY
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COURSE REQUIREMENTS
Required courses:
CS/ ECE 6810 Computer Architecture
CS/ ECE 6710 Digital VLSI Design

Thesis option: 2 required, 2 electives
Project option: 2 required, 3 electives
Course-only option: 2 required, 4 electives

* Additional courses on the program of study must be approved by the student's committee.

ELECTIVES	
Two courses must be taken by students doing the thesis option, three courses must be taken by students doing the project option, and four courses must be taken by students doing the coursework option, and Courses selected should be in an area of specialization selected by the student.	
CS 6110	Formal Methods in System Design
CS 6150	Advanced Algorithms
CS 6235	Parallel Programming for GPUs/Many Cores/Multi-Cores
CS 6460	Operating Systems
CS 6470	Compiler Principles and Techniques
CS 6475	Advanced Compilers
CS 6480	Advanced Computer Networks
CS 6490	Network Security
CS 6956	Wireless and Mobile Networks
ECE 5325	Wireless Communications Systems
ECE 5520	Digital Communications Systems

Computer Engineering Track Elective courses: Continued	
ECE 6530	Digital Signal Processing
ECE 6531	Advanced Digital Signal Processing II
ECE 6580	Implementation of Digital Signal Processing
CS/ ECE 6720	Analog Integrated Circuit Design
CS/ ECE 6740	Computer-Aided design of Digital Circuits
CS/ ECE 6745	Testing and Verification of Digital Circuits
CS/ ECE 6750	Synthesis and Verification of Async VSLI Systems
CS/ ECE 6770	Advanced Digital VLSI Systems Design
CS/ ECE 6780	Embedded Systems Design
CS/ ECE 6785	Advanced Embedded Software
CS/ ECE 6830	VLSI Architecture
CS/ ECE 7810	Advanced Architecture
CS/ ECE 7820	Parallel Architecture

Course-only Option:
In this option all the course requirements are fulfilled through graduate courses (no thesis hours). No more than three hours can be Independent Study (CS/ECE 6950).

Thesis Option:
This option involves research on a thesis area and a written thesis submitted to the graduate school. A minimum of six thesis hours are required, and there must be at least 20 classroom hours in the program of study. A maximum of three hours of Independent Study (CS/ECE 6950) is permitted only when it is self-contained and not related to the thesis.

Project Option:
Similar to the coursework option with an independent/special study on a project topic required with a project report submitted to the independent/special study advisor. A minimum of three hours and maximum of six hours of Independent Study (CS/ECE 6950) are allowed.

A maximum of two seminar hours will be permitted for any of the three options.

PHD IN COMPUTING:
COMPUTER ENGINEERING

A PhD student must either already have an MS degree or complete all of the requirements for a course, project, or thesis-based MS degree in CE. The supervisory committees may require additional coursework hours above that required for the MS degree. Also, all students must complete at least 7 hours of coursework at the University of Utah. All students must complete at least 14 hours of dissertation research (CS 7970).

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COURSE REQUIREMENTS

Required courses for students not already having an MS degree:
Same as the requirements for the M.S. in Computer Engineering listed on Page 11 of this handbook.

Required courses for students who already have an MS degree:
At least 7 hours of coursework at the University of Utah determined in consultation with the student's committee.

Each CE graduate student must form a supervisory committee whose members approve the student's program of study and guides the student's research program. A PhD committee consists of five members. The majority of the committee must consist of CE faculty from either SoC or ECE. PhD students are strongly encouraged to have a member of the committee who is outside the University of Utah whenever it is feasible. The committee should be formed by the end of the second semester of enrollment in the graduate program, although a committee may be revised later by petition to the CE committee.

Any SoC or ECE regular faculty member may serve as a supervisory committee chair. Auxiliary faculty may chair supervisory committees if accorded that privilege by the regular faculty and the Dean of the Graduate School. Individuals who are not faculty members may serve on supervisory committees if nominated by the regular faculty on the committee, and endorsed by the CE Committee. The Dean of the Graduate School must grant final approval of all supervisory committees. **A maximum of two seminars hours will be permitted.**