Qualifying Exam Process for CAS Area

The CAS qualifying review will follow the general requirements stated in the ECE graduate student handbook. This document provides an overview of the CAS qualifying review. Additional details (dates, times, etc.) for the current semester can be found at the **CAS Qual web site**:

http://www.comparch.ncsu.edu/qual

General Guidelines:

1. A student entering with an MS degree must take the Qual exam by their third semester. A student entering with a BS degree must take it by the fourth semester, but not earlier than the third semester.
2. If a student fails his/her first exam, he/she will be granted one more chance to take the exam in the following semester.
3. Students are advised to find an advisor prior to taking the exam.
4. Students must be enrolled in ECE 834 during the semester they take the exam. The purpose of ECE 834 is to reduce the regular course load in preparation for the exam.
5. Common exam dates will be selected for all qualifying exam candidates in a particular semester. The dates will be chosen by the committee and will be published at the beginning of the semester.

Exam Procedure:

The student must first register for taking the Qualifying Exam in that semester. The registration deadline is listed on the **CAS Qual web site** under the heading "Important Dates". To register, a student must submit a "Qualifying Exam Registration Form". This is in addition to registering for ECE 834.

A qualifying exam committee which will evaluate the student consists of at least three CAS faculty members and will not include the student's advisor. The exam consists of an oral component and a written component. In order to pass the exam, a student must pass both the oral and written components of the exam, each by a simple majority vote of the committee members.

Written and Oral Components

Written Component:

The written component of the examination includes questions from major areas of CAS. The questions may be closed-ended, in which there is a single solution to the questions, or open-ended, in which there are several potential solutions and the student must argue for his/her chosen solution.

Oral Component:

For the oral component, the student is given up to three papers selected by the committee. The student is expected to present the materials from the papers or a subset of the papers (as specified on the **CAS Qual web site** for the particular semester), and the committee will ask questions related to the fundamental concepts mentioned in the papers to test the student's breadth and depth of mastery of the concepts. The student's ability to organize a quality presentation and to articulate satisfactory answers to those questions will determine the outcome of the oral component of the exam.

In weighting the outcome of the exam, the Committee will take into account the relative importance of different areas to the student's planned research area stated in his/her qualifying exam registration form, i.e. larger weightings will be used for areas directly related to the student's planned research.

Students must individually prepare their presentation slides without assistance from anybody else. Giving or receiving assistance in creating slides is considered cheating.

Recommended Courses

The student is recommended to have taken or currently be taking the following courses (in no particular order):

ECE 463/521

ECE 506

ECE 561

ECE 566

ECE 520

ECE 546

CSC 501

Recommended Reading

The student is recommended to master concepts covered in the following reading materials. Additional reading material suggestions may be listed on the **CAS Qual web site**.

Parallel Architecture:

Fundamentals of Parallel Computer Architecture, textbook by Yan Solihin, Chapters 1-4 and 6-12.

Parallel Computer Architecture, textbook by Culler and Singh, 2nd Edition, Chapters 1-3, 5, 6.1-6.4, 8, 9.1, 10

Microarchitecture:

Computer Architecture: A Quantitative Approach, textbook by Hennessy and Patterson, 4th Edition, Chapters 1, 2, 3, 5, Appendix A-C

Embedded Systems:

Real Time Embedded Systems and Components, textbook by Sam Siewert, 1st Edition, 2007, Chapters 1, 2, 3, 4, 8, 10

VLSI Design:

Digital Integrated Circuits: A Design Perspective, textbook by Rabaey, Chandrakasan, and Nikolic, 2nd Edition.

ASIC Design:

Verilog Styles for Synthesis of Digital Systems, textbook by Smith and Franzon.

Operating Systems:

Operating Systems Concepts, textbook by Silberschatz, Galvin and Gagne.

or

Operating Systems: Internals and Design Principles, textbook by Stallings.