COMPUTER SCIENCE & COMPUTER ENGINEERING GRADUATE STUDENT HANDBOOK

Fall 2013

This guide describes requirements for the Master of Science and the Ph.D. programs offered by the Computer Science & Computer Engineering Department and procedures to be followed in completing the requirements of each degree program. Also included are guidelines and policies for any graduate student on assistantship supported by the CSCE Department.

The Graduate School publishes the *Graduate School Catalog* stating requirements and regulations that apply to all graduate students and also maintains a website: *http://www.uark.edu/depts/gradinfo/*

In some instances, <u>CSCE requirements are more stringent than those of the Graduate School</u>, and in these cases, the more stringent requirements apply. It is the student's responsibility to consult the *Graduate School Catalog* and website, this manual, and his/her major advisor when planning or revising the program of studies.

If there are any doubts regarding the interpretation of any regulation or requirement in the manual, or if there are questions about the graduate program involving matters not covered in this manual, please contact the CSCE Graduate Coordinator.

<u>Registration and Related Topics</u>

Students must register during one of the formal registration periods. Graduate students, returning or currently enrolled, should register during priority registration held each semester. Graduate students on assistantships are <u>strongly encouraged</u> to register during priority registration; late registration may affect tuition waivers and employment processing.

Registration Policy

Students are required to register every spring and fall until they complete the degree requirements <u>including</u> the defense. A student who has not been "continuously enrolled" will have to follow the CSCE Department policy as stated below and be readmitted to the program.

Students who defend a thesis in the summer and were enrolled in the previous spring semester will not be required to register if all coursework and thesis hours are completed. However, students must defend prior to the published deadline for the Graduate School.

Readmission *to the Graduate School is not automatic.*
   1. *Students who have not maintained continuous enrollment in a CSCE Graduate program may be readmitted if:*
      a. *The student has earned at least a 3.0 cumulative grade-point average on all graduate credits attempted during all previous enrollments;*
      b. *The student's graduate status at the end of the previous enrollment was "good standing."*

All requirements for the master's degree must be completed within six years of the first enrollment used for the degree. Absence from the University does not change these time limits.

Enrollment Limits

Under ordinary circumstances, graduate registration is limited to 18 hours for any one semester in the fall or spring, including undergraduate courses and courses audited. The Graduate Dean must approve registration above 15 hours. For registration in the summer, the enrollment limit is 12 hours without approval by the Graduate Dean.

Standard registration for students on assistantship is 6-9 hours in the fall/spring semesters and 3 hours in the summer.

For official enrollment guidelines and status go to: http://grad.uark.edu/dean/enrollment/index.php

Registration Out of Career

Students who wish to enroll in classes for credit outside of his/her career (e.g. graduate students who wish to enroll in undergraduate classes for undergraduate credit) should complete the *Out-of-Career Registration* form from the Graduate School Web site (*http://www.uark.edu/grad*), obtain the appropriate signatures, and return the form to the office indicated on the form. Graduate students are required to obtain prior approval from their advisory/thesis committees to register for a 4000-level course that is **not** listed in the *Graduate School Catalog*.

Attendance

Students are expected to be diligent in the pursuit of their studies and in their class attendance. Students have the responsibility of making arrangements satisfactory to the instructor regarding all absences. Such arrangements should be made prior to the absence if possible. Policies of making up work missed as a result of unexcused absences are at the discretion of the instructor, and students should inform themselves at the beginning of each semester concerning the policies of their instructors.

Academic Review

It is a policy of the Graduate Council that every master's degree and doctoral student be reviewed annually by his/her degree program for progress toward the degree. At a minimum, the review will cover progress in the following: a) completing courses with an adequate grade-point average; b) completing the thesis, dissertation, or coursework requirements; c) completing all of the required examinations; d) completing other requirements for the degree. When the review of each student is completed, the review form will be signed by the graduate student and the department head, as well as other appropriate individuals as designated in the program review policy. This review will be forwarded to the Graduate School, to be included in the student's file.

Appeals and Petitions

Decisions regarding the CSCE programs may be appealed by petitioning the CSCE Graduate Studies Committee. Before petitioning the Committee, a student should discuss the matter with the Graduate Coordinator. To petition this Committee, a student in a CSCE graduate program must submit a written petition to the Graduate Coordinator. A letter of support from the major professor should also be submitted. If the petitioner is not satisfied with the decision, that decision may be appealed to the CSCE Department Head. If a grievance is still not resolved in a manner satisfactory to all parties, the petitioner should refer to the section of the *Graduate School Catalog* entitled "Academic Grievance Procedures for Graduate Students".

The CSCE Graduate Studies Committee cannot change rules and regulations of the Graduate School. A student may appeal to the Graduate School and higher in the administration, again in accordance with the grievance procedures.

Graduate Assistantships – Teaching or Research

Graduate assistantships are available for qualified students in either program and must be applied for through the CSCE Department office. Recipients of these appointments are expected to carry a limited program of graduate studies. For more information on the types of assistantships available consult the Graduate School Catalog. Appointment periods for nine-month graduate assistantships begin the week before classes are scheduled to begin.

Master of Science Degree Programs

The CSCE Department offers two M.S. programs – one in Computer Engineering and one in Computer Science. All rules and regulations of the CSCE Department, the College of Engineering, and the Graduate School must be followed.

Degree Requirements
1. *Thesis option* requires the successful completion of at least six credit hours of CSCE 610V, Master's Thesis, plus 24 credit hours of coursework approved by the candidate's advisory committee. At least 15 of the 24 hours must be CSCE courses at the 5000 level.
2. *Non-thesis option* (coursework option) requires the successful completion of 33 credit hours of coursework approved by the candidate's graduate committee. At least 21 of the 33 hours must be CSCE courses at the 5000 level.
3. The remaining hours (nine for the thesis option, twelve for the project option) may include no more than six hours of transfer work, three hours of individual study, six hours from outside the department, and nine hours of courses at the 4000 level.

Masters students –

Option	Req'd Hrs	# 5000		Options for remaining courses (number of courses)				
				Not 5000+	Individual Study	Outside Dept	Transfer	4000 level
Thesis	24	≥ 5		≤ 3	1	2	2	3
Coursework	33	≥ 7		≤ 4	1	2	2	3

Advising

All masters' students are initially assigned to the Graduate Coordinator for advising. The Graduate Coordinator is responsible for advising the student prior to the initial registration and to assist the student in forming an Advisory Committee.

Prior to the second semester registration the student is responsible for completing the Advisory Committee form (from http://csce.uark.edu/graduate), which serves notice to the Graduate School which faculty are serving on the committee.

The requirements for the formation of either the Advisory Committee or the Thesis Committee for students in either the computer science program or computer engineering program is that the majority of the committee members must be from the program in which the student is admitted. The committees must have at least three current faculty members within the department who have received Graduate Faculty I or II

status. All members of the Advisory and Thesis committees must be members of the University of Arkansas Fayetteville Faculty at the time of the thesis defense.

Once the Advisory Committee form has been submitted and a student wishes to change any member of that committee – a new Advisory Committee form will have to be submitted to the Graduate Coordinator, along with written statements from the committee member(s) agreeing to step down. The advisory committee, once chosen, is responsible for advising the student.

Students who are completing the thesis option are required to also complete a Master's Thesis Title and Master's Thesis Committee form. The Master's Thesis Committee and the Master's Advisory Committee often are the same but this is not a requirement. See the current Graduate School Catalog for procedures and deadlines for Master's degrees and for Doctoral Degrees.

The procedure for registering for class is as follows:

- The student reviews their proposed courses with his/her faculty advisor or major professor. Progress towards the degree is discussed at that time.
- The student meets with the Graduate Coordinator, who reviews the course selections and, if there are no problems, the advising hold will be removed.

Transfer of Credit

If a student wishes to transfer credits from another graduate school in the United States recognized by the University of Arkansas, he/she must first supply the Dean of the Graduate School and the Graduate Coordinator with official transcripts. Next, the student's faculty advisor must indicate approval of the transfer credits by memo to the Graduate Coordinator who will forward it to the Dean of the Graduate School.

Only courses with a grade of B or above may be transferred, and a maximum of six credit hours may be transferred. Transfer of credit from an institution from outside the U.S. is not permitted. All students contemplating the transfer of graduate credit from other universities should consult the Graduate School.

Comprehensive Exam

All CSCE master's students must pass an oral examination and defense of the thesis or coursework option in at most two attempts. The first attempt may not occur before all of the following qualifying conditions have been satisfied:

- Candidates must have completed at least 21 hours for the thesis option or 24 hours for the coursework option that are applicable toward the degree.
- The candidate's cumulative grade-point average on all graduate-level courses must be 3.0 or above.
- Any deficiencies assigned upon admission to the program must be removed.
- Any other conditions that have been specified by the student's advisory or thesis committee must be satisfied.

M.S. Thesis Guidelines

All candidates for the M.S. degree, in either program, choosing the thesis option must file *Master's Thesis Title* and *Master's Thesis Committee* forms at least three months prior to planned graduation. The forms are submitted to the Graduate Coordinator. The student is urged to consult with his/her thesis committee on a regular basis during the period of research to keep the committee informed as to the progress and to offer additional guidance.

The student should obtain a copy of the latest *Guide for Preparing Theses and Dissertations* and the current *Instructions* and *Calendar for Graduate Students* from the Graduate School office or web site – see *http://www.uark.edu/depts/gradinfo/*. Check the Graduate School website for submission requirements and due dates. These dates are posted on the Graduate School website (http://grad.uark.edu). One electronic copy of the thesis or dissertation should be sent to srh@uark.edu for departmental records.

Coursework Defense

For students who have chosen the coursework option the comprehensive exam is an oral examination covering the 33 hours of coursework which satisfies the degree requirement.

Thesis Defense

All candidates who chose the thesis option for the M.S. degree must present a thesis to their thesis/advisory committee during the last semester of study. The student is required to make an oral presentation of his/her work. Based upon the thesis/advisory committee's recommendation the student will either receive a "Pass" or will be asked to complete further work. A simple majority of the student's thesis/advisory committee must vote to "Pass" the defense/report.

Since the thesis defense fulfills the requirement of a Comprehensive Examination (see current *Graduate School Catalog*), the examination may include other aspects of the candidate's graduate work. All members of the thesis committee and advisory committee must participate in the thesis defense unless the Dean of the Graduate School has granted an exception. While this examination is not typically open to the public, the student's committee chair may, with the approval of the student, open the defense to selected members of the public.

Probation and Dismissal

In addition to the policy for probation and for academic dismissal from the Graduate School (see *Graduate School Catalog*), the CSCE Faculty have adopted the following policy governing the students in any CSCE graduate program:

"Immediately after a semester in which a student receives a grade less than B, the student must contact his/her advisor and the Graduate Coordinator to discuss the consequences and options available to him/her. Their graduate advisor and the CSCE graduate program coordinator will select the student's classes for the following semester."

"If a second grade lower than B is received the student will be terminated from the program. The student may appeal the termination to the Graduate Studies Committee. If the student is allowed to remain in the program the student should expect to be required to repeat one or more classes in which a grade less than B was received as well as other possible requirements."

Graduation

In order to be eligible for graduation, a student must:
- have satisfactorily completed the program of study with a grade point average of at least 3.0
- have passed the thesis defense/comprehensive exam
- have completed all requirements for the M.S. degree within six (6) consecutive calendar years of the date of his/her first enrollment in the program. Failure to complete requirements within this period will result in the removal of the student from the program.

- meet any requirements, in addition to the above, that may be established by the Graduate School or the CSCE Department.

Ph.D. Degree Programs

The CSCE Department offers Ph.D. programs in Computer Science and in Computer Engineering. All rules and regulations of the CSCE Department, the College of Engineering, and the Graduate School must be followed.

Requirements for the Doctor of Philosophy Degree in Engineering and in Computer Science

In addition to the requirements of the Graduate School, the following departmental requirements must be satisfied by candidates for a Doctor of Philosophy degree with a major in either computer engineering or computer science.

1. All students must complete a minimum of 72 semester hours of graduate-level credit beyond the bachelor's degree, including a minimum of 42 semester hours of course work and a minimum of 30 semester hours of dissertation research credits.

2. A minimum of 30 semester hours of course work must be at the graduate level (5000 or above). The remaining 12 hours may include no more than six hours of transfer work, three hours of individual study, six hours from outside the department, and six hours of courses at the 4000 level.

PhD students –

Option	Req'd Hrs	# 5000		Not 5000+	Options for remaining hours			
					Individual Study	Outside Dept	Transfer	4000 level
w/Masters	18	≥ 4		≤ 2	1	1	0	0
w/o Masters	42	≥ 9		≤ 5	2	3	2	3

3. Upon recommendation of the student's advisory committee, a student who has entered the Ph.D. program after a master's degree may receive credit for up to 30 semester hours. If the 30 hours includes master's thesis research, the advisory committee may credit up to six hours of thesis research toward the minimum dissertation research requirement.

4. Complete a minimum of nine semester credit hours of course work in a set of coherent courses in a related subject area approved by the student's advisory committee.

5. Earn a minimum cumulative grade-point average of 3.0 on all graduate courses attempted.

6. Satisfactorily pass both a written and oral qualifying examination.

7. Complete and defend a dissertation on some topic in the student's major field of study.

8. Satisfactorily pass a final comprehensive oral examination.

Chronological Guide

The major milestones to obtaining the Ph.D. degree are listed in this section. Most steps are discussed in greater detail in the *Graduate School Catalog*. Copies of any forms required are found on the CSCE website.

- Determine a Ph.D. major professor. (A condition for admission to Ph.D. program).
- Form a Ph.D. advisory committee. (Prior to second registration.)
- Take the *Qualifying Examination*. (See below concerning this exam)
- Pass the Examination for Candidacy – dissertation research proposal defense. (At least one year before completing all other Ph.D. requirements.)
- File a *Dissertation Title* form and *Dissertation Committee* form. (At least one year before completing all requirements.)
- Announce of the Dissertation Defense. (At least 10 days before examination, date must be announced with CSCE and Graduate School.)
- Pass the Oral defense of the dissertation
- Submit the dissertation
- Apply for graduation through the Graduate School

It is the responsibility of the student to see that all forms are properly approved and submitted in a timely manner. Copies of all Ph.D. forms are on the web and available from the departmental office. It is to the student's advantage to complete each step as early as possible in his/her work. In particular it is strongly recommended that the first five items be completed as soon as possible.

Choice of Doctoral Advisory Committee

Each student shall submit a *Doctoral Advisory Committee* form to the Dean of the Graduate School through the Graduate Coordinator as soon as possible after acceptance into the program. The Doctoral Advisory Committee must consist of at least four current members of the Graduate Faculty. At least one member of the Doctoral Advisory Committee must be outside of the CSCE department. All members of the Doctoral Advisory Committee must be members of the University of Arkansas Fayetteville Faculty at the time of the dissertation defense. Ad Hoc members may serve on committees with approval from the CSCE Department.

Residency Requirement

A student must fulfill a residency requirement by completing a minimum of two consecutive semesters of full-time graduate study (9 hours or more per semester), either fall-spring, spring-fall, spring-summer, or summer-fall. For a Graduate Assistant, this requirement is six semester hours per semester for 50% appointments and 9 semester hours per semester for 25% appointments. During this period of residency, the student must be continually involved on a full time basis with the academic, scholarly, and research activities of the Computer Science and Computer Engineering Department.

For complete details for establishing residency consult the Graduate School.

Qualifying Examination

Philosophy
Any person earning the Ph.D. in the field of Computer Science or Computer Engineering should be able to teach the required courses in an undergraduate CS or CE curriculum. Further, the person should be able to advance the state-of-the-art through research in his/her field of specialization. It is on these fundamental assumptions that the structure for general examinations during the course of Ph.D. study in the Computer Science and Computer Engineering Department is based.
Purpose
A written examination to insure an adequate undergraduate preparation for Ph.D. studies and adequate M.S. preparation in the student's area of specialization.

Written Examination
All Ph.D. students in Computer Science and Computer Engineering take the written exam for their program of study. The exams cover undergraduate Computer Science or Computer Engineering topics. Sample tests from previous exams are available for review; contact Susan Huskey (srh@uark.edu) to request copies. The Qualifying exams will be scheduled early in the spring semesters. Each exam is two hours in length.

The examination for computer science consists of examinations in Algorithms, Operating Systems, Formal Languages and Database Management.

The examination for computer engineering consists of examinations in Operating Systems, Systems Synthesis, Embedded Systems and Computer Architecture.

Structure
1. The professor most recently teaching the covered course will be asked to prepare questions and normally will grade that section. The questions should be consistent with the contents of the course presently taught, with the current text, and with the current outline provided to the student taking the test. Terminology and symbols will be consistent with the textbook currently being used.
2. The Graduate Studies Committee as a group will collect and review all qualifier examination problems prior to their use and oversee the grading process.

Grading
In order to pass the exam unconditionally, a student must score at least 60% in each subject taken. A student who is required to take the exam but does not do so will be considered to have failed the exam. Results of the exam will be available approximately two weeks after completion of the exam.

The Ph.D. Qualifying Examination must be taken no later than the end of the first year of study for students admitted to the program with a master's degree in computer engineering or computer science and no later than the end of the third year for students admitted to the program without a master's degree. Students admitted to the program with a master's degree in a field other than computer engineering or computer science may request an exception to this policy.

The Qualifying Examination is scored Pass or Fail on each of the four sections of the examination. If a Fail is assigned on any section of the examination, then the student must repeat those sections at the next administration of the examination. A second failure will terminate the student's course of study in the doctoral program.

Continuous Enrollment
Once the Qualifying Examination has been passed the student must maintain continuous enrollment in the PhD program, this includes summer sessions. To satisfy the requirement in the summer a student must enroll in at least one hour of dissertation.

Proposal Defense
The purpose of the proposal defense is to insure that the student has adequate graduate academic training to undertake a meaningful research effort in the student's chosen area of specialization and to critique the student's proposed research endeavors. The exam is taken after the student has completed most or all of the course work and at least one year before applying for graduation.

The results of the examination may be:
- unconditional pass
- pass subject to condition
- failure with option for re-taking the exam, or

- failure with dismissal from the Ph.D. program.

The results of the Proposal Defense must be reported by memorandum from the student's Major Professor to the Graduate Coordinator, the CSCE Graduate Studies Committee and the Graduate School.

Upon satisfactory completion of this examination, the student is admitted to Candidacy and may proceed to work toward completion of the remaining requirements of the degree. After this exam has been passed, the student must take at least one hour of CSCE 700 each semester and one hour during the summer session until the work is completed whether the student is in residence on campus or not. Each student must form a doctoral supervisory committee before registering for dissertation hours.

For each semester in which a student fails to register without prior approval of the Dean of the Graduate School, a registration of three hours will be required before the degree is granted. Please see the *Graduate School Registration and Leave of Absence Policy*.

Doctoral Dissertation Title and Dissertation Committee Forms

At least one year before the final examination (Dissertation defense), the assignment of the topic and title of the dissertation is determined and the proper forms are forwarded to the Graduate School for approval.

Changes of the title may be submitted by memorandum to the Graduate School until immediately before graduation; however changes submitted less than four months before graduation may not appear in the Commencement Program.

Dissertation
When the student has completed the dissertation to the satisfaction of the major adviser, then copies are forwarded to the Advisory Committee and the dissertation defense is scheduled. The major adviser will forward to the Dean of the Graduate School and the CSCE Graduate Studies Committee, not less than ten days before the date of the final examination, an abstract of the dissertation accompanied by a memorandum announcing the day, time, and place of the oral examination. The examination is open to the public.

The purpose of the final examination is to insure that the student has performed Ph.D. level research and has communicated the scope and results of his/her research in written form that would be acceptable to the scientific community. While the examination will be primarily concerned with the field of the dissertation, it may also include other aspects of the candidate's graduate work. The examining committee shall consist of the student's advisory committee and others who may be included at the discretion of the major adviser and the Dean of the Graduate School. Grades assigned will be one of the following: pass, do further work and re-examine by the advisory committee, do further work approved by the major adviser, and failure and dismissal from the Ph.D. program. The candidate's Major Adviser will report to the CSCE Graduate Studies Committee, Graduate Coordinator, and to the Graduate School the results of the dissertation defense.

Submission of Dissertation and Application for Graduation
The student should consult the Graduate School for deadlines for submission of the dissertation and for application for graduation. The Graduate School determines the style of the dissertation. A *Guide for Preparing Thesis and Dissertations* is available from the Graduate School:
http://www.uark.edu/depts/gradinfo/dean/thesisguide.html.