

Guidebook for Graduate Students

Computer Science Department

University of Kentucky

March 9, 2007

Welcome to Lexington and to the University of Kentucky Computer Science Department! The purpose of this guidebook is to present a lot of different information under one cover. The guidebook contains

- The rules and regulations concerning graduate students, the director of graduate studies, and the graduate school.
- Syllabi for breadth and depth exams.

This guidebook is likely to be updated periodically. Please make suggestions about how it can become more useful.

The Department of Computer Science offers programs of study leading to the Master of Science and Doctor of Philosophy degrees. Admission to these programs is highly competitive and based upon academic record, GRE scores, and letters of recommendation. It is strongly suggested that applicants present evidence of competence in computer science as well as of mathematical maturity.

Since very few specific courses are required for the graduate degree programs, all candidates in MS program are expected to demonstrate proficiency in the fundamental areas of computer science by taking four *core* courses, see part III.A below. Participation in departmental seminars is also required.

Thesis (Plan A) and non-thesis (Plan B) options are available in the program leading to the Master of Science degree. A project is required of non-thesis candidates. No language requirement (other than proficiency in English) is mandated.

The doctoral program in Computer Science is a research degree granted primarily on the presentation of a substantial research achievement. To be admitted to candidacy for this degree, candidates must satisfy the requirements of the Graduate School, and pass the qualifying examination. This examination consists of written and oral sections covering breadth in computer science as well as depth in a specific area. Proficiency in a foreign language is no longer required.

Students admitted to the doctoral degree program in Computer Science who hold a prior Master's degree in Computer Science from another institution are not eligible to receive a U.K. Master's degree in Computer Science. In special circumstances and in the case of students who passed the breadth and depth exams, the DGS may petition the Graduate School for a waiver of this policy.

Guidelines for graduate students in CS

This document contains a wealth of information about the academic life of graduate students. It uses the following abbreviations:

CSD: Computer Science Department
 DGS: Director of Graduate Studies: Grzegorz W. Wasilkowski
 DGSS: Secretary for Director of Graduate Studies: Martha Wells
 DUS: Director of Undergraduate Studies: Anthony Q. Baxter
 GGPA: Grade-point average (cumulative over grad courses)
 GRE: Graduate record exam
 GS: Grad School
 GSD: Grad School Dean: Jeannine Blackwell
 INS: Immigration and Naturalization Service
 ISO: International Student Office
 Dee: Dee Fuhs (staff assistant)
 PB: Post baccalaureate status
 RA: Research assistant (from a faculty grant)
 TA: Teaching assistant (from the GS; amount determined by College)
 UK: University of Kentucky.

We believe this document to be accurate, but the official documents of the CSD, GS, and UK take precedence in all matters of disagreement. The Graduate School Bulletin

<http://www.research.uky.edu/gs/bulletin/bullinfo.shtml>

is the most comprehensive document describing the graduate studies at UK.

I. ADMISSION

- A. Deadlines** Application materials from international students and/or from students wishing to be considered for a Teaching Assistantship should be on file by the following dates: February 1 (for Fall semester), June 15 (for Spring semester), and October 31 (for Summer sessions). The application materials from domestic students should be on file at least one month prior to the start of a semester. The deadline for the fellowship application is February 1.
- B. Conditional admission.** A student may be admitted conditionally. Typical conditions are: high GGPA, number of credits to be taken, scores on GRE. The GS will police conditions and review them by the end of the semester.
- C. Graduating UK seniors.** Seniors needing fewer than 6 credits toward graduation can apply for "Deficiency Graduate Student" status that allows them to apply graduate credits beyond the ones needed for the undergraduate degree to the graduate program. They may take no more than 12 credits during that semester.
- D. University Scholars Program.** Gifted and highly motivated CS undergraduate students can integrate the senior year with the MS study to have up to 12 graduate hours counted for both BS and MS degrees. To qualify, GPA of 3.5 in CS and 3.2 overall is required.
- E. Admission from other UK programs.** The student makes a request to the GS by letter for a change from one program to another. This letter is equivalent to filling out a new application (without fee). The GS refuses to process such applications until the end of the first semester of the student's graduate career.
- F. Admission to CS PhD program from CS Masters program.** The student must write a letter to the DGS stating the intentions of getting a PhD. There is no deadline for such a status change, nor must a student finish the Masters before switching to the PhD. CSD Masters students may count all their UK credits taken for a Masters (except for CS768 and any credits transferred from PB) towards the first and even second year of PhD residency once they enter the PhD program and no Masters degree had been awarded.
- G. Concurrent degrees**

1. Students may be enrolled simultaneously in degree programs from several departments, subject to the written approval of the DGS of each department and the GSD.
2. Students who wish concurrent degrees must write the GS requesting that their admissions materials be forwarded to the new department.
3. At most 9 credit hours of work may be counted jointly toward two degrees. The DGS of both departments must agree in writing to the GS about which courses are counted jointly.

H. Re-admission. After any hiatus (including probationary dismissal) other than just a summer, a graduate student needs to apply to the GS for re-admission. The GGPA and course credits are carried over from the previous time the student was enrolled.

I. CS PhD students getting CS Masters degree. A PhD student may be awarded a Masters degree after passing the qualifying exam, but the student's advisory committee must approve, and the DGS must write a letter of approval to the GSD. Note however the following rule **K**.

J. Students with prior CS Master's degree. Students admitted to the doctoral degree program in Computer Science who hold a prior Master's degree in Computer Science from another institution are not eligible to receive a U.K. Master's degree in Computer Science. In special circumstances and in the case of students who passed the breadth and depth exams, the DGS may petition the Graduate School for a waiver of this policy.

II. MASTERS DEGREE REQUIREMENTS

A. Core Courses. Passing four *core* courses, two from each of the following two groups: **(a)** CS505 (Databases), CS541 (Compilers), CS570 (Systems), CS571 (Networks), and **(b)** CS515 (Algorithms), CS537 (Numerical), CS575 (Theory). The final grades in each course must be **B** or higher.

B. Credits. A Masters degree needs either **(option A)** 24 credit hours and a thesis (no need for thesis credits), or **(option B)** 30 credit hours and a project (the 30 hours may include CS610). For either option, at least half of the credit hours must be in higher than 500-level courses (excluding CS768 or CS680). Courses from other departments require a prior DGS approval. All courses must have grades (no pass/fail).

C. Course load during the last semester. It is not necessary to take a full load during the last semester, even for international students (but a form is needed) and/or TAs.

D. Masters committee. DGS and the professor who supervises the project or thesis sets up the committee. There are three members; at least one must be a full member of the graduate faculty.

E. No remaining incompletes.

F. Formal masters exam. All Masters students need to take the Masters exam that is related to the thesis or the project, depending on the student's option. There is a form that lists committee members, credit hours, number of 600-level courses. The student should get the form from the DGSS, fill it in, and give back to the DGSS at least three weeks before the exam. The form will not be processed unless all incompletes are resolved and all requirements have been met.

G. Enrollment. Students need not be enrolled in the semester they take the masters exam and/or receive a Masters degree.

H. Time limits. International students have 2 years (4 semesters) to complete the study. Domestic students enrolled prior to the Fall 2005 have 8 years to complete all requirements for the degree, but extensions up to additional 4 years may be requested. Domestic students first enrolled in a master's/specialist program in the fall 2005 semester and beyond will have 6 years to complete all requirements for the degree, but will still have the opportunity to request extensions up to additional 4 years for a total of 10 years.

III. PhD DEGREE REQUIREMENTS

- A. Advisor.** When entering the program, each PhD student is assigned a (preliminary) advisor whose role is to help in selecting courses and choosing the research area. The student should choose the research area and find a real advisor as soon as possible.
- B. PhD advisory committee.** PhD students need to have advisory committee formed (by the DGS in consultation with the advisor) at least one year before the qualifying examination. It consists of at least 4 members: the advisor serves as the chair of the committee, one person is from an outside department, at least 3 others (including chair) must be full graduate faculty. The core of 4 must all be members of the graduate faculty. A new committee can be formed if a student switches advisors.
- C. Plan of study.** The advisory committee must agree on a plan of study, which suggests courses and papers that the student must take or read/produce. It also decides on the form of the qualifying examination.
- D. Residence credit for a PhD.** PhD students must spend two years (36 credits, including audits, undergraduate classes, and classes outside CSD, but not including courses taken pass/fail) in residence before the qualifying exam. CSD Masters students may count all their UK credits taken for a Masters (except for CS768 and any credits transferred from PB) towards the first and second year of residency once they enter the PhD program if no Masters degree has been awarded. The DGS may ask the GS to waive the second year of residency for exceptional students. Neither CS749 nor CS769 may be taken before qualifying exam (unless the qualifying exam is slated for first 6 weeks of same semester).
1. **First year.** Either (a) Masters at UK, (b) 18 grad hours at UK, or (c) transfer of residence credits from an awarded Masters at an accredited domestic (not foreign) school.
 2. **Second year** Either (a) two consecutive semesters (may include summer) enrolled with at least 9 grad credits per semester, (b) three consecutive semesters enrolled with at least 6 grad credits per semester, or (c) 24 grad credits taken within 3 consecutive academic or calendar years, no more than 9 of which are in summer sessions; short courses don't count. All courses have to be taken at UK.
- E. Two breadth and one depth exams** should be chosen from the following five areas that are listed below in three groups: **GROUP 1:** AI and Theory, **GROUP 2:** NA and Comp. Vis./Graph., **GROUP 3:** Systems. The three exams should be in areas that belong to three different groups. The Depth exam should be in the research area approved by the student's advisory committee. (Students admitted to the program before Fall 2001 may follow the old rule, i.e., to choose the three exams from the following four areas: AI, NA, OS, TH.) The Depth exam should be individualized to the research focus of the student and can be given whenever the student feels being ready. For that end, the advisory committee should prepare in advance a specific syllabus. The Breadth exams are of a general nature and will be given twice a year: in the beginning of Spring and Fall, provided that there are student wishing to take them. (A month before the scheduled time of an exam, the DGS will poll students to see if the exams should be given.) All three exams are written and they need not be taken simultaneously. The syllabi are provided at

<http://www.cs.uky.edu/graduate/syllabi.html>

The students are expected to pass the exams within the first 4 semesters. However, in the worst case, the following limits should not be extended:

1. **Number of sittings.** A student may take exams in each GROUP no more than three times. Students are considered to have sat for any exam that they attend and for which they get an exam sheet. (Students admitted to the program before Fall 2002 may follow the old rule, i.e., to take each exam no more than twice.)
2. **Real-time limitation.** All three exams must be finished by the end of the fifth year after the student enters the graduate program.
3. **Virtual-time limitation.** All three exams must be finished by the end of the semester following the one during which the fifteenth graduate-level CS course has been passed.

F. No remaining incompletes.

G. Qualifying exam. After two years of residency, the completion of the requirements above, and any other requirements (such as courses and research papers) imposed by the student's advisory committee, the student becomes eligible for a qualifying exam. The oral qualifying exam is scheduled by the DGSS through the Grad School, and **must be attended by all members** of the advisory committee. Exams require a 3-week minimum lead time for the GS to act. The qualifying exam must be taken within one semester of finishing all depth and breadth examinations.

H. The year after the qualifying exam, old rules. If the qualifying exam is taken during the first six weeks of a semester (or third week of the 8-week summer session), this year starts at the start of that semester; otherwise it will start in the next semester. The student must sign up for a full-time year (two semesters). The only options are 9 credits of CS769, 6 credits of CS769 and 3 of other courses, or 6 credits of CS769 and 6 of other courses. The summer may be used for residency credit: 3 hours during the four-week term and 6 hours during the eight-week term.

Years following, old rules. CS769 (or CS749; see below) for 0 credits must be taken every semester. Registration is automatic after the first semester at 0 credits. In addition, the student may take other classes. UK gets money for all PhD students past quals who take CS769. CS749 is for international students and domestic students who need to prove physical presence on campus (typically to maintain a loan deferment). It requires a letter from DGS stating the student is working half to full time on the dissertation and has completed two semesters of CS769.

I. Years after the qualifying exam, new rules. Students first enrolled in the PhD program in the Fall 2005 or later are required, after completing the qualifying examination, to enroll in CS 767 *Dissertation Residency Credit*, a 2-credit hour course, after completing the qualifying examination. They will be charged at the in-state tuition rate plus mandatory fees in each term (Spring and Fall) until the completion of the study. At the very minimum, students will have to take CS 767 for at least two semester before they can graduate. Students enrolled prior to Fall 2005 may opt for taking CS 767 provided they did not pass yet the qualifying examination. Students who are readmitted to the program in Fall 2005 or later have to follow the new rules.

J. Time limits, new rules. (Students first enrolled Summer 1992 or later, and other students opting for this rule): All degree requirements for PhD must be finished within five years of the end of the semester in which the qualifying exam is passed. After that period, the student needs to re-take the qualifying exam and the depth/breadth exams and the DGS must petition the GS to allow an additional period (not to exceed five years). No extensions beyond 10 years are allowed.

K. Time limits, old rules. All activities used to satisfy the PhD requirement (breadth, and depth exams, qualifier) must be completed within 8 years preceding the proposed date of graduation.

L. PhD Oral examination. The final hurdle is the PhD oral exam. The student submits three forms to the DGSS: (1) Notification of the Intent to Schedule a Final Examination (1 month before exam). (2) Request for Final Doctoral Examination (3 weeks before exam). (3) Dissertation Approval Sheet (submitted along with #2, signed by the majority of the advisory committee, accompanied by a typed, paginated pre-exam copy of the dissertation with all sections complete).

IV. COURSES

A. Advising. Prior to registration or pre-registration, students are encouraged to discuss with DGS/advisor their schedule for next semester.

B. Pass/fail. No graduate-level course (400G or higher) may be taken Pass/Fail. All courses must be taken for grades.

C. Repeat option. A student may exercise once during the graduate career the option to repeat a course and have only the second time count for credit and towards the GGPA. The student should fill out the appropriate form that can

be obtained from the GS. If you re-take a course but do not invoke the repeat option, both grades count towards the GGPA.

D. Courses outside major. There is no set rule concerning the number of courses that can be taken outside the major. However, all such courses have to be a prior approved by student's advisor and DGS.

E. CS612, independent work. This course may be repeated to a maximum of 9 credits. Students taking the course must enter into an agreement with the professor with whom the student is working at the beginning of the semester. This agreement, preferably in writing, stipulates what the student is expected to do and by when. If such an agreement is lacking, professors are perfectly justified in giving students an E in these courses. If no professor claims a student signed up for one of these courses, the student is given no grade at all. A missing grade will prevent graduation, and the class cannot be retroactively dropped.

F. CS610 and Masters Project. The following grading policies were approved by the Faculty in Summer 1999.

F.1 CS610 is not a required course.

F.2 The grade in CS610 (for students taking the course) will reflect student's performance during the whole semester. Specifically, the grade will depend on: (a) initial write-up, (b) midterm progress report, (c) final project. It will not depend on the final examination.

F.3 Each MS project (regardless of whether it is performed as CS610) should require the amount of work that is approximately equal to taking a 600-level course. It should require a programming component, testing/verification as well as final write-up and presentation. Moreover, at the beginning of the project, a student should prepare and post on Web a write-up of the project that would provide, in particular, the techniques to be used and specific goals with a time table. The student should also provide the advisor with a written progress report in the middle of the semester.

G. Add/drop. The DGS must sign add/drop slips. In general, they are signed without question. However, international students should generally not drop below 9 credits, and TA's are in danger of losing their TA position if they don't progress at a reasonable rate. Students enrolled for fewer than 9 credits do not endanger their health benefits.

H. Graduate courses in other departments. Graduate students on one department generally need an override to register for graduate courses (600-level) in other departments.

I. Incompletes. The student need not be enrolled at the time the incomplete is made up.

J. Limit of time (statute of limitations). Courses taken more than 8 years before the degree do not count for the degree. DGS may request GSD to increase this window. The GSD needs approval from the Graduate Council to increase the window beyond 10 years. It cannot be increased beyond 12 years. Courses that fall outside the window still count in the GGPA, but do not count for graduate credit and may be repeated without invoking the repeat option.

K. Probation, low GGPA. A GGPA of 3.0 is required for graduation. GGPA less than 3.0 puts the student on probation if the student has completed 12 or more hours of graduate course work. Students on probation may not serve as TAs nor hold fellowships from the GS. After one full semester on probation (or 9-credit equivalent), GS does not allow student to continue unless GGPA is at least 3.0. DGS may ask GS to allow a longer probation. After dismissal for these reasons, student may apply for re-admission after two semesters (one of which may be the 8-week summer term).

V. PROPER BEHAVIOR

A. Plagiarism. All academic work, written or otherwise, that you submit is expected to be the result of your own thought, research, or self-expression. It is a serious offense to allow other students to copy your work or to copy

the work of other students (even if it is in a public computer file) unless the instructor of the course explicitly permits such activities. If you borrow ideas, wording, or code from other sources, you must acknowledge that fact or you have committed plagiarism. (Some of this text is taken from the EDP202 plagiarism guide.) & These offenses are punished quite strictly. The minimum punishment is an E grade that cannot be removed by the repeat option.

- B. Responsible use of computers.** Respect the privacy of others. Don't try to gain access to the files of another user without clear authorization (such as public access permission). Don't try to intercept network communications (including mail). Don't build programs that secretly collect information about their users. Don't attempt to obtain unauthorized privileges. Don't try to alter the integrity of the software (by using unauthorized accounts, impersonating others, cracking passwords, modifying others' data or programs). Don't copy programs for redistribution outside the department (even if within UK) without authorization. Don't use our computers for immediate financial gain. Inform the staff if you detect others violating these principles.
- C. Computer privacy.** The staff and faculty will generally not attempt to read your protected or encrypted files and directories unless you explicitly permit it, except if they need to in order to perform their function or if there is reasonable suspicion of your violating the plagiarism or responsible computer use guidelines. Realize that we keep archival backups on a regular basis and that mail and protected (or even encrypted) files and directories are not secure. Therefore, it is unwise to keep confidential material on the computer.

VI. CREDITS

- A. Academic load** The normal load during any semester is 9 credit hours. DGS can override. However: (a) an approval of GSD is needed to exceed 15 credits; (b) no more than 9 credits per 8-week summer session, and 4 credits per 4-week summer session.

B. Credit transfer

1. **How many.** Maximum number of credits allowed (effectively 9 hours) = $\max(9 \text{ hours}, 25\% \text{ of semester hours required for degree (not counting thesis credit)})$. The GSD can override the 9-credit max in some cases (such as PB sometimes). A course that earned n credits on a quarter scheme transfers as $2n/3$ credits in our semester scheme.
2. **When.** The credits must not be more than 8 years old. The transfer cannot happen while the student is on academic probation at UK.
3. **Where.** The credits must come from an accredited American institution. They may come from a previous graduate degree at UK.
4. **Exceptions.** Older or foreign credits can be transferred based on passing a course exam, but students will have to pay for such credits.
5. **What.** Credits must not be in independent work, research, or thesis. Grades must be A or B. The course may be from another UK program in which the student has already received a degree.
6. **Effect.** A transferred credit counts towards the degree requirements, but the grade is not transferred. Transferred courses do not affect the GGPA. It is permissible to transfer high-level (600, 700-level) credits.
7. **How.** DGS requests GSD to allow transfers. (GSD usually does.) The letter from the DGS includes a) the UK equivalent course b) original catalog description c) rationale if not a direct Computer Science transfer (example: a course in materials science dealing with Ga and Si compounds used in chips).
8. **Graduate students transferring into CS from elsewhere on campus** automatically transfer graduate-level (including non-CS 400G) credits. If the student will not receive a degree in the other program, there is no limit on the number of courses. The DGS may choose to disallow certain non-CS courses from applying to the CS degree.

9. **PB credits.** Up to 9 graduate level (including non-CS 400G) PB credits may be transferred. It is wise to transfer 600-level credits first.

VII. INTERNATIONAL STUDENTS

- A. Credits, minimum.** INS requires 9 credit hours for graduates. This minimum can be lowered due to language difficulties, improper placement leading to drop, work on thesis, preparing for Masters exam, in last semester before graduation. In all these cases, DGS must sign a special form that can be obtained from ISO. Masters students under plan A can register in the final (4th semester) for CS 748 (zero credits) if no other courses are being taken. Students under plan B **cannot** register for CS 748 and have to have be registered for at least three credit hours. A student who drops below the number of hours due to dropping a class for academic reasons must get a form from ISO and have it signed by the DGS.
- B. PB status.** Only domestic students may generally be PB (because INS does not allow an I-20 form to be issued to a PB student; GS will not allow an F-2 visa to be used for a PB). However, someone who already has an F-2 visa can take classes post-bac and part-time.
- C. Financial matters.** International students are not eligible for student loans. Full-time TAs may not have additional job. Half-time TAs may work another 10 hours on campus, but need permission from INS to take a job off campus. Summer jobs can be full-time, and permission from INS is likely to be easier in the summer for off-campus jobs.

VIII. FINANCIAL MATTERS

- A. Travel support.** There is a limited budget to support travel expenses of students presenting talks at conferences or expenses related to thesis/dissertation research. To apply, see
<http://www.research.uky.edu/gs/fellowship/studentsupport.html>
- B. Payroll.** The payroll for Computer Science TAs and RAs is handled by Dee. Dee has forms to let students decide in what form they wish to be paid and how much state and federal withholding should be applied. Students may be eligible for a waiver of local taxes; see Dee for details.
- C. Fellowships.** The DGS nominates students for fellowships, typically in early March. These fellowships generally apply only to students (new or old) whose most recent degree is from an American school. They often have lower limits on GRE scores.
- D. NSF Graduate Research Fellowships.** The National Science Foundation provides three-year graduate and minority graduate fellowships. Undergraduates and first year graduate students who are US citizens are eligible. Application materials are available from: The Fellowship Office, National Research Council, 2101 Constitution Avenue, Washington, DC 20418, (202) 334-2872.
- E. TA positions** are generally allocated by the DGS. Summer TA's are allocated by the GUS. TA's need to e-mail GUS in early spring expressing interest. Courses like CS101, CS115, CS215, CS216, CS222 are often offered and need TA's, but the number of positions is not known until after pre-registration. The DUS assigns responsibilities to TAs. The amount of stipend is calculated once a year at the start of the Fall semester based on budget and level of experience of the student. We do not raise the stipend during the year.
- F. Limits.** A masters student may only be supported for two years. A PhD student may only be supported for four years unless the qualifying exam has been passed.
- G. Tuition scholarship.** Full-time TA's and RA's get it; Half-time TA's and half-RA's get half of it.