November 29, 2007

MEMORANDUM

TO: Stephen Halperin  
    Dean, College of Computer, Mathematical and Physical Sciences

FROM: Phyllis Peres  
        Associate Provost for Academic Planning and Programs

SUBJECT: Proposal to modify the curriculum of the Ph.D. in Computer Science (PCC log no. 07031)

Your proposal to modify the curriculum of the Ph.D. in Computer Science has been administratively approved. A copy of the approved proposal is attached.

The changes are effective Spring, 2008. The College should ensure that the changes are fully described in the Graduate Catalog and in all relevant descriptive materials, and that all advisors are informed.

CWR/

Enclosure

cc: Carmen Balthrop, Chair, Senate PCC Committee  
    Sarah Bauder, Office of Student Financial Aid  
    Mary Giles, University Senate  
    Barbara Hope, Data Administration  
    Denise Nadasen, Institutional Research & Planning  
    Anne Turkos, Archives  
    Linda Yokoi, Office of the Registrar  
    Mary Ann Ottinger, Graduate School  
    David Lay, Computer, Mathematical and Physical Sciences
THE UNIVERSITY OF MARYLAND, COLLEGE PARK  
PROGRAM/CURRICULUM PROPOSAL

DIRECTIONS:  
- Provide one form with original approval signatures in lines 1 - 4 for each proposed action. Keep this form to one page in length.  
- Early consultation with the Office of the Associate Provost for Academic Planning & Programs is strongly recommended if there are questions or concerns, particularly with new programs.  
- Please submit the signed form to Claudia Rector, Office of the Associate Provost for Academic Planning and Programs, 1119 Main Administration Building, Campus.  
- Please email the rest of the proposal as an MSWord attachment to pcc-submissions@umd.edu.

DATE SUBMITTED: _Oct. 22, 2007_  
PCC LOG NO. 07031

COLLEGE/SCHOOL _CMPS_  
DEPARTMENT/PROGRAM _CMSC_

PROPOSED ACTION (A separate form for each) ADD ___ DELETE ____ CHANGE __ X ___

DESCRIPTION (Provide a succinct account of the proposed action. Details should be provided in an attachment. Provide old and new sample programs for curriculum changes.)

This proposed change to the Ph.D. requirements will allow students to take up to 3 courses in any area. The current requirements limits the number of courses per area to 2.

JUSTIFICATION/REASONS/RESOURCES (Briefly explain the reason for the proposed action. Identify the source of new resources that may be required. Details should be provided in an attachment.)

CMSC has recently hired several renowned faculty members in the area of Computational Biology (CompBio). CompBio courses are being offered as either AI or Alg&Theory. This creates a problem for AI and Alg&Theory students as they cannot use the CompBio class to satisfy requirements if they have already taken 2 courses in that area. Since both areas have an extensive offering, this is a serious problem.

APPROVAL SIGNATURES - Please print name, sign, and date

1. Department Committee Chair  
   _[Signature]_  
   ATIF M. MEMON  
   OCT. 22, 2007

2. Department Chair  
   _[Signature]_  
   LARRY DAVIS  
   1/22/07

3. College/School PCC Chair  
   _[Signature]_  
   DAVID LAY  
   1/29/07

4. Dean  
   _[Signature]_  
   DAVID LAY  
   1/29/07

5. Dean of the Graduate School (if required)  
   _[Signature]_  
   1/29/07

6. Chair, Senate PCC  
   _[Signature]_  
   1/29/07

7. Chair of Senate  
   _[Signature]_  
   1/29/07

8. Vice President for Academic Affairs & Provost  
   _[Signature]_  
   1/29/07

VPAAP 8-05
Adjusting PhD qualifying coursework requirements to accommodate Computational Biology courses  
October 22, 2007  
Department: CMSC

Background

This proposal is regarding the PhD. course requirements. The CS department courses are partitioned into the following seven areas:

1. AI  
2. PL/SE/HCI  
3. Systems  
4. Databases  
5. Algorithms & Theory  
6. Vision & Geometric Computing  
7. Scientific Computing

According to the current PhD requirements, students need to take 7 courses in at least 5 different areas with an upper bound of 2 in an area. For example, a student could take (2,2,1,1,1) or (1,1,1,1,1,2) or (1,1,1,1,1,1,1) as the distribution.

We have recently hired several renowned faculty members in the area of Computational Biology (CompBio). CompBio courses are being offered as either AI or Alg&Theory. This creates a problem for AI and Alg&Theory students as they cannot use the CompBio class to satisfy requirements if they have already taken 2 courses in that area. Since both areas have an extensive offering, this is a serious problem.

The Computer Science Department’s Education Committee considered several proposals to solve the above problem. The following proposed change was considered to be acceptable.

Proposed Change

This proposed change to the Ph.D. requirements will allow students to take up to 3 courses in any area. CompBio will continue to offer their courses as either AI or Theory for now.
1. Introduction

This document contains information about degree requirements and other concerns of graduate study in the Computer Science Department, and is addressed to the graduate student. It supersedes the Computer Science Department Graduate Catalog and the previous graduate policy manual dated August 12, 1988.
For further information, please contact

Computer Science Graduate Office
Room 1151 A. V. Williams Building
tel: 301-405-2664
email: csgradof@cs.umd.edu
web: http://www.cs.umd.edu/Grad

Information about campus-wide graduate study requirements, policies, and deadlines is available from the UMCP Graduate School. Departmental deadline information is available from Computer Science Department Deadlines.

2. General Degree Requirements

All degrees have residence requirement, time limit requirement, graduate credit requirement (on minimum number of graduate credits), and qualifying coursework requirement (on breadth and depth of coursework).

Graduate students in CMPS doctoral programs are expected to develop a mastery of their field, and gain familiarity with their discipline from arrival to graduation. In particular, full-time doctoral students who arrive with a baccalaureate degree normally will:

1. Become engaged in research no later than during their second year and often in their first year.

2. Identify a thesis adviser by the end of their second year.

3. Identify a thesis topic by the end of their third year.

4. Secure admission to candidacy within 3-4 years.

5. Publish at least one paper prior to advancing to candidacy, and several prior to graduating.

6. Complete all requirements and graduate within 5-6 years.

Graduate students may expect:

a) A wide selection of courses.

b) Advice and mentoring by faculty in their program prior to the assignment of an adviser.

c) From their advisor:
   -- Regular access and advice during the research and thesis writing process.
   -- Training in the preparation of oral and written scholarly presentations; in particular the advice and support for the writing of at least one paper for publication.
   -- Introduction, for example at conferences, to other members of the field.
   -- Assistance and advice with job searches

You are expected to make satisfactory progress toward your degree, commensurate with your other responsibilities. You must maintain an overall B average in your course work exclusive of CMSC 799 (Thesis Research) and CMSC 899 (Dissertation Research), and you must either complete at least two
courses per year or be actively engaged in thesis or dissertation work. Otherwise, your standing in the graduate program may be terminated.

If you receive a grade of I (incomplete) in any course, you must have this grade removed before you can be granted your degree. If you receive a grade of D or F in a graduate course, you may not complete your degree unless you raise your grade for that course to a C or higher by repeating the course.

You are responsible for being aware of and meeting all deadlines and requirements relevant to your progress through graduate school. Exact dates of examinations and application deadlines are posted by the Graduate School each academic year, and by the department each semester. The department will notify you of any changes in departmental policies either by sending you mail or by posting an announcement to the csd.grad.announce newsgroup.

You are responsible for notifying the Computer Science Graduate Office in writing of any circumstances that would prevent you from maintaining graduate standing or fulfilling the requirements for your degree.

3. Minimum course load per semester

Course load is measured in units, which are defined as follows:

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Units/credit hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Courses numbered 000-399</td>
<td>2 units/credit hour</td>
</tr>
<tr>
<td>Courses numbered 400-499</td>
<td>4 units/credit hour</td>
</tr>
<tr>
<td>Courses numbered 500-599</td>
<td>5 units/credit hour</td>
</tr>
<tr>
<td>Courses numbered 600-897</td>
<td>6 units/credit hour</td>
</tr>
<tr>
<td>Research courses 799</td>
<td>12 units/credit hour</td>
</tr>
<tr>
<td>Pre-Candidacy Research 898</td>
<td>18 units/credit hour</td>
</tr>
<tr>
<td>Post-Candidacy Research 899</td>
<td>Mandatory 6 credits /108 units total</td>
</tr>
</tbody>
</table>

Audited courses do not generate graduate units. A part-time graduate student must complete at least 12 units per year. A full-time graduate student is normally expected to successfully complete a combination of courses that totals at least 48 units each semester (excluding summer sessions). For graduate assistants, the minimum full-time requirement is reduced to 24 units, calculated as above. Graduate assistants and International students must maintain full-time status.

4. Advising

Every graduate student has a faculty advisor. You should meet with your advisor at least once each semester to discuss your progress.

When you enter the graduate program, the department assigns you an initial advisor, but as your research interests become clearer you may want to switch advisors. Normally, when you begin your MS or PhD research, your advisor should be the person with whom you are doing that work.

If you accept a research assistantship with a professor and that person is not already your advisor, then he/she becomes your new advisor. If you switch advisors, you must let the Computer Science Graduate office know. To do this, file a Change of Advisor form with the Graduate Office.

5. Registration and Early Registration

All Computer Science graduate students must register using the Maryland Automated Registration System (MARS). Each semester, your advisor must approve your registration as well as changes to it.

If you have been admitted to our program by the Graduate School or you are currently a student in our program, you may be eligible to take advantage of Early Registration for courses offered in the next semester. The Graduate School will send early registration information to eligible students who are registered in the current semester. The Computer Science Graduate Office notifies students of departmental registration requirements and helps students obtain permission to take restricted courses. Due to heavy demand for Computer Science courses, we strongly advise you to register early.

6. Areas and Courses

The graduate program coursework is organized into areas, each with associated faculty, courses, and comprehensive exams. There are currently seven areas:

- Artificial Intelligence
- Computer Systems
- Database Systems
- Software Engineering/Programming Languages
- Scientific Computing
- Algorithms and Computation Theory
- Visual and Geometric Computing

Below are the courses by area:

**Artificial Intelligence**
CMSC 421  Introduction to Artificial Intelligence
CMSC 620  Problem Solving Methods in Artificial Intelligence
CMSC 720  Logic for Problem Solving
CMSC 721  Non-Monotonic Reasoning
CMSC 722  Artificial Intelligence Planning
CMSC 723  Computational Linguistics I (Formerly: Natural Language Processing)
CMSC 726  Machine Learning
CMSC 727  Neural Modeling
CMSC 773  Computational Linguistics II

**Computer Systems**
CMSC 411  Computer Systems Architecture (Not a valid qualifying course for MS or Phd after Fall 99)
CMSC 412  Operating Systems
CMSC 414  Computer Security
CMSC 415  Systems Programming
CMSC 417  Computer Networks (Upper-level Fall 99 and prior)
CMCS 615  Advanced Computer Architecture (No longer being offered)
CMSC 710  Performance Evaluation of Computer Systems
CMSC 711  Computer Networks
CMSC 712  Distributed Algorithms and Verification
CMSC 713  Real-time Systems
CMSC 714  High Performance Computing
Database Systems
CMSC 420 Data Structures
CMSC 423 Bioinformatic Algorithms, Databases and Tools
CMSC 424 Database Design
CMSC 624 Database Systems Implementation (Inactive Course)
CMSC 724 Database Management Systems
CMSC 725 Geographic Information Systems and Spatial Databases

Scientific Computing
CMSC 460 Computational Methods (MS only)
CMSC 462 Computer Science for Scientific Computing
CMSC 466 Introduction to Numerical Analysis I
CMSC 660 Scientific Computing I
CMSC 661 Scientific Computing II
CMSC 662 Computer Organization and Programming for Scientific Computing (Not a valid qualifying course for MS or Phd)
CMSC 663 Advanced Scientific Computing I
CMSC 664 Advanced Scientific Computing II
CMSC 666 Numerical Analysis I
CMSC 667 Numerical Analysis II
CMSC 760 Advanced Linear Numerical Analysis
CMSC 762 Numerical Solution of Nonlinear Equations
CMSC 764 Advanced Numerical Optimization

NOTE: Previously you were allowed to take up to 2 courses in an area. This is still true, *except* that you may now take up to 3 courses from the Software Engineering/Programming Languages/Human-computer Interaction (HCI) area, with no more than two courses in each of the following two sub-areas:

Software and Programming Languages
CMSC 430 Theory of Language Translation
CMSC 433 Programming Language Technologies and Paradigms
CMSC 630 Theory of Programming Languages
CMSC 631 Program Analysis and Understanding
CMSC 731 Programming Language Implementation
CMSC 737 Fundamentals of Software Testing

Software Engineering and HCI
CMSC 434 Introduction to Human-Computer Interaction
CMSC 435 Software Engineering
CMSC 632 Software Product Assurance
CMSC 634 Empirical Research Methods for Computer Science (cannot earn graduate credit for both CMSC634 and CMSC838G)
CMSC 732 Compiling for Vector and Parallel Architecture
CMSC 734 Information Visualization
CMSC 735 Quantitative Approach to Software Management and Engineering
CMSC 736 Software Engineering Environments
CMSC 737 Fundamentals of Software Testing

Algorithms and Computation Theory
CMSC 450 Elementary Logic and Algorithms (Not a valid qualifying course for MS or Phd after
Fall 01)
CMSC 451 Design and Analysis of Computer Algorithms
CMSC 452 Elementary Theory of Computation
CMSC 456 Cryptology
CMSC 475 Combinatorics and Graph Theory
CMSC 477 Optimization
CMSC 650 Theory of Computing
CMSC 651 Analysis of Algorithms
CMSC 652 Complexity Theory
CMSC 750 Advanced Theory of Computation (Inactive Course)
CMSC 751 Parallel Algorithms
CMSC 752 Concrete Complexity
CMSC 753 Mathematical Linguistics
CMSC 754 Computational Geometry

Visual and Geometric Computing
CMSC 420 Data Structures
CMSC 426 Image Processing
CMSC 427 Computer Graphics (MS only. Cannot get graduate credit for both CMSC 427 and CMSC 740)
CMSC 725 Geographic Information Systems and Spatial Databases
CMSC 740 Advanced Computer Graphics
CMSC 741 Geometric and Solid Modeling
CMSC 733 Computer Processing of Pictorial Information
CMSC 754 Computational Geometry

All the courses above count for graduate credit provided they are taken after you have been admitted to the graduate program.

A course above counts for the PhD qualifying coursework and MS Comps, unless otherwise specified.

A course above marked as "MS only" counts for the MS qualifying coursework but not for the PhD qualifying coursework.

Some courses may appear in more than one area; however, you cannot use a particular course to satisfy more than one area's requirement.

It is expected that courses at the 600-800 level will be offered on a rotating basis, roughly every three or four semesters.

In addition to the courses listed above, special topics courses are offered, under the course numbers CMSC 498, 798, 818, 828, 838, etc. Check here to see if such a course is valid for MS/PhD qualifying coursework or administers MS comps.

Taking courses from other departments

In certain cases, courses from other departments may be used for MS/Phd qualifying coursework. If you want to do this, you should submit to the grad office a request that

- identifies the course, gives info (syllabus, instructor, etc)
- identifies the area in which you want the course to count
• (usually, but not necessarily) a letter of support from your advisor

The grad office forwards the request to the relevant area representative and asks for a decision on

• whether the course is acceptable as a Phd/MS course for the area
• if so, at what level (400 or higher).

The area rep usually contact the relevant faculty to reach this decision. Please submit the request sufficiently prior to the start of the semester in which the course is to be done.

7. M.S. Degree Requirements

The department offers both thesis and non-thesis options for the Master of Science degree in computer science. The following requirements apply to both options.

1. Graduate credits: You must complete at least 30 credit hours of approved course work, with a B average. These courses must be at the 400-level or higher, with at least 18 credit hours at the 600-800 level. At least 21 credit hours must be in computer science courses. Courses from other departments must be approved by your advisor; you must submit a written approval to the Graduate Office prior to the start of the semester in which the course is to be done.

2. Qualifying coursework: You must complete at least four computer science courses at the 600-800 level in four out of the seven areas. For these four courses, you must have at least a B average.

3. Residency: You must complete at least two full-time semesters, or the equivalent, at this university (four semesters part-time are considered equivalent to two semesters full-time).

4. You must be registered for at least one credit in the semester in which you expect to receive your degree.

5. Transferring graduate credits: You may transfer no more than six credit hours from another university or another program at the University of Maryland, College Park. If you wish to take these credits after you are admitted to the University of Maryland Graduate School, you may do this only with prior written approval of your advisor, the Director of Graduate Studies, and the Graduate School.

6. Time limit: You must complete all requirements for your degree no later than five years after the date you were admitted to the program.

7.1. M.S. Degree with Thesis

You must complete six hours of CMSC 799 (Master's Thesis Research) and prepare a thesis. The thesis must present an independent accomplishment in a research, development, or application area of computer science. The required format is available from UMCP Graduate School. You may count the course credit for CMSC 799 toward the MS graduate credits requirement (in Section 7). To register for CMSC 799, you will need the permission of your thesis advisor.

At the beginning of the semester in which you intend to graduate, you should go to the Computer Science Graduate Office to get a packet of graduation materials. This packet will include the following forms:
You must complete the Diploma Application Form and submit it to the Graduate School by the published
deadline, which is very early in the semester. The Graduate Office will process the form if you submit it
well before the deadline. The other forms must be submitted to the Computer Science Graduate Office
later in the semester, before the posted deadlines.

Once your advisor is satisfied with your thesis, you will need to set up a thesis committee. The thesis
committee must consist of at least three faculty, and its purpose is to give you an oral examination called
the thesis defense. To request the formation of this committee, you and your advisor should fill out the
thesis committee nomination form and return it to the Computer Science Graduate Office.

At least two weeks before the day on which you want to have your thesis defense, you must do two
things: (1) schedule the defense, by submitting the oral examination scheduling form to the Computer
Science Graduate Office, and (2) give a copy of the thesis to each member of the thesis committee.

You must pass the thesis defense, and make all changes to the thesis required by the thesis committee.
You must then submit two copies of the corrected thesis to the Graduate School and one copy to the
Computer Science Graduate Office, to be forwarded to the Computer Science Library; these are the only
copies required. The Computer Science Graduate Office can tell you the deadlines for doing these things.

If you do not complete your degree in the semester in which you filed all of the required forms, they will
remain on file in the Graduate School and will not be required to re-submit them if you graduate in a later
semester.

7.2. MS Degree without Thesis

For an MS degree without a thesis, you must pass a written MS comprehensive examination in each of
the four areas used to satisfy the qualifying coursework requirement (in Section 7). You must pass all
four examinations with at least B grades, and at least two of them with A grades. You must complete your
four comps exams before the semester in which you apply for graduation.

During the first month of the Fall and Spring semesters, the department will announce the examination
dates. If you wish to take any of these exams, you must sign up for them in the Computer Science
Graduate Office. If you wish to ask the faculty to re-evaluate the results of any examination, you must
submit a request in writing to the Computer Science Graduate Office within two weeks of the date on
which your grade for the examination was announced.

You must also complete a scholarly paper acceptable to a professor (who need not be your advisor) in an
area approved by that professor. The paper must include an abstract and references to the relevant
literature. You must submit by the appropriate deadline one copy of the scholarly paper (electronically
using email) to the Computer Science Graduate Office; this is the only copy required. Your paper, along
with your name, will be available for viewing on the Scholarly Paper Archive webpage.

At the beginning of the semester in which you intend to graduate, you should go to the Computer Science
Graduate Office to get a packet of graduation materials. This packet will include the following forms:

- Diploma Application Form (Application for Graduation)
8. Ph.D. Degree Requirements

The requirements for the PhD in Computer Science consists of the following:

- Residence Requirement
- Time Limitations Requirement
- Graduate Credits Requirement
- Qualifying Coursework Requirement
- Preliminary Examination
- Foreign Language Competency
- Admission to Candidacy
- Dissertation and Defense

These requirements are described in the following sections. You can find additional information in the current publications of the Graduate School.

8.1. Residence

You must complete at least three years, or the equivalent, of full-time graduate study and research. Of the three years, you must spend the equivalent of at least one year at this university.

8.2. Time Limitations

The Graduate School imposes two time limitations. First, you must advance to candidacy no later than five years after entering the graduate program, and normally one academic year before you receive your PhD degree. Second, after you are admitted to candidacy, you must complete your PhD degree, including the dissertation and final oral examination, within four additional years.

If you cannot meet a time limitation, you must file a petition for extension of time. Extensions cannot exceed one year. For each time limitation, the Graduate School normally accepts no more than two petitions for extension; a student requiring more is usually terminated.

8.3. Graduate Credits

Pre-Candidacy Research Credits
If you would like to sign up for dissertation research credit before advancing to candidacy, you can register for CMSC 898 for a variable amount of credits (usually 1-3 credits). The section number for this
course is directly related to the professor you are doing your research with. To find the section number for your professor, please go to the following webpage: http://www.cs.umd.edu/Grad/Sections/section.shtml.

**Post-Candidacy Research Credits**

12 credits of CMSC 899 (Dissertation Research). After admission to candidacy, you will be automatically registered for six credits of CMSC 899 during each semester of the academic year, until you finish your degree.

**8.4. Qualifying Coursework**

New PhD coursework requirements for students starting the PhD program in Fall 2004 or later. Graduate students who started before Fall 2004 can choose to stay with the *pre-2004* requirements, or switch to the current requirements.

The current coursework requirements are as follows:

1. You must take 7 600-800 level courses spread over at least 5 areas, with no more than 2 in any one area. You must obtain at least 5 A's and 2 B's (A includes A- and A+, B includes B- and B+), and you must complete this within the first five semesters of starting your PhD program. You can substitute a course in another department with appropriate approval (as in pre-2004). All courses must use homework, exams, and, when appropriate, projects as the basis for grading. (You can take a 400-level course for background, but it will not count towards your PhD coursework requirements.)

2. You must take a 1-credit course on *How to Conduct Research*, to be offered on a regular basis.

3. You are required to take two additional 3-credit 600-800 level courses, with the approval of your advisor. You must receive a grade of B or higher. There is no time limit on taking these courses. The courses may be seminar courses, including those offered outside of the CS Department.

4. Field Committees will determine a list of acceptable courses and sections to be offered. A 400-level course/section can be included by cross listing it as a 600-800 level course.

5. Course waiver process and appeals process will be the same as in pre-2004, although we anticipate far fewer approvals.

**Course waivers**

Course waivers to the 10-course qualifying coursework are granted in special conditions, for example, an exemplary student who already holds the MS in Computer Science from a peer institution, a student who has already taken qualifying courses through the Graduate School as an Advanced Special Student (i.e., while their application is pending). No graduate courses taken while a student was an undergraduate will be waived. Course waivers will usually not reduce the number of As required in courses taken at the University of Maryland, College Park.

Note: Waivers will no longer be considered for the following courses in the Systems area: CMSC818 courses and courses such as CMSC 615, which are no longer being offered.

Waivers are granted by the Director of Graduate Studies in consultation with area representatives. Requests for waivers should be filed in the Graduate Office no later than the start of the second month of your first semester in residence at the University of Maryland, College Park (that is, October 1 if you started in a fall semester, and March 1 if you started in a spring semester).

Please submit two hard copies of your request. The request must have the following information:
- Cover page listing (name and number) all the CMSC courses that you want waived and, for each course, the relevant courses you took elsewhere.
- For each CMSC course you want waived, a separate set of pages containing the following:
  - Copy of the cover page, with a mark indicating the CMSC course
  - The following information for each relevant course taken elsewhere:
    - Institution where course was taken
    - Semester and year when course was taken
    - Name and number of course at institution where taken
    - Grade received in course
    - Syllabus for course, indicating text used, workload (exams, programming, projects, presentations), and weight of each part
    - Sample(s) of homework, exams, projects, as appropriate.

*Note:*
- As mentioned above, please submit two hard copies and please keep material for different CMSC courses on separate pages. Faculty may want to meet with you for clarifications when evaluating your request.
- Course waivers are often granted at the 400-level, even if the request was for courses at the 600-800 level. [This is because we want you to do 600-800 level courses as this is where you really get to know professors and their research.]
- Course waivers are processed after the submission deadline.

### Appeals

Each semester, the Academic Evaluation Committee (AEC) reviews all students who have completed their qualifying coursework successfully, or have used up (or are about to use up) their five-semester window without completing the qualifying coursework. For students in the latter category, the AEC can grant waivers of grade or time requirements if students provide evidence of extenuating circumstances. This evidence is in the form of a written request which may be accompanied by written letters of support from faculty members.

The AEC consists of the Graduate Director and one faculty member from each area. If an appealing student's advisor is a member of the AEC, then the advisor will not participate in the discussion or vote on the particular appeal.

### 8.4A. Pre-2004 Qualifying Coursework

Qualifying coursework for graduate students who started *before* Fall 2004:

In the first five semesters of graduate study, you must complete 10 courses covering five out of seven areas.

1. The 10 courses can be made up in one of two ways:
   - Two courses in each of five areas, with one course in each area being at the 600-800 level.
   - Two courses in each of three areas, three courses in one area, one course in one area. In each area, at least one course must be at the 600-800 level. In the area with three courses, two must be at the 600-800 level.

2. With appropriate approval (see "Taking courses from other departments"), you can substitute a course in another department that will contribute to your dissertation work.
3. All projects and exams must be completed in the courses.

4. You must have an A in at least seven of the ten courses and no less than a B in the remaining courses (A includes A- and A+, B includes B- and B+). A deficient grade can be made up by repeating the course, taking another course in the area, or switching to another area.

5. Course waiver process and appeals process are the same as listed in Qualifying Coursework.

8.5. Preliminary Examination

After (and only after) successfully completing the qualifying coursework, the next step is the PhD Preliminary Examination. This is an oral examination to review and appraise your proposed dissertation research, to test how well you have prepared for the research, and to discover whether or not you understand the subject matter sufficiently well to carry out the proposed research.

Prepare a dissertation proposal satisfactory to your advisor, that describes your proposed research, surveys relevant literature, and includes reading lists for three areas of knowledge related to the proposal.

Form a preliminary examination committee consisting of the following people:

1. Your dissertation advisor, who is the committee chair.
2. A departmental representative, who is from outside your research area and is suggested by your advisor. The ultimate choice of the representative is made by the department.
3. At least one additional faculty member, chosen by you and your advisor.

Get a packet of materials for the preliminary exam from the Computer Science Graduate Office. This packet includes the following forms:

- Oral Exam Scheduling Form
- Action of PhD Preliminary Examination Committee
- Application for Admission to Candidacy
- Foreign Language Competency Certification Form. *(Not required as of May 1, 2000).*

At least two weeks before the day you intend to take the exam, submit the oral exam scheduling form to the Computer Science Graduate Office, along with one copy of the prospectus, which will be kept by the department as a matter of public record. The committee will not be appointed until you do this. You must also hand out one copy of the prospectus to each member of the examination committee.

The Examination. One week before the exam, the department distributes a notice of the examination, inviting all members of the department's graduate faculty to attend as non-voting participants. The examination committee chair may invite additional non-voting participants.

The examination is oral, and is normally about two hours long and consists of three parts:

1. Your presentation of the dissertation proposal (about 30 minutes).
2. Questions and discussion of the proposal (about 30 minutes).
3. An examination based on the related areas of knowledge (about one hour, and normally restricted to questions about material in the reading lists).

During this exam, you are expected to demonstrate a level of competence that is attainable in approximately one year of study beyond completion of the course-based qualifying sequence.
After the exam, the committee asks you to leave the room while they make their decision. The committee may decide that you have passed or failed the exam, or they may defer the decision. The distinction between failure and deferred decision is based on the committee's evaluation of your probability of success. Your dissertation advisor reports this decision to the department. If the committee defers the decision, your dissertation advisor's report to the department specifies how they intend to resolve the decision.

The committee member appointed by the department is responsible for making sure that the examination conforms to the guidelines given above.

8.7 Admission to Candidacy

After you have successfully completed the qualifying coursework, the preliminary examination, the foreign language competency requirement, and have maintained an overall grade average of B or better, you can advance to candidacy.

Complete the application for admission to candidacy (from the preliminary examination packet), have your advisor sign it, and return it to the Computer Science Graduate Office. The Graduate Director then signs the form and forwards it to the Graduate School. You should allow about a month for your application to be approved. and take that time lapse into account if you are close to the 5-year time deadline.

8.8 Writing and Defending Your Dissertation

Your PhD research should represent an original contribution to the field of computer science. To describe and document your research, you must write a dissertation under the guidance of your advisor. The required format is available from UMCP Graduate School.

Dissertation Committee. Once your advisor is satisfied with your dissertation, you and your advisor must set up a dissertation committee. The purpose of this committee is to give you an oral examination called the dissertation defense.

The dissertation committee must consist of at least five members, including your advisor. All must be regular, adjunct, or special members of the UMCP Graduate Faculty. At least three must be Regular Members of the Graduate Faculty. One committee member, the Dean's Representative, must be a tenured Regular Member of the Graduate Faculty from a department other than Computer Science. All regular (tenure-track and above) professors in the Computer Science Department are Regular Members of the Graduate Faculty. One or more members of the committee may be distinguished scholars from other institutions or appointed as research faculty on this campus; these members fall under the category of "Special Members", and you should check with the Computer Science Graduate Office about the procedures to be followed. The Graduate School has issued a revised policy regarding the nomination of non-faculty members. For further information about nominating faculty for dissertation committees, see the following: Graduate Faculty Policy.

To request creation of the dissertation committee, you should fill out the dissertation committee nomination form with the help of your advisor, have your advisor sign it, and submit the completed form to the Computer Science Graduate Office. You must do this by about the third week of the semester in which you expect to complete the requirements for your degree. Each semester, the deadline for filing the committee nomination is published by the Graduate School and the Computer Science Graduate Office. If you do not complete the degree in the semester in which you file the committee nomination, it will remain on file in the Graduate School and you are not required to re-submit the form.
**Dissertation Defense.** Once your advisor is satisfied with your dissertation, you must schedule your dissertation defense. To do this, you must submit the oral examination scheduling form to the Computer Science Graduate Office at least two weeks before the proposed examination date. At least two weeks before the oral examination, you must give a copy of the dissertation to each member of the dissertation committee.

One week before the exam, the department will distribute a notice of the defense, inviting all interested graduate faculty of the department to attend as non-voting participants. The examination committee chair may invite additional non-voting participants.

The defense is oral, and is normally no more than two hours long. All members of your committee must be present. It consists of an oral presentation of your dissertation research (normally no more than 45 minutes long), and questions by the committee about your research and your dissertation. At the end of the exam, the committee will ask you to leave the room while they confer in private, to decide whether your defense has been satisfactory. For further information on the dissertation defense, you can consult the relevant parts of the UMCP Graduate Catalog.

To complete your degree, you must pass the oral examination, and make all changes in the dissertation required by the examination committee. You must then submit one copy of the corrected dissertation to the Graduate School and one copy to the Computer Science Graduate Office, to be forwarded to the Computer Science Library. The Computer Science Graduate Office can tell you the deadlines for doing these things.

**8.9 Graduating with the PhD**

At the beginning of the semester in which you intend to graduate, you should go to the Computer Science Graduate Office and pick up a packet of graduate materials. This packet will include the following forms:

- Diploma Application Form
- Dissertation Committee Nomination Form
- Oral Exam Scheduling Form

You must complete the Diploma Application Form and submit it to the Computer Science Graduate Office during the first two weeks of the semester. The deadlines for submitting the other forms are later in the semester; the Computer Science Graduate Office can tell you what they are.

**9. Travel Grants for PhD Students**

The Computer Science Department has travel grants for students to attend conferences. Grants are competitive and awards are decided by the Graduate Director(s). Students can apply for these travel grants at any time by submitting applications to the Graduate Office. Students can apply for these travel grants at any time by submitting applications to the Graduate Office.

The maximum amount of a grant is $250. The student's effort to make economical travel arrangements will be taken into account when making decisions. The conference should be well-recognized. Student's request should be supported by advisor and one other faculty member.

Applications should include:

1. Letter to Graduate Director giving name of conference, title of paper to be presented, travel
arrangements and costs.
2. Copy of paper to be presented (if the student is presenting a paper).
3. Two recommendations as required above.

10. Internships for PhD Students

PhD students may undertake internships for credit during the summer months. Students must execute a "Required Internship Independent Study Course" form, have it signed by their advisor, and obtain permission from the Graduate Office to register for CMSC 598. Students may register for one to three credits. With the approval of their advisors, students pursuing PhD research may undertake internships during the academic year. International students on student visas may obtain permission for up to twelve months of Curricular Practical Training, in order to accept appropriate internships. Internship credit does not count toward the PhD qualifying sequence.

11. Clarification on MS/PhD/8x8 coursework and MS comps

MS/PhD Qualifying Courses:

1. Any MS/PhD qualifying course should base its grade primarily on exams.

2. Courses that consist primarily of paper readings and presentations are not valid for MS/PhD qualifying coursework.

3. Unless specific permission is granted by the graduate director, 600-800 level courses count towards MS/PhD areas courses or MS comps ONLY if they are taught by people with regular or affiliate professor positions in the CS department.

MS Comps:

1. The MS comp MUST be based on EXAMS. It cannot be based on projects, homework, term papers, etc.

2. MS comp exams in the Department are ADMINISTERED as part of courses. It can be one or more of the regular exams in the course (e.g., final, midterm + final, etc). It can be a separate exam. It can be a regular exam augmented with additional questions. The choice is up to the professor, but it must be announced early in the semester.

3. The MS comp grade given to the student is A, B, or F. The grade is independent of the grade the student gets in the course. In fact, the student can do the comp WITHOUT DOING THE COURSE.

4. It is NOT NECESSARY that the MS comp is the final exam in the course and that the MS comp grade is simply the final exam grade with C or less becoming F. The professor may choose to do it like that.

8x8 Courses:

1. An 8x8 courses (or any other special topics courses) is BY DEFAULT not a valid course for MS coursework, PhD coursework, or MS comps.
2. So the professor teaching such a course must decide the area or areas for which the course is valid (i.e., AI, Systems, DB, SC, SE/PL, Alg/Thy, Visual/Geom) and GET APPROVAL from the relevant area committee(s).

Usually the area is the one in whose field committee the professor serves, and approval is not an issue. But if the professor wants the course to be valid for OTHER areas, he/she must make a request to that field committee which then decides; this is NOT automatic.

3. The professor teaching such a course must also decide whether the course is valid for MS coursework, and/or Phd coursework, and/or MS comp.

If it is valid for MS comp, then the professor must decide what constitutes the MS comp in the course (e.g., final only, midterm + final, etc). The MS COMP grade MUST be based on EXAMS; it cannot be based on a project.

4. The Graduate Office will ask the professor for this information and post it here before the start of the semester.