

# **GRADUATE STUDENT HANDBOOK**

***2009-2010***



**Computer Science Department**

**College Of Engineering**

**University Of Missouri – Columbia**

**201 Engineering Building west**

**Columbia, MO 65201**

**(573) 882-3842**

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**Dr. Dong Xu**

Department Chair

**Dr. Yi Shang**

Director of Graduate Studies

**Dr. Michael Jurczyk**

Director of Undergraduate Studies



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**INTRODUCTION**

This document is provided to help you better understand the graduate degree program procedures and requirements of the Computer Science Department at the University of Missouri--Columbia, as well as general department information which should be useful to you as a graduate student here. Included within is important information pertaining to university and department policies, financial and support services, and other vital information. **It is your responsibility to read and familiarize yourself with the material contained in this manual.**

Though every effort has been made to ensure up-to-date accuracy of the information contained within, many policies outside of this department are subject to change without notice. This document should be considered a constant work in progress, and is to be regarded as an informational resource only.

If you believe this document contains any errors or inaccuracies, please notify CS department support staff.

\*information contained in this manual should be considered supplementary to existing University policies, and is subject to supersession at any time by any and all applicable rules, regulations, and policies outlined by the University System, MU Grad School, College of Engineering, Computer Science dept., and other campus departments where/when applicable.

**DEPARTMENT DIRECTORY**

**Administration**

**Dr. Dong Xu**

*Department Chair*

*Professor*

201 EBW

xudong@missouri.edu.....(573) 882-2299

**Dr. Yi Shang**

*Director of Graduate Studies*

*Professor*

125 EBW

shangy@missouri.edu.....(573) 884-7794

**Adrianna Lynn**

*Undergraduate Academic Advisor*

113 EBW

lynna@missouri.edu.....(573) 884-6342

**Trish Hall**

*Administrative Associate I*

201 EBW

hallpat@missouri.edu.....(573) 882-3843

**Sandra Moore**

*Administrative Assistant*

201 EBW

mooresan@missouri.edu.....(573) 884-1887

**Jodie Lenser**

*Administrative Assistant*

201 EBW

lenserj@missouri.edu.....(573) 882-3842

**Faculty**

**Dr. Jianlin Cheng**

*Assistant Professor*

109 EBW

chengji@missouri.edu.....(573) 882-7306

**Dr. Ye Duan**

*Associate Professor*

321 EBW

duanye@missouri.edu.....(573) 882-3951

**Dr. William Harrison**

*Associate Professor*

331 EBW

harrisonwl@missouri.edu.....(573) 884-2436

**Dr. Michael Jurczyk**

*Associate Professor*

121 EBW

jurczykkm@missouri.edu.....(573) 884-8869

**Dr. Toni Kazic**

*Associate Professor*

143A EBW

kazict@missouri.edu.....(573) 882-1946

**Dr. Dmitry Korkin**

*Assistant Professor*

207 EBW

korkined@missouri.edu.....(573) 882-4762

**Dr. Dale Musser**

*Assistant Professor, IT Director*

107 EBW  
musserda@missouri.edu.....(573) 884-1328

**Dr. Kannappan Palaniappan**

*Associate Professor*  
329 EBW  
palaniappank@missouri.edu.....(573) 884-9266

**Dr. Markita Price**

*Associate Teaching Professor*  
107A EBW  
pricemar@missouri.edu.....(573) 882-5896

**Dr. Youssef Saab**

*Associate Professor*  
143B EBW  
saaby@missouri.edu.....(573) 882-4559

**Dr. Chi-Ren Shyu**

*Associate Professor*  
126 EBW  
shyuc@missouri.edu.....(573) 882-3884

**Dr. Gordon Springer**

*Associate Professor*  
115 EBW  
springerg@missouri.edu.....(573) 882-7422

**Dr. Jeffrey Uhlmann**

*Associate Professor*  
327 EBW  
uhlmannj@missouri.edu.....(573) 884-2129

**Dr. Wenjun Zeng**

*Associate Professor*  
119 EBW  
zengw@missouri.edu.....(573) 882-4480

**Dr. Yunxin Zhao**

*Professor*  
335 EBW  
zhaoy@missouri.edu.....(573) 882-3374

**Dr. Xinhua Zhuang**

*Professor*  
313EBW  
zhuangx@missouri.edu.....(573) 882-2382

**Matthew Dickinson**

*Systems Administrator*  
126 EBW  
dickinsonmg@missouri.edu.....(573) 882-7930

**Christopher "Chip" Gubera**

*Resident Instructor*  
201 EBW  
guberac@missouri.edu.....(573) 882-6566

# FACILITIES

## Administrative Offices

The Computer Science department administrative office is located in room 201 Engineering Building West. The department support staff is on hand Monday through Friday from 8:00 AM – 5:00 PM (the office closes for lunch for one hour each day).

The Department Chair's office is also located in 201 EBW.

The undergraduate academic advisor's office is located in 113 EBW.

## Mail

All graduate students are given a mailbox in 244 EBW in order to facilitate the receiving of mail for official university business. (Graduate Teaching Assistants are assigned mailboxes in 201 EBW.) Please do not arrange for personal mail to be sent to you at your campus address.

## Telephones

Most University phone numbers begin with an "882" or "884" prefix. When dialing a university phone number using a campus phone, simply dial the last five digits of the number you're trying to reach. For example, if you are trying to reach the CS office at 882-3842, dial "23842" to be connected.

To make local, off-campus phone calls, dial "9", followed by the seven-digit phone number you are trying to reach.

## Photocopies

A photocopy machine is supplied for CS graduate student use in room 244 EBW. Use of this copier requires a four digit access code, which you may obtain from the CS support staff in 201 EBW. Let the staff know when more paper is needed for the copier.

**This machine is provided for the copying of class-related materials only, and is not to be utilized for personal reasons.**

# INTERNATIONAL STUDENTS

International students bear sole responsibility for complying with any and all immigration regulations that may be applicable to their Visa status. Don't hesitate to contact an International Student & Scholar Services advisor with any questions and for assistance.

## **International Student & Scholar Services Directory**

### **David Currey**

*ISSS Director/Asst. Director of International Center*

N5 Memorial Union

curreyd@missouri.edu.....(573) 882-5510

### **Mihaela Britt**

*Coordinator – Scholar Services and J-1 Scholars*

N52 Memorial Union

brittm@missouri.edu.....(573) 882-7099

### **Jennifer Glass**

*Advisor – F-1 Students*

N52 Memorial Union  
glassjs@missouri.edu.....(573) 882-6007

**Dottie Heibel**

*Document Specialist*  
N52 Memorial Union  
heibeld@missouri.edu.....(573) 884-7680

**Jalana Robinson**

*Advisor – H1-B Scholars*  
N52 Memorial Union  
robinsonjj@missouri.edu.....(573) 882-6367

**ACADEMIC HONESTY**

**What is Academic Integrity?**

*Academic Integrity* is the core set of values and principles that underwrite the mission of the University of Missouri: integrity, honesty, hard work, and strong personal, professional, and ethical principles. The focus of this institution at every level (administration, faculty, staff and students) is to instill and reinforce the fundamental values that are central to the University's mission.<sup>1</sup>

- Article VI of the Faculty Handbook states:

*"Academic dishonesty refers to any act that is intended to produce an academic assessment that is not commensurate with an individual's performance, or any act that is intended to unfairly assist or hinder an individual's academic efforts."*<sup>2</sup>

Some examples of Academic Dishonesty include, but are not limited to:

- Allowing the work of one student to be academically assessed as the work of another
- Allowing academic credit to be assigned for work that has not been performed
- Unauthorized possession of University-owned and regulated resources (e.g., reserved library material, laboratory material, art work, computer software or medical excuses)
- Misrepresentation of an academic record (e.g., changing grades without following proper procedure, failure to report work done at other institutions)
- Denial of access to resources (e.g., reserved library material, laboratory material, artwork, computer software) intended to be available to other students

**STUDENT PRIVACY/FERPA**

**Student Records and FERPA**

What is "FERPA"? And what does this mean for you in relationship to your class?

FERPA is an acronym for ***Family Education Rights and Privacy Act***. The act is a "federal law designed to protect the privacy of educational records, to establish the rights of students to inspect and review their educational records, and to provide guidelines for the correction of inaccurate and misleading data through informal and formal hearings."<sup>3</sup>

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<sup>1</sup> *Teaching at Mizzou*; <http://teachandlearn.missouri.edu/guide/chapters/academicintegrity.htm>  
<sup>2</sup> MU Faculty Council; <http://facultycouncil.missouri.edu/handbook/article-6.html>  
<sup>3</sup> Office of the MU Registrar; [http://registrar.missouri.edu/Policies\\_Rules\\_and\\_Regulations/ferpa.htm](http://registrar.missouri.edu/Policies_Rules_and_Regulations/ferpa.htm)

Educational institutions may not release personally identifiable information or non-directory information about a student without that student's written permission.

### **What is Directory Information?**

Please direct any requests for Directory Information to the CS Department Support office in 201 EBW (882-3842).

### **What is "Personally Identifiable Information?"**

This is information that might invade privacy, allow for the student's identity to be traced, etc. Examples:

- Name
- Name of parents or family members
- Personal identifiers, i.e.: social security number and/or student number.
- List of personal characteristics that would make a student's identity traceable.
- Address

### **The following information about students may not be released under *any* circumstances:**

- Social security number
- Student number
- Race/ethnicity/nationality
- Gender
- Grades
- Any other **personally identifiable information** without written consent or when subject to an applicable exception.

Further information about FERPA can be obtained at:

[http://registrar.missouri.edu/Policies\\_Rules\\_and\\_Regulations/ferpa.htm](http://registrar.missouri.edu/Policies_Rules_and_Regulations/ferpa.htm)

### **Campus Resources for personal issues**

Students should be aware of campus resources that are in place to assist students in need. The MU Counseling Center (882-6601, 119 Parker Hall) has a staff of licensed psychologists whose help is available at no cost to students. It is not unusual or complicated to receive counseling services on campus, and it is not complicated to schedule an appointment. The MU Counseling Center will carry out an initial interview with students who walk in to the Center if they are in crisis (open Monday-Friday, 8:00am-5:00pm). Their counseling services are kept confidential.

# GRADUATE DEGREES IN COMPUTER SCIENCE

**Computer Science Department  
College of Engineering  
University of Missouri – Columbia**

**MS, ME – Computer Science  
PhD – Computer Science**  
(Revision June 2008)

The following is a general description of the graduate degree programs offered by the Computer Science (CS) Department at the University of Missouri–Columbia (MU). Admission and graduation requirements are described.

## GENERAL ORIENTATION

The CS Department graduate programs lead to the degrees of Master of Science or Master of Engineering in Computer Science and Doctor of Philosophy in Computer Science. The CS graduate degree programs prepare prior recipients of four-year BS degrees in Computer Science or closely related areas for further study at the doctoral level or for successful careers as specialized computer professionals. The Ph.D. program is a research degree designed to prepare students for various advanced professional careers, including college teaching and research, as well as research and development in leading industrial and government R&D facilities.

Specialized training is available in the faculty's active research fields including algorithms, artificial and computational intelligence, bioinformatics, computer graphics, computer vision, cyber-security, data mining, database, multimedia systems, networking, parallel and distributed computing, programming languages, software engineering, visualization, wireless networks, and world-wide-web programming.

The CS Department has a variety of computing equipment and laboratories available for instruction and research. These facilities, enhanced in conjunction with computing laboratories maintained by the campus, offer students in CS a wealth of opportunity to access and utilize a wide range of equipment best suited for their instructional and research needs. All of the equipment is connected to departmental, campus and global networks, which provides ready access to the exploding world of information and computational resources. Departmental information can be obtained by accessing the Departmental Web pages at <http://www.cs.missouri.edu> or by sending an e-mail to [grad\\_sec@cs.missouri.edu](mailto:grad_sec@cs.missouri.edu).

A wealth of library resources are available through the extensive collections of books and journals housed in the Engineering and Mathematical Sciences libraries as well as collections in the Main Library and Health Sciences Libraries at MU. The entire library catalog at MU (all library branches) as well as the other campuses of the University of Missouri are available online and can be searched from any computer access point at the University.

## APPLICATION PROCEDURES

Application for admission to a graduate degree program in CS involves submitting a formal application through the Graduate School's online application for admission ([http://gradschool.missouri.edu/prospective/prospective\\_apply.htm](http://gradschool.missouri.edu/prospective/prospective_apply.htm)). An application must be accompanied by an application fee. In addition, the applicant must have the following original paperwork sent directly from the originating institutions to the Graduate School.

1. Official transcripts from ALL institutions attended
2. Official GRE score report from Educational Testing Service in New Jersey (and TOEFL scores for international applicants)

The following supplemental materials must be uploaded in the online application or mailed to the CS Department:

1. A personal goal statement indicating why you feel prepared to pursue the degree program and why you want to pursue this degree (**uploaded** in your online application)
2. Minimum course requirement form if you do not have a BS in computer science (**uploaded** in your online application)
3. Three letters of recommendation form professors who know your abilities that must address your ability and readiness to pursue a graduate program in computer science (**mailed** to Director of Graduate Studies, Computer Science Department, 201 Engineering Building West, University of Missouri-Columbia, Columbia, MO 65211-2060, USA)

In order to be considered for admission in a particular semester, the Director of Graduate Studies, according to the following deadlines must receive **all** required paperwork:

- Fall admission:** Applications and all paperwork must be received by March 1<sup>st</sup>.  
**NOTE:** If applying for financial assistance in the department, applications and all paperwork must be received by January 15<sup>th</sup>.
- Winter admission:** Applications and all paperwork must be received by October 1<sup>st</sup>.

**Note:** Copies of the required papers (transcripts, GRE scores, etc.) cannot be accepted in lieu of the official reports from the originating institutions. Copies of these records can be submitted for evaluation, but any decision on admission is non-binding until the official records have been received. International students are urged to submit all paperwork well in advance of the published deadlines.

All MU students (current or prior) must meet the same requirements as external students. The only difference is that MU students file one of the following forms (in lieu of an MU Application Form):

- a) Current undergraduates or Non-Degree Graduates: **Change of Division, Degree, Program, Emphasis, or Advisor** form,
- b) Previous student: **Request to Re-enroll** form,
- c) Current graduate students in another department: **Change of Division, Degree, Program, Emphasis, or Advisor** form (same as a).

These forms can be obtained from the Department Office or the Graduate School, 210 Jesse Hall.

## TEACHING AND RESEARCH ASSISTANTSHIPS

Applications for teaching assistantships must be received according to the same deadline schedule as applications for admission. In order to apply for a TA, send your resume with your application for graduate study. International students who have not completed their first semester or residency at MU are not eligible for teaching assistantships. International students must be tested by the Program for Excellence in Teaching and receive a satisfactory score before they will be considered as a TA their second semester. To apply for a research assistantship, you should contact the CS professors directly. Their emails and research interests are located at our website: <http://www.cs.missouri.edu>. The professor will make you an offer if he/she is interested in hiring you.

### **Financial Aid Pointers:**

FOR:	APPLY TO:
Teaching and Research Assistantships	<b>CS Department, 201 EBW</b>
Fellowships & Scholarships	<b>Graduate School</b> 210 Jesse Hall University of Missouri – Columbia Columbia, MO 65211
Fellowships & Scholarships	<b>International Center</b> N52 Memorial Union University of Missouri – Columbia

	Columbia, MO 65211
Information and Technology Service Positions	<p style="text-align: center;"><b>IATS</b></p> <p style="text-align: center;">615 Locust Street University of Missouri – Columbia Columbia, MO 65211</p>
Student Loans	<p style="text-align: center;"><b>Financial Aid Office</b></p> <p style="text-align: center;">11 Jesse Hall University of Missouri – Columbia Columbia, MO 65211</p>

## ADMISSION

Students applying to the CS graduate program must have a sufficient background in mathematics and computer science to be able to enroll in and perform satisfactorily in the CS courses numbered 7000 and above. Students applying for admission must fulfill the following minimum requirements that include material contained in specific CS courses or their equivalent taken at another institution. It is preferred that students have earned a BS degree in Computer Science. However, students from other disciplines meeting the minimum requirements will be considered for admission.

1. Proficiency in a procedural programming language equivalent to that gained by taking CS 1050 and 2050 (Algorithm Design & Programming I and II). The preferred programming language is Java. This material includes fundamental algorithm design and data structures.
2. Three semesters of formal course work in Calculus (Math 1500, 1700 and 2300 at MU).
3. Knowledge of statistics equivalent to that contained in Stat 4710 (Introduction to Mathematical Statistics).
4. Knowledge of discrete mathematical structures equivalent to that covered in Math 2320 (Discrete Mathematical Structures).
5. Knowledge of computer system architecture equivalent to that contained in CS 3270 (Introduction to Digital Logic) and CS 3280 (Assembly Languages and Computer Organization).
6. Four courses with grades B or better equivalent to those defined as follows:
  - a. CS 4050 (Design and Analysis of Algorithms I)
  - b. CS 4320 (Software Engineering) or 4330 (Object-Oriented Design)
  - c. CS 4410 (Theory of Computation I), 4430 (Compilers I) or 4450 (Principles of Programming Languages)
  - d. CS 4520 (Operating Systems I)
7. A GPA of at least 3.0 (A=4.0) for the last half of the undergraduate curriculum.
8. Acceptable scores on the GRE General Test's three parts taken within the last five years. The minimum acceptable scores are the 25<sup>th</sup> percentile on the verbal (GRE-v) part, the 80<sup>th</sup> percentile on the quantitative part (GRE-q), and 4 on the analytical writing part.
9. For those not schooled in English as their native language, a score of TOEFL (taken within last two years) above 577 if paper-based, 233 if computer-based, or 90 if Internet-based.
10. For admission into the Ph.D. program, the student must have either:
  - a. A Bachelor's degree in Computer Science with a GPA of 3.4 (out of 4.), or
  - b. An equivalent of a Master's degree in Computer Science, or a closely related field, with a GPA of least 3.4 (out of 4.0).

## GRADUATION REQUIREMENTS

Students must complete the following requirements in order to earn the respective graduate degrees from the CS Department. The Master of Science degree program has both a thesis and a non-thesis option, which can be chosen by the student after consultation with their selected advisor.

### **M.S. Degree**

All students completing a Master's degree must fulfill the following minimum requirements:

1. The student must earn a minimum of 30 credit hours of course work approved by the CS Department. This course work must include at least 15 credit hours of course work numbered 8000 or above (CS 8990 Thesis Research credit is counted in the required 15 credit hours, but CS 8980 is not).
2. The overall GPA of course work taken as an enrolled graduate student must be at least 3.0 (out of 4.0).
3. Courses taken in other departments (up to 6 credit hours) will be considered for approval as part of a student's MS program and the approval is sought prior to the student undertaking the course work.
4. A 4000-level course listed in the minimum requirements for graduate admission, cannot be taken at the equivalent 7000 level as part of the required hours for the MS, ME, or PhD programs.

5. **Non-Thesis Option:**

In order to complete the non-thesis option, the student must complete an independent project under a faculty advisor approved by the department. This project is carried out by enrolling in CS 8980 (Non-Thesis Research) for at least one hour of credit. This project is documented and presented to a faculty committee of at least three graduate faculty members and defended in a public defense as part of a final oral examination. The CS 8980 course grade is assigned by the student's faculty advisor upon the conclusion of the oral examination. This course is graded on an S/U basis and cannot be used to increase the student's overall GPA in graduate work. In this option, at most, 3 credit hours of Research, Reading, and/or Problem courses (such as CS 8980, 8990, 8085) can be counted toward the 30-hour MS graduate requirements.

6. **Thesis Option:**

In order to complete the thesis option, the student must complete an independent project under a faculty advisor approved by the department. This project is carried out by enrolling in CS 8990 (Thesis Research) for at least three hours of credit. A maximum of six credit hours of CS 8990 can be counted toward the required 30 credit hours for the MS degree program. The thesis project is documented in a formal thesis, presented to a faculty committee of at least three graduate faculty members (one of whom is a faculty member from another department) and defended in a public defense as part of a final oral examination. The CS 8990 course grade(s) is/are assigned by the student's faculty advisor upon the conclusion of the oral examination. CS 8990 is graded on an S/U basis and cannot be used to increase the student's overall GPA in graduate work. In this option, at most 9 credit hours of Research, Reading, and/or Problem courses (such as CS 8980, 8990, 8085) can be counted toward the 30-hour MS graduate requirements.

7. **Seminar Attendance:** The approval of the M3 form is tied to the attendance records for the department's seminar series. MS students are required to satisfy the seminar attendance requirement in at least *two* semesters prior to graduation. Attendance at half of the approved CS seminars per semester meets this requirement.
8. **M Forms:** By the end of the second semester in the program, the M1 *Plan of Study* form should be prepared and submitted, with the aid of a faculty advisor in the department. An advisor should be selected during the student's first semester. If a thesis option is chosen, the student should form a thesis committee and submit the M2 *Request for Thesis Committee* form. The M3 *Report of Master's Examining Committee* form is submitted after the thesis or project defense during the final semester.
8. **Annual Review Requirement of the Graduate School:** This is accomplished through the Graduate Student Progress System found at <https://web.missouri.edu/~umcgradweb/policies/progress/annual-review/progress-system/>. All

graduate students are required to complete the Annual Review Requirement by updating their information in the Graduate Student Progress System by the end of their second, fourth, etc. semesters of their program. The CS Department requires that this report be attached to each M form before being signed by the student's advisor and the CS Director of Graduate Studies.

## **M.E. Degree**

The requirements for the Master of Engineering degree are the same as those for the Master of Science (MS) in Computer Science degree with the following exceptions.

1. The student must complete at least 36 hours of graduate courses.
2. A minimum of 30 credit hours must be earned from University of Missouri System institutions.
3. At least 21 hours must be courses offered by the computer science department.
4. At least 15 hours must be 8000 level courses offered by the computer science department (excluding CS 8085).
5. CS 8980, CS 8990, and CS 9990 may not be taken.
6. At most 3 hours of CS 8085 may be taken.
7. No final examination is required.

The entrance requirements for the MS and ME degrees are the same. **Students must decide on either the MS or ME when they apply. Switching from the MS to the ME after starting the MS program is not allowed, although sometimes switching to the MS from the ME is approved.**

## **Ph.D. Degree**

All students completing a Ph.D. degree must fulfill the following minimum requirements:

1. Complete all of the course work requirements of the Master's degree in CS or have an MS degree in CS from another institution. The student must have maintained an overall GPA of at least 3.4/4.0 in their prior graduate level course work (excluding research and problems courses).
2. Pass a qualifying examination to be admitted to candidacy in the CS Ph.D. program.
3. Earn a minimum of 72 credit hours of course work and research past the student's BS degree.
4. Pass a comprehensive examination covering their areas of expertise.
5. Complete a doctoral dissertation on a topic approved by the candidate's advisory committee.
6. Defend the dissertation in a final oral examination.
7. Have at least one journal paper submitted, accepted or published, as approved by the advisor.
8. **Seminar Attendance:** The approval of the D4 form is tied to the attendance records for the department's seminar series. PhD students are required to satisfy the seminar attendance requirement in at least *four* semesters prior to graduation. Attendance at half of the approved CS seminars per semester meets this requirement.
9. **D Forms:** By the end of the second semester in the program, ideally, the D1 *Qualifying Exam Results & Doctoral Committee Approval* and the D2 *Plan of Study for the Doctoral Degree* forms should be submitted to the Graduate School. The D3 form *Doctoral Comprehensive Examination Results and Continuous Enrollment* form are submitted when the student has completed the Comprehensive Exam. The dissertation defense is followed by submission of the D4 *Dissertation Defense* form.
10. **Annual Review** Requirement of the Graduate School: This is accomplished through the Graduate Student Progress System found at <https://web.missouri.edu/~umcgradweb/policies/progress/annual-review/progress-system/>. All graduate students are required to complete the Annual Review Requirement by updating their information in the Graduate Student Progress System by the end of their second, fourth, etc. semesters of their program. The CS Department requires that this report be attached to each D form before being signed by the student's advisor and the CS Director of Graduate Studies.

\* Students cannot take CS 9990 before passing the PhD qualifying exam.

## **PhD Qualifying Examination**

The CS Qualifying Examination (Qual) is to assure the core computer science background of the CS PhD students. Note that the more specific background and research skills of the students in their research areas will be assured as part of their comprehensive exam.

### **Qual Rules**

1. To be eligible to take the Qual, students must be accepted for advisement in the PhD program. The examination must be passed before the end of his or her fourth semester of advisement as a PhD student, unless approved otherwise. Each student may take the Qual twice. Students in the last semester of their MS program who have been accepted into the PhD program are encouraged to take the Qual during their terminal semester of their MS degree program.
2. All eligible students who intend to take the Qual must complete the Request for Qualifying Examination form and submit it to the CS Graduate Office at least one month prior to the date of the Qual. Only eligible students who have completed the Request for Qualifying Examination form will be allowed to take the Qual.
3. The Qual shall be prepared and administered during the 12<sup>th</sup> week of both the Fall and Winter semesters by the Qualifying Examination Committee. The Director of Graduate Studies will select the specific date, time, and place for the Qual at the beginning of each semester.
4. The Qual is a written examination containing thirteen (13) questions, one from each of the thirteen subject areas (defined in item 5). A student must choose five (5) of them (each worth 20 points) to answer, and the answers must be in his/her own words. The examination will last four hours. A student passes the Qual with a score of at least 70 points. As an option, a student can take the CS Subject GRE and obtain 80 percentile or above to pass the Qual.
5. The thirteen subject areas are as follows:
  - 1) Programming Languages
  - 2) Compilers
  - 3) Operating Systems
  - 4) Computer Networks
  - 5) Database Systems
  - 6) Software Engineering
  - 7) Digital Logic Design
  - 8) Computer Architecture and Organization
  - 9) Computation Theory
  - 10) Algorithm Design and Analysis
  - 11) Computer Graphics
  - 12) Image Processing
  - 13) Artificial Intelligence
6. Each student will be allowed to bring in five 8.5" x 11" sheets of paper containing notes to be used in the exam. No other material will be allowed. These five sheets of paper will be collected with the exam and will be returned to the student upon request after the exam is graded.
7. The Qualifying Examination Committee shall administer and grade the examination, identifying the passing candidates. The Committee will not make the questions available to future Qual takers.

8. Each candidate recommended by the Qualifying Examination Committee and by a member of the CS doctoral faculty who has agreed to serve as his or her dissertation advisor will be submitted to the full CS faculty at a regular faculty meeting to obtain departmental qualification.

### **Suggested References for the Thirteen Subject Areas**

1. Friedman, Wand, and Haynes, *Essentials of Programming Languages*, 2<sup>nd</sup> Edition, MIT Press, 2001  
Chapters 1-5
2. Aho, Sethi, and Ullman, *Compilers: Principles, Techniques, and Tools*, Addison Wesley, 1986  
All chapters
3. Silberschatz, Galvin, and Gagne, *Operating Systems Concepts*, 7<sup>th</sup> Edition, Wiley and Sons, 2004  
Chapters 1 - 17
4. Tanenbaum, *Computer Networks*, 4<sup>th</sup> Edition, Prentice Hall, 2002  
All chapters
5. Ramakrishnan and Gehrke, *Database Management Systems*, 3<sup>rd</sup> Edition, McGraw Hill, 2003  
All chapters
6. Sommerville, *Software Engineering*, 7<sup>th</sup> Edition, Addison Wesley, 2004  
Chapters 1-9, 11, 12, 14, 16, 18, 19, & 21-23
7. Katz and Borriello, *Contemporary Logic Design*, 2<sup>nd</sup> Edition, Prentice Hall, 2005  
Chapters 1-7, Appendix A, & Appendix C
8. Hayes, *Computer Architecture and Organization*, 3<sup>rd</sup> Edition, McGraw Hill, 1998  
All 7 chapters
9. Sipser, *Introduction to the Theory of Computation*, 2<sup>nd</sup> Edition, Thomson Course Technology, 2005  
Chapters 1-4 & 7
10. Cormen, Leiserson, Rivest, and Stein, *Introduction to Algorithms*, 2<sup>nd</sup> Edition, MIT Press, 2001  
Chapters 1-16
11. Hearn and Baker, *Computer Graphics with OpenGL*, 3<sup>rd</sup> Edition, Prentice Hall, 2004  
Chapters 1-8 & 11
12. Gonzalez and Woods, *Digital Image Processing*, 2<sup>nd</sup> Edition, Prentice Hall, 2002  
Chapters 1-6, 9, & 10
13. Russell and Norvig, *Artificial Intelligence: A Modern Approach*, 2<sup>nd</sup> Edition, Prentice Hall, 2002  
Chapters 1-20

## ADDITIONAL NOTES

### **MS Thesis and Non-Thesis Requirements:**

The MS thesis or non-thesis project is the distinctive element of the MS degree program. Documentation of the project work is an extended report on a technically substantive research project that involves basic computer science, and, possible, one of its many application areas. Interdisciplinary topics for both thesis and non-thesis project reports are encouraged. Both thesis and non-thesis projects are defended.

To satisfy the Graduate School, the MS thesis must be “the student’s own work and must demonstrate a capacity for research and independent thought.” It is not required that the MS thesis involve the discovery or creation of new knowledge, as is the case for the Ph.D. thesis. An MS thesis must show the student’s ability to carry through to completion a project of a credible level of difficulty that draws on the knowledge and experience gained through advanced graduate course work.

### **Annual Review Requirement:**

The Annual Review Requirement of the Graduate School is at <http://gradschool.missouri.edu/policies/progress/annual-review/>. It is done through the Graduate Student Progress System at <https://web.missouri.edu/~umcgradweb/policies/progress/annual-review/progress-system/>. All graduate students are required to complete the Annual Review Requirement by updating their information in the Graduate Student Progress System by the end of their second, fourth, etc. semesters of their program. Approval of an M or D form is contingent upon the completion of a student’ annual review in the Graduate Student Progress System. A summary printed out from the system is required to be submitted with any M or D form.

Annual Review information includes the indicators listed below, not all of which are applicable to all graduate students every year:

1. Review of progress toward degree completion using program of study as a guide.
2. Areas in which student is meeting or exceeding expectations.
3. Areas in which student needs improvement
4. \* Number of presentations (single or co-authored) at:
  - a. Local conferences
  - b. Regional conference
  - c. National conferences
5. \*Number of publications (single or co-authored)
6. \*Notification of any grant/fellowship applications submitted
7. \*Notification of any grant/fellowship applications funded
8. \*Involvement in any partnerships programs of research, outreach, or appropriate professional activity with non-university organizations;
9. \*Notification of any teaching awards
10. \*Notification of any research awards
11. \*Notification of any other awards, specify
12. \*Notification of any conference travel
13. \*Notification of any department/college awarded fellowship/scholarship
14. \*Participation and evaluation of any internship experience
15. \*Update on job search; notification of job placement

\*Indicates items of information required on annual data forms submitted by departments to the Graduate School in July of each year.

### **Credit Toward a Second Master's Degree:**

A student who has completed one Master's degree at MU or elsewhere may present, upon the recommendation of the student's advisor and approval by the Director of Graduate Studies and the Graduate School, a maximum of six hours of credit earned in the previous program toward a second Master's degree. (**Note:** The Graduate School permits eight credits, but the CS Department only accepts six).