Graduate Student Handbook

2022-2023

Computer Science Department
Western Washington University

Updated 6/24/2022

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Welcome

The faculty and staff of the Computer Science Department welcome you to Graduate School and wish you success in the pursuit of your Master of Science in Computer Science.

Our graduate program requires a student to be independent and responsible to the greatest extent possible. Staying informed and keeping in touch with your supervisor will help you manage that independence and responsibility. A number of sources of information are available to assist you:

1. The academic e-catalog: http://catalog.wwu.edu. It contains the basic Graduate School regulations as well as the academic requirements and course descriptions. You will find important dates in the University Academic Calendar, and writing proficiency requirements.

2. This handbook (which you are reading) provides a general description of the MS Computer Science program, helpful guidelines, forms required, and other useful information.

3. The Graduate School Website: http://www.wwu.edu/depts/gradschool. This Website contains important and useful information to guide you through the course of your study at Western. Pay particular attention to important dates, deadlines, scholarships, financial aids, and requirements.

4. The College of Science and Engineering: https://cse.wwu.edu. The college provides information about academic opportunities, research projects, teaching assistants, and scholarships.

5. The Computer Science Department: https://cse.wwu.edu/computer-science. The departmental Website provides important information about courses offered each academic year, faculty and staff contact information, and faculty members' Websites that contain their research interests, course information, and job opportunities.

6. The address of the Graduate School: 516 High Street, Old Main 530, Bellingham, WA 98225-9037 360-650-3170, gradschool@wwu.edu

Welcome on board, and best wishes from the faculty and staff during your tenure in the graduate program here at Western!

Mission Statement
Graduate Program in Computer Science

The faculty and staff of the Computer Science Department are dedicated to training and preparing students to become computer scientists. We believe that computer science has been and will continue to contribute greatly to all disciplines of study and the world economy.

We provide a high-quality education to prepare students for productive careers in industry, academia, and government in a nourishing environment for teaching, learning, and research in the theory and applications of computing. This training is offered under the direction of the Graduate School at Western Washington University.

Students in the graduate program in the Computer Science take courses on computer science theory, concepts, and practice and in research projects. Students graduating from our program will have the ability to apply computing knowledge and mathematics to real-world problems. They will be able to analyze problems and identify the computing requirements appropriate to their solution. Students will master the design-implementation-evaluation cycle for computer-based systems, processes, components, or programs to meet desired goals. Our program provides students with an understanding of professional, ethical, legal, security, and social issues and responsibilities. Our excellent preparation for our students will have a profound impact on the future of humanity.

Goals:

- To graduate students with a strong, in-depth background in computer science
- To prepare students for Ph.D. programs and advanced careers in information technology
- To engage students in high-quality research-oriented projects

Objectives:

- To educate students in core concepts in computer science
- To provide students with in-depth knowledge, skills, and experiences in computer science
- To focus on the applied aspects of computer science, especially real-world projects that use core concepts and expert knowledge of computer science
- To provide students and faculty opportunities to engage in research in computer science

Computer Science Graduate Program Prerequisites

The Computer Science Department offers a Master of Science Degree in computer science. This graduate program is designed to provide the student with both breadth and depth in the theoretical bases of the disciplines as well as competence in real-world practice.

Students who have completed an undergraduate degree, who meet the requirements of the Graduate School, and who show evidence of strong scholarship are invited to apply for admission to the graduate program in computer science.

Students may be admitted into the computer science master's degree program in one of three ways: full admit, full admit with prerequisite course work, and provisional admit. Students who have a sufficient background in computer science, i.e. an undergraduate degree in computer science, and who meet the general requirements of the Graduate School can be given a "full admit".

Due to the nature of this field of study, it is often the case that students with an undergraduate degree in an area other than computer science seek admission to the graduate program in computer science. Such students usually require a number of prerequisite undergraduate courses before they can embark on their graduate studies. If they meet the other requirements of the Graduate School, such students can usually be given a "full admit with prerequisite course work". The student is admitted into the graduate program but is required to complete a number of undergraduate prerequisite courses.

Other constraints may be placed on such admissions, such as a minimum acceptable grade for the prerequisites and perhaps a time frame for completion of the prerequisites. The exact nature and composition of the prerequisite coursework will be determined on a case-by-case basis. In rare cases, students who do not meet the general requirements of the graduate school, for example, do not have the required minimum GPA, can be given a "provisional admit" provided their background is such that it indicates a high probability of success in the program.

In case of provisional admission, the program advisor may interview the candidate individually and consider the following factors:

- Related background knowledge and work experience
- Classes taken since graduation
- Reference letters

Application Information

Graduate Program Admission Deadlines:

- Fall Quarter, Priority deadline - March 1; Regular deadline: April 15
- Winter Quarter, October 1
- Spring Quarter, January 10

English Language Proficiency:
All applicants must obtain at least the minimum TOEFL scores (86 internet-based test) or IELTS (7.0) for admission eligibility unless English is your native language; or you have earned, or are in the process of earning, a baccalaureate (or higher) degree from a regionally accredited U.S. institution; or you earned your degree at an institution where English was the language of instruction.

Grade Point Average:
In order to be eligible for full admission, applicants must have at least a 3.0 GPA (on a 4.0 scale) over the last 60 semester-hours or 90 quarter-hours of study. Post-baccalaureate coursework must be "upper-division" at a four-year university to be included in GPA calculation. Applicants with advanced degrees from accredited institutions are considered to have met GPA requirements.

Graduate School Admission Requirements:

- https://gradschool.wwu.edu/admissions-eligibility
- https://gradschool.wwu.edu/admissions-faqs
- https://gradschool.wwu.edu/computer-science

International students:

- https://gradschool.wwu.edu/international-students

Computer Science Graduate Program Policies

Program Enrollment Limits: depends on faculty resources

Core Course Enrollment Limits: no more than 30 students

Elective Course Enrollment Limits: approximately 10 students

Undergraduates taking Graduate Classes: Students must meet graduate school criteria of at least 3.0 GPA and senior status, no exceptions. They must also have a 3.0 GPA or greater in all computer science courses.

Pre-Masters Program: Any student in the Pre-Master program is automatically eligible to take graduate courses. Only undergraduates in the Pre-Masters Program will be allowed to take the 4 core courses, and there are no exceptions. If students wish to take these courses they should apply to the Pre-Masters program or get the instructor's permission.

Counting Undergraduate Courses for Graduate Degree: The department does not allow counting undergraduate 400-level courses towards the graduate degree.

Credit Splitting of graduate course credits: Will not be allowed, no exceptions. If any part of a graduate course is used to fulfill the B.S. degree, no part of that course may be used to fulfill the M.S. degree (except the core courses CSCI 509, 510, 511, and 512 for Pre-Masters students).

Explanation of credit splitting: Undergraduate students can take computer science graduate electives and count them toward the 16 credits of electives for their B.S. If they are admitted to the computer science graduate program, they are not allowed to count any graduate elective used for the B.S. degree towards the M.S. degree. That is, students want to split one graduate elective credit between their B.S and M.S degrees. This is called credit splitting.

Credit Transfer: A student may, with the agreement of the graduate advisor, transfer up to 12 credits into the Masters's program.   This is most often done when a Pre-Masters student takes elective graduate classes while still an undergraduate and that class does not meet any of the B.S. requirements.   These credits may be transferred from the undergraduate to the graduate program.

Course Requirements

The core curriculum consists of four courses of 4 credits each.

- CSCI 509 – Operating System Internals
- CSCI 510 – Automata and Formal Language Theory
- CSCI 511 – Analysis of Algorithms
- CSCI 512 – Design and Implementation of Computer Programming Languages

All students in the MS in computer science program must take **three of these four courses**. The fourth course may be taken as an elective.

Elective Courses

Other CSCI 500-level courses are to be taken as electives. All students must take a minimum of 16 credits of electives. These electives may include the fourth core class. The electives are often in support of the research area of the student.

Graduate Seminar

All students are required to take the graduate seminar. CSCI 590 must be taken first for a total of 3 credits. Then CSCI 591 must be taken for a total of 6 credits giving a total of 9 credits of seminar.

Research Experience

In addition to the core courses, elective courses, and graduate seminars, all students in the MS in computer science program are required to take a minimum of three research experience courses. The research experience courses are tied to one of a number of ongoing projects in the computer science department. Effectively, the student is joining that research team effort by registering for these courses. As such, the student should discuss their intentions with the faculty members involved in that project prior to registering for these courses. The research experience course is CSCI 692, 5 credits, and must be taken 3 or 4 times. To receive credit for the research classes, the student must write a research paper by the final quarter of research that is submitted to a refereed conference or journal with advisor approval and present their research in CSCI 591. The total credits of research and elective credits must be 35 or 36 credits.

Total Credit Hours Required for the MS Degree in Computer Science

Component	Explanation		Credits
Core Courses	3 courses x 4 credits each		12
Graduate Seminar	CSCI590 (3 credits) CSCI591 (6 credits)		9
Elective / Research Experience Select **A** or **B**	**A**	4 research experience classes (4 x 5 credits) and 4 elective courses (4 x 4 credits)	36 or 35
	B	3 research experience classes (3 x 5 credits) and 5 elective courses (4 x 5 credits)	
	Total Credits		**56-57**

Five-Year BS and MS Fast Track Program

The Five-Year BS + MS Fast Track program makes it possible for exceptional undergraduate computer science majors to complete both a BS and MS degree in computer science in five years, although five years plus one quarter is more common. Computer science majors who qualify will take four courses from the graduate program when they are seniors, three of the core and one elective. The computer science master's degree may then be completed in four more quarters of study at the master's level.   It is possible to complete the master's degree in three quarters by taking 2 credits of CSCI 591 during the senior year and then taking a heavy load during the three quarters of master's work.

Computer science majors who have achieved a GPA of 3.0 or above in their first three years as an undergraduate should contact the computer science graduate advisor. Applications are available outside the department office, and the undergraduate advisor's office, and may be downloaded from the computer science Website.

Students should apply for admission into the undergraduate honors program after the completion of their junior year of study. Once admitted to the honors program, students will take three of the four MS core curriculum courses. The course substitutions are: CSCI 509 for CSCI 447, CSCI 510 for CSCI 401, CSCI 511 for CSCI 405, CSCI 512 for CSCI 410. The student takes a fourth course which is either the fourth core class or a graduate elective. **Note**, a graduate elective counts for elective credit in the undergraduate program.   For electives with both an undergraduate and a graduate version, like CSCI 415 and CSCI 515, taking CSCI 515 means you cannot also receive credit for CSCI 415.   In the case where the graduate elective does not have an undergraduate version, the graduate class will not replace an undergraduate class.

A Fast Track student may take up to two additional 500 level classes and 2 credits of CSCI 591 for transfer to the Fast Track Master program as an undergraduate. These classes may not be used for any undergraduate requirements to be eligible for transfer to the Master program.

After students graduate with the BS degree in the computer science honors program, they will then complete all remaining requirements for the MS degree, i.e., electives, research experience and seminar.   A fast track student is required only 8 hours of 591. Electives, seminar and research experience credits must total 39 or 40 credits. (8 seminar plus 16 elective and 15 research or 8 seminar plus 12 elective and 20 research) To complete all MS requirements in only one additional year, the student must have 2 credits of CSCI 591 taken during their undergraduate study transferred into the degree, take 3 research experience courses, 5 electives and the remaining 6 hours of CSCI 591 in three quarters.

Master's Students Without a CS Bachelor's Degree

The following is the list of standard prerequisite course work required of a new graduate student who does not hold an undergraduate degree in Computer Science. Previous courses taken or work experience may satisfy some of these requirements.

A graduate student admitted with the requirement of prerequisite course work needs to meet with the graduate advisor before registering for their first quarter of study to determine which of these classes will be required for the student.

If a student takes financial aid, there is a limit of 55 to 58 credits. If a student separates undergraduate and graduate courses, they are not likely to exceed this limit. (**Currently, our department is not taking Post Baccalaureate students**.)

Standard Prerequisite Courses:

CSCI 141 – Computer Programming I
CSCI 145 – Computer Programming and Linear Data Structures
CSCI 241 – Data Structures
CSCI 247 – Computer Systems I
CSCI 301 – Formal Language and Functional Programming
CSCI 305 – Algorithm Analysis I
CSCI 330 – Database System
CSCI 345 – Object Oriented Design
CSCI 347 – Computer Systems II
CSCI 367 – Computer Networks I

Math 124 – Calculus and Analytic Geometry
Math 125 – Calculus and Analytic Geometry
Math 204 – Elementary Linear Algebra
Math 341 – Probability and Statistics

For the First Quarter Students

Understand the program requirement and make a plan in your first quarter! Message from the Graduate School - https://gradschool.wwu.edu/program-requirements

Important Policies: https://gradschool.wwu.edu/policies

- Academic Progress (GPA requirement etc.)
- Continuous Enrollment (thinking to take a quarter off? Or No course to take?)
- Transfer Credit, Independent Study

Graduate Plan of Study

Creating a New Plan

In DegreeWorks, select the Plans tab just below your name and ID at the top. You will be prompted to select a template, or create a blank plan from scratch. In most cases, starting with a template is the best choice.

Select the correct program from the list of available templates and click Open at the top, then choose the start term.

The template should contain the most common terms attended for the program, and may contain some or all of the required courses. Courses can be dragged and dropped into different quarters, or can be chosen from a list and dragged into the appropriate quarter.

This video covers the basics:

Planning in DegreeWorks (for students and advisors)

Notify the advisor as soon as your plan is created so the plan can be launched and locked.

Amendments

You can update a plan as needed by asking the advisor to unlock it to allow you to make changes, or ask the advisor to make the changes for you. You can also create a whole new plan if that is easier.

Access your DegreWorks:

https://registrar.wwu.edu/degree-works-students

The Graduate Research Project

Before students can take CSCI 692 for the first time, they must complete the research proposal form. The e-form can be found on the CS Graduate Program Website.

https://esign.wwu.edu/forms/CSCI/_csci_grad_research_proj_1.aspx

Applying for Graduation

The Link to the Requirements and Deadlines from the Graduate School:

https://gradschool.wwu.edu/degree-completion

Graduate School Requirements for Option II (non-thesis)

1. Degree Recommendation e-sign form

2. All "K" and "X" grades removed for students completing degree

3. Join the Commencement

Note: The deadline for each quarter is different. Please check the most current information from graduate school Website (see above link).

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Requirements and Deadlines from CS Graduate Program:

1. Fill out the Application For Degree form.

2. Fill out the Degree Recommendation – Non-thesis form.

3. Along with the Degree Recommendation form, please also submit the following

   1) Proof of submission to a conference or journal
   2) If you don't have 1), email your paper in a submittable format to the CS Graduate Program Advisor. The Computer Science Department Graduate Committee members will review your paper and make sure the paper meets the standard of a conference or journal paper.
   3) E-mail your paper to CS Graduate Program Advisor including the software, technical report, and related documents
   4) E-mail your supervisor the "Degree Recommendation Form"
   5) Your supervisor e-mail the "Degree Recommendation Form" to the CS Graduate Program Advisor his or her recommendation

   Do all above AT LEAST THREE DAYS BEFORE the Graduate School's deadline.

   In particular, do 2) AT LEAST ONE WEEK BEFORE the Graduate School's deadline.

4. Finally the Computer Science Graduate Program Advisor will e-mail this "Degree Recommendation Form" to the Graduate School after careful examination of your material.

Graduate Faculty

The Graduate Faculty members are dedicated to graduate program and good at working with students on their own research interests. We extend our research interests to supervise students. All graduate faculty members are very responsible, helpful, knowledgeable, and have strong interests in research with students.

Here is the list of graduate faculty members with some of their research interests.

1. **Ahmed, Shameem,** PhD, Information and Communication Technology for Development, Human Computer Interaction, mHealth, Mobile Computing.
2. **Wesley, Deneke**, PhD, Computer Graphics, Pervasive Computing, and Artificial Intelligence
3. **Fizzano, Perry**, PhD, Algorithms, optimization, bioinformatics.
4. **Hao, Qiang,** PhD, Computer Education.
5. **Hardin, Caroline,** PhD, Computer Science Education, digital privacy.
6. **Hearne, James W**., PhD, Artificial intelligence, computational science.
7. **Hutchinson, Brian**, PhD, Speech and language processing, machine learning and optimization.
8. **Idriss, Tarek**, PhD, Lightweight Security, Machine Learning and Internet of Things.
9. **Jagodzinski, Filip**, PhD, Computational structural biology, big data, integrated information systems.
10. **Kameron Decker Harris**, PhD, Machine learning, Networked dynamical systems, computational neuroscience, mathematical modeling.
11. **Liu, Yudong**, PhD, Natural Language Processing and biometric authentication.
12. **Meehan, Michael J.,** PhD, parallel and distributed computing, programming languages, networks.
13. **Nelson, Philip A.,** PhD, parallel and distributed computing, compilers, operating systems.
14. **Sharmin, Moushumi**, PhD, Human-computer interaction, information visualization, mobile health, privacy.
15. **Michael Tsikerdekis**, PhD, CyberSecurity, Social Computing, Online Deception, Machine Learning.
16. **Shrirang Mare,** PhD, computer security and privacy, with an emphasis on usable security and privacy.
17. **Scott Wehrwein**, PhD, Computer Vision, Computational Photography, Computer Graphics.
18. **Yasmine EI-Glaly**, PhD, HCI, user experience, mobile computing, assistive technology, and multimodal interaction.

Funding and Support

General information from the Graduate School: https://gradschool.wwu.edu/funding-support

Teaching Assistantships: https://gradschool.wwu.edu/teaching-assistantships

CS TAships are usually awarded every year in the late Spring quarter. The applications will be solicited and reviewed before the awards.

For potential research assistantship opportunities, please contact faculty members individually.

Safety Information

Here is some information on methods to protect you from being the victim of a campus crime:

1. Do not prop open locked lab doors. You should never lend your proximity card to anyone.

2. Avoid working alone whenever possible. If you have to, lock yourself in the lab or office. Do not leave the door open.

3. Do not walk alone in a dark parking lot. Call campus police (650-3555) if you got lost in the campus.

4. If you find yourself in a bad situation, scream, draw attention to yourself, yell "No", "Stop", or "Fire". Run away quickly to a busy area and call 650-3555.

5. Report suspicious persons to campus police at 650-3555 immediately.

6. Here is a public safety Website: http://www.wwu.edu/ps/

Useful Links and Forms

1. Grad School: http://www.wwu.edu/gradschool

2. CS Home: http://www.wwu.edu/cs;
   https://cs.wwu.edu/cs-masters-program

3. Catalog Home: http://catalog.wwu.edu

4. Policies including Academic Standard, Continuous Enrollment, Transfer Credits, and
   Independent Study: https://gradschool.wwu.edu/policies

5. Funding and Support: https://gradschool.wwu.edu/funding-support

6. Degree Completion, Deadlines, Commencement:
   https://gradschool.wwu.edu/degree-completion

7. Western Career Center: http://www.wwu.edu/careers

8. Tuition: http://www.wwu.edu/sbo/tuition-fee-schedule.shtml