COMPUTER SCIENCE, PHD

The Doctor of Philosophy, the highest degree offered by the University, is conferred in recognition of marked scholarship in a broad field of knowledge as well as distinguished critical or creative achievement within a special area of the general field (the special area being the subject of the doctoral dissertation). The Doctor of Philosophy (PhD) in Computer Science program in the College of Engineering and Applied Science (CEAS) is designed to meet the traditional high standards for such programs. The PhD in Computer Science is administered by the division of Computer Science in the department of Electrical Engineering and Computer Science. Some aspects of the program are delegated to the CEAS Graduate Office.

The program is flexible, allowing the student to develop a plan of studies tailored to meet individual needs. Evaluation of the study plan is based on its appropriateness as a computer science program, the availability within the University of appropriate course offerings, and the availability within the division of Computer Science of a faculty member who is qualified to serve as the student's major professor.

The PhD degree requires a minimum of 66 credits beyond the baccalaureate, including a dissertation. The student must also satisfy a residence requirement.

Many of the courses leading toward graduate degrees in CEAS are offered in the late afternoon or evening. So, students can complete much of their coursework on a part-time basis.

Admission Requirements

Application Deadlines

Application deadlines vary by program, please review the application deadline chart (http://uwm.edu/graduateschool/program-deadlines/) for specific programs. Other important dates and deadlines can be found by using the One Stop calendars (https://uwm.edu/onestop/dates-and-deadlines/).

Admission

An applicant must meet Graduate School requirements (http://uwm.edu/graduateschool/admission/) plus these program requirements to be considered for admission to the program:

1. A bachelor's or master's degree:
   a. Applicants holding a MS degree in computer science will generally be admitted without deficiencies. Applicants holding a BS degree in computer science may be admitted only if they are exceptionally strong, such as with a record including successful completion of courses normally taken at the graduate level in computer science.
   b. Applicants holding MS degrees from domains outside of computer science may be admitted with specific program-defined course deficiencies, provided that the deficiencies amount to no more than two courses. The student is expected to satisfy deficiency requirements within three enrolled semesters. The deficiencies are monitored by the Graduate School and the division of Computer Science. No course credits earned in making up deficiencies may be counted as program credits required for the degree. The mathematics preparation must generally include mathematics equivalent to MATH 231. Otherwise, the made-up deficiencies must be sufficient to assure that the applicant is

able to proceed with advanced work directed toward the doctoral degree.

2. A minimum grade point average of 3.0 on the basis of 4.0, in the highest degree granted. An applicant with a master's degree in engineering or computer science having a GPA of less than 3.0, but at least equal to 2.75, may be admitted if substantial evidence can be submitted demonstrating that the applicant has the capacity to perform satisfactory doctoral work.

3. All applicants are required to submit a brief (1 or 2 page) statement describing their professional goals and at least two letters of reference.

4. The Graduate Record Examination (GRE) is required for all international and domestic applicants.

5. International students require proof of English language proficiency. Complete information is available at the UWM Center for International Education (https://uwm.edu/cie/international-admissions/graduate-application/english-proficiency-requirement/).

6. Applicants with a relevant master's degree who intend to complete an additional master's in Computer Science at UWM should announce their plans at the time of admission, and not later than the start of their second year into the PhD program.

Reapplication

A student who receives a master's degree at UWM must formally apply for admission to the Graduate School as a doctoral student before continuing studies that will be credited toward the Doctor of Philosophy in Computer Science.

Credits and Courses

The minimum degree requirement is 66 graduate credits beyond the bachelor's degree. The minimum credit distribution of coursework to be undertaken must be as follows depending on the option selected.

Code	Title	Credits
Select 21 credits in the major area of concentration		21
Select 9 credits in an approved minor area		9
Select 6 credits in mathematics and/or quantitative methods		6
Take for total of 18 credits:		18
COMPSCI 998	Doctoral Thesis	
Select 9 credits of electives		9
EAS 701	Effective Academic Writing	1
EAS 702	Preparing Future Engineering Faculty & Professionals	2
Total Credits		**66**

The 6-credit requirement in mathematics and/or quantitative methods may be met by satisfactorily completing certain courses specified by the Department or by taking the minor in mathematics. When such courses also count for either the major or the minor area, the remaining credits may be taken as approved electives.

The student must achieve a 3.0 GPA separately in each of the following areas: the major area, the minor area, and the quantitative methods area.

The minor is normally in another area offered in the College or in the physical sciences or mathematics or in management sciences. Consideration of any other area as a minor requires the prior approval of the Department.

A minimum of 26 credits, excluding doctoral thesis, must be at the 700 level or higher.

Additional Requirements

Major Professor as Advisor

The Graduate School requires that the student must have a major professor to advise, supervise, and approve the program of study before registering for courses. The incoming student will be assigned to an initial Program Advisor at the time of admission. Prior to the completion of 12 credits (9 credits for part-time students), the student must select a major professor who will be the student's thesis advisor. The student, in consultation with the major professor, develops a proposed program of studies which is submitted for approval. For subsequent changes, the student must file a revised program of study for approval.

Foreign Language

There is no foreign language requirement for the degree.

Residence

The program residence requirement is satisfied either by completing 8 or more graduate credits in two consecutive semesters, exclusive of summer sessions, or by completing 6 or more graduate credits in each of three consecutive semesters, exclusive of summer sessions.

Qualifying Examination

Each student in the program must take and pass a Qualifying Examination to demonstrate that the student is qualified for doctoral-level work. The Qualifying Examination is a written exam and is structured in two parts: Part 1 and Part 2. The examination is offered twice a year during the regular academic year.

Students entering with only a bachelor's degree or with a master's degree in an area unrelated to their major may take the Qualifying Examination for the first time after earning 12 credits of graduate work at UWM and must successfully pass the exam before earning 30 credits of graduate work at UWM.

Students admitted after completing an appropriate master's degree must take this examination no later than the semester immediately after 18 credits of graduate work have been earned at UWM.

A student may take the Qualifying Examination twice. On the first attempt, the student must attempt both Part 1 and Part 2 of the examination.

- If the student passes both parts, then the student has passed the entire examination and will be permitted to proceed toward the Doctor of Philosophy degree.
- If the student fails both parts, then the student must take the entire exam again at its next offering.
- If a student passes only one of the two parts, then the student must take the examination again at its next offering, but may choose to take only the part of the examination that was not passed on the first attempt.
- If a passing grade is not obtained on the second attempt of the Qualifying Examination, the student will not be permitted to proceed toward the Doctor of Philosophy degree.

A student who fails the qualifying exam twice is subject to dismissal from the PhD in Computer Science program. A student may appeal the failure and dismissal within 30 days of being notified of the failure. If the student does not appeal or the appeal is not granted, the College will recommend to the Graduate School that the student be dismissed. A student who is dismissed from the PhD in Computer Science program because of failing the qualifying exam may not be enrolled in the PhD in Computer Science program for a complete calendar year. This does not preclude the student from being enrolled in any other degree program offered by the University. A student who wishes to re-enroll in the program after a calendar year has passed must apply as any other student would, including payment of fees. A student readmitted after having failed the qualifying exam twice must take the qualifying exam in the first semester of matriculation and this will count as the student's first attempt at the exam. The student may appeal this requirement prior to the first scheduled day of classes. If the student fails the qualifying exam on this first attempt, the student is permitted the customary second attempt as described above. All appeals must be in writing and directed to the CEAS Associate Dean for Academic Affairs.

Doctoral Program Committee

The Doctoral Program Committee is proposed by the major professor in consultation with the student and the department. The Committee must include at least five graduate faculty (three from major area, one from minor area, and one from any area, including the major and minor areas). The last member may be a person from outside the University (such as another university, a research laboratory, or a relevant industrial partner), provided that person meets Graduate School requirements. The Committee may have more than five members, provided that the majority of the Committee members are from the student's major field.

Doctoral Preliminary Examination

A student is admitted to candidacy only after successful completion of the doctoral preliminary examination conducted by the Doctoral Program Committee. This examination, which normally is oral, must be taken before the completion of 48 credits of graduate work toward the Doctor of Philosophy degree in Computer Science and should be taken within the first seven years in the program. Prior to the examination, the student must present a proposal for a doctoral dissertation project. The examination may cover both graduate course material and items related to the proposed dissertation project.

Dissertation and Dissertator Status

The student must carry out a creative effort in the major area under the supervision of the major professor and report the results in an acceptable dissertation. The effort of the student and the major professor to produce the dissertation is reflected in the PhD in Computer Science program requirement that the student complete at least 18 credits of doctoral thesis.

After the student has successfully completed all degree requirements except the dissertation, the student may enter Dissertator Status. Achieving Dissertator Status requires successful completion of the Doctoral Preliminary Examination and prior approval of the student's advisor, the Doctoral Program Committee, and the Computer Science GPR of a dissertation proposal that outlines the scope of the project, the research method, and the goals to be achieved. Any proposal that may involve a financial commitment by the University also must be approved by the Office of the Dean. After having achieved Dissertator Status, the student must continue to register for 3 credits of doctoral thesis per semester during the academic year until the dissertation is completed.

Dissertation Defense

The final examination, which is oral, consists of a defense of the dissertation project. The doctoral defense examination may only be taken

after all coursework and other requirements have been completed. The student must have Dissertator Status at the time of the defense.

Time Limit

All degree requirements must be completed within ten years from the date of initial enrollment in the doctoral program.