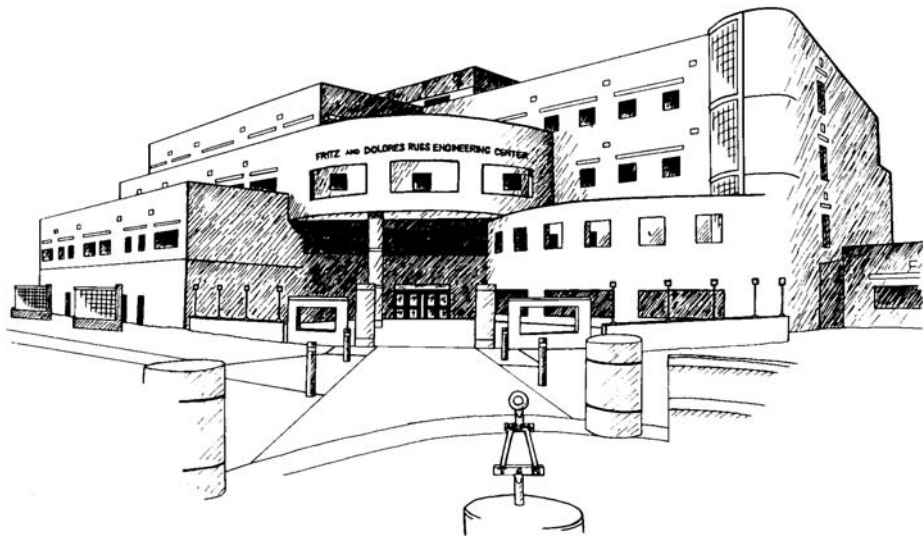


Doctor of Philosophy  
In  
Computer Science and Engineering

Curriculum and Policies



**Department of Computer Science and Engineering**  
Room 303 Russ Engineering Center  
Wright State University  
3640 Colonel Glenn Hwy.  
Dayton OH 45435-0001

Revised 3/08

# I. Ph.D. Requirements

## **Completion of Course and Credit Hour Requirements:**

A Student must satisfy the course and credit hour requirements specified in part II of this document. The program must be completed with a minimum grade point average of 3.0.

## **Program of Study**

The student must complete a program of study and have it on file in the School of Graduate Studies. The program of study indicates the coursework to be completed in the student's program and is determined in consultation with the student's advisor. The completed program of study must be approved by the Director of the Ph.D. Program, the Chair of the Department of Computer Science and Engineering, and the Dean of the School of Graduate Studies. Program of study forms may be obtained in the department office (see Appendix 2).

The School of Graduate Studies *Policies and Procedures Manual* requires the program of study to be completed, approved and on file by the sixth quarter of a student's Ph.D. program.

## **Ph.D. Qualifying**

The successful completion of the Qualifying Examination demonstrates that the student has attained a breadth of knowledge in computer science or computer engineering at the graduate level. The examination may be passed either by outstanding performance on the core courses or through a series of written examinations. Students have two opportunities to pass the Qualifying Examination.

### ***The First Examination***

Within the first two quarters of entering the Ph.D. program and prior to taking any of the core courses, the student must indicate whether he/she will take the Qualifying Examination by coursework or by a written examination. Student selecting to qualify for the Ph.D. program by the core curriculum must declare whether they will complete the Computer Science or the Computer Engineering core.

### ***Examination by Core Curriculum***

The student passes the Qualifying Examination if he/she completes the core curriculum courses

1. within the 6 quarters of entering the program, and
2. achieves a 3.75 grade point average or greater in the core courses  
(no repeat of classes).

### ***Written Examination***

The written examination will cover the topics from the core curriculum courses. If this option is chosen, the student must take examination within 4 quarters of entering the program. The exam will consist of a two-hour examination on each of the topics. A grade point average of at least 3.75 on the examinations is required to pass.

### ***Second examination***

Students not passing the examination on the first attempt will be given one additional opportunity to pass at the next available offering of the written examination. Any student who fails to pass the examination on the second attempt will be dismissed from the program.

The second examination will be a written examination over the student's selected core curriculum. The student is required to take the exam in each area in which he/she did not receive an A on the first examination. The grades obtained on the second examination will replace those from the first examination. A grade point average of at least 3.75 on the two combined examinations is required to pass.

### ***WSU Masters Students***

Students entering the Ph.D. program with a Masters in Computer Science or Computer Engineering from Wright State will be credited with passing the Qualifying Examination if their performance on the core courses in the Masters program satisfies the criteria for passing the Qualifying Examination by coursework described above.

Students must register for CS 892 or CEG 892 to take the written examination. Students will be notified of the results within two weeks of the final session of the examination.

### **Dissertation Committee**

The dissertation committee may be formed only after completion of the Qualifying Examination but prior to the Candidacy Examination. It is the responsibility of the student to find a faculty member who agrees to supervise his/her research. The dissertation director must be a dissertation qualified member of the Computer Science and Engineering Doctoral Program Faculty.

The dissertation committee will be comprised of:

- The dissertation director
- Two additional members of the Computer Science and Engineering Doctoral Program Faculty who are members of the university graduate faculty
- One full member of the university graduate faculty who is not a member of the Department of Computer Science and Engineering faculty

Additional members may be added to the committee at the request of the dissertation director and with the approval of the Director of the Ph.D. program. Faculty members from Dayton Area Graduate Studies Institute (DAGSI) Institutions may serve as departmental faculty members on dissertation committees. Committee members not from Wright State University or DAGSI must be approved for committee membership following the School of Graduate Studies requirements.

The dissertation director is responsible for the overall direction of the research, the day-to-day advising of the student, and continuing progress of the student in completing his/her program of study. The role of the dissertation director and the program faculty members of the committee is to provide supervision during the research and to judge the extent and quality of the research upon its completion. The role of the Wright State University graduate faculty member who is on the dissertation committee but not a member of the Computer Science and Engineering faculty is to ensure that all University and School of Graduate Studies policies and procedures are satisfied. At the discretion of the advisor, the committee may include one member from outside of the University whose research accomplishments are appropriate for the committee.

It is the responsibility of the student to submit the Approval of Dissertation Committee form (see Appendix 2) to the director of the Ph.D. program. This form should be accompanied by documentation that indicates the suitability of the proposed committee. This requirement will generally be satisfied by a vita or resume of each of the potential committee members.

The dissertation committee must be approved by the Director of the Ph.D. program, the Dean of the College of Engineering and Computer Science, and the Dean of the School of Graduate Studies. The student and the dissertation director will be notified of the approval of the proposed dissertation committee.

### **Candidacy Examination**

The Candidacy Examination permits the student to present his/her proposed research to the dissertation committee and the public. The dissertation director, in consultation with the dissertation committee, will determine when the student has identified a program of research suitable for a Ph.D. dissertation and is prepared to take the Candidacy Examination

Prior to the Candidacy Examination, the student must:

- Have passed the Qualifying Examination
- Have assembled an approved dissertation committee
- Be registered for Candidacy Examination (CS/CEG 894)
- Have provided a research proposal to the members of the dissertation committee at least two weeks prior to the examination

The research proposal must exhibit the student's thorough background knowledge of the research area, indicate previous work in the area, and explicitly outline the proposed research to be undertaken in the dissertation.

The dissertation director will be the chair of the Candidacy Examination. The examination will consist of a public presentation of the proposed research and a question and answer period. The dissertation committee may also have an interrogatory session with the student that is closed to the public. Unanimous consent of the dissertation committee is required to pass the Candidacy Examination.

### **Dissertation Defense**

In the Dissertation Defense, the student presents the results of his/her research to the dissertation committee and the public. The dissertation director, in consultation with the dissertation committee, will determine when the student has completed sufficient research to defend the dissertation.

Prior to the Dissertation Defense, the student must:

- Have passed the Candidacy Examination
- Be registered for Dissertation Defense (CS/CEG 896)
- Have provided a copy of the dissertation to the members of the dissertation committee at least four weeks prior to the examination

The dissertation director is the chair of the Dissertation Defense. The examination consists of a public presentation of the student's research and a question and answer period. The dissertation committee may

also have an interrogatory session with the student that is closed to the public. Unanimous consent of the dissertation committee is required to pass the Dissertation Defense.

### **Graduation Procedures**

To graduate the student must:

- Complete all the requirements of the program
- Apply for graduation within the time frame specified in the quarterly bulletin
- Deliver the completed signature sheets and a complete file containing the approved dissertation in the format specified by the School of Graduate Studies to the department office no later than 30 days after the end of the quarter in which the degree will be granted. See the School of Graduate Studies *Policies and Procedures Manual* for complete details.
- Be registered for at least one credit hour in the quarter in which he/she wishes to graduate

### **Time Limit**

Students must complete all the requirements for a doctoral degree within 10 years from the date that student was admitted to the Ph.D. program.

## II. Curriculum\*

### Credit Requirements

A student entering the program with a Bachelor of Science or Bachelor of Arts degree must complete a minimum of 136 credit hours.

A student entering the program with a Masters degree in Computer Science, Computer Engineering, or a related field from a regionally accredited university must complete a minimum of 91 credit hours.

The following course requirements must be satisfied in completing the necessary number of credit hours.

### Course requirements:

A student must complete a minimum of 76 hours of course work at the graduate level. CS 600 and CEG 633 will not be counted toward meeting this requirement.

The 76 credit hours in courses must include:

- Completion of either the Computer Science or Computer Engineering Core courses.
- At least 40 hours of formal computer science and computer engineering courses available to graduate students only (CS/CEG 700/800 level). A course other than those listed may be used to satisfy the graduate only course requirement if it is part of a coherent program and has received approval from the Graduate Studies Committee prior to enrollment in the course.
- At least 24 hours of graduate level CSE technical electives including at least 8 hours of formal course work. Up to 12 hours of thesis research (CS 799 or CEG 799) taken at Wright State in the successful completion of a Masters thesis may be included in these hours.
- At least 12 credit hours of graduate courses outside of the CSE Department e.g. mathematics or statistics, electrical engineering, psychology, biology, etc. that provide a coherent second area of specialization that complements the student's research areas.
- Courses that are co-listed as CS or CEG cannot be used toward this requirement (Except MTH 607, MTH 619, MTH 656, MTH 658, EE 619, EE 654, EE 656, EE 659, EE 662, and HFE 665).

For the purposes of the course requirements given above, a formal course is defined as follows:

A formal course meets on a regularly scheduled basis throughout the quarter as specified in the quarterly university bulletin. In a formal course, a faculty member delivers a series of lectures and students are evaluated using a combination of projects, presentations, and examinations. Consequently, this excludes seminars, independent study, thesis research, dissertation research, principles of instruction, or other directed research hours. However, the 24 hours of graduate level CSE technical electives allows for 16 hours of independent study type courses but not thesis or dissertation research.

### Graduate Core Curriculum

The core curriculum is designed to ensure that students completing a graduate degree have demonstrated competence at the graduate level in a breadth of core topics in the discipline.

### CS core curriculum

Area	Associated Course
Distributed Computing Principles	CEG 730
Database Systems and Design	CS 701
Programming Languages	CS 784
Computational Complexity	CS 740

## CEG core curriculum

Area	Associated Course
Distributed Computing Principles	CEG 730
Computer Architecture	CEG 720
Advanced Computer Networks	CEG 702
Computer Engineering Mathematics	CEG 770

## Publication Requirements

The student must have at least one journal paper of which he/she is the first author accepted for publication from his/her dissertation research. The dissertation committee will specify peer reviewed journals appropriate for the satisfaction of this requirement.

A paper published in a highly selective conference may satisfy this requirement with the agreement of the dissertation committee and the Director of the Ph.D. Program.

## Transfer Credit

(Adopted from the School of Graduate Studies *Policies and Procedures Manual*)

Upon the recommendation of the student's advisor and the approval of the Graduate Studies Committee and the School of Graduate Studies, graduate credit completed at another regionally accredited graduate institution may be transferred to the student's degree program at Wright State.

Students with a relevant Masters degree whose Ph.D. program requires only 91 credit hours may not transfer credit into their Wright State Ph.D. program of study. Courses taken in the Masters degree may, however, be used to satisfy the course requirements of the Ph.D. program.

Credit may be transferred if the following conditions are met:

- The student was in good standing at the other institution
- The courses were taken for the graduate credit and the grades received are B or better.
- The credit is within the ten year time limit for completing the Ph.D. degree.
- The amount of credit to be transferred does not exceed 45 quarter hours.
- An official transcript reflecting the course work is on file in the School of Graduate Studies.
- The courses have not been applied toward another degree.
- The student has been admitted into degree status, is pursuing a graduate degree program at Wright State, and has a program of study on file in the School of Graduate Studies.
- The student must have been registered for a minimum of one academic quarter in a Wright State graduate degree program.

It is the responsibility of the students to provide documentation that specifies the level of the course, the date taken, the grade obtained, and the subject matter covered in the course. This is generally satisfied by a transcript and a catalog description or a syllabus.

## **Course Requirements Waivers and Substitutions**

Students entering with a Masters degree or transferring credit may wish to apply courses taken at other institutions toward the Ph.D. course requirements. To obtain such a waiver or substitution, the student must complete a waiver form (see Appendix 2). It is the responsibility of the student to provide documentation that shows the course taken to be of the same level and covers material equivalent to that of the course in the Doctoral program. A transcript indicating the grade and a catalog description or a syllabus is generally sufficient documentation. A request for a waiver or substitution will be reviewed by the Director of the Ph.D. Program or the Graduate Studies Committee.

The waiver of a requirement or substitution of a course does not decrease the number of credits required in the program.

## **Residency Research**

A student must enroll in three quarters over two consecutive years of Residency Research (CS/CEG 897). A student will generally enroll in residency research after completing the Ph.D. Qualifying Examination. Enrollment in residency research prior to completion of the Qualifying Examination will be permitted only by the petition to the Graduate Studies Committee.

## **Dissertation Research**

A student may enroll in Dissertation Research (CS/CEG 898) only after successfully completing the Candidacy Examination.

## **Continuing Registration**

Once the student has begun dissertation research (signaled by enrollment in either residency research or dissertation research), the student must register for at least four credit hours in every quarter in which he/she consults with department faculty or uses faculty resources. This requirement may be satisfied by enrollment in Residency Research (CS/CEG 897) or Dissertation Research (CS/CEG 898). A student who is not actively involved in research in a given quarter may retain active status in the program by enrolling in one credit of Continuing Registration (CS/CEG 789).

## **Graduate Enrollment**

When courses are co-listed at the 300/500 or the 400/600 level, a student in a graduate program must enroll at the 500 or 600 level respectively.

## **Three C Rule**

The department has a three C rule for graduate students. A graduate student who receives 9 or more credit hours of grades C, D, F, or U in computer science or computer engineering graduate courses will be recommended for dismissal from the program. The rule includes prerequisite courses taken for graduate study, independent study, and thesis or dissertation research. Dismissal action will be taken by the School of Graduate Studies.

---

\* Curriculum effective March, 2008

### **III. Program Advising and Student Progress**

The Director of the Ph.D. Program will advise doctoral students until the student has identified a dissertation director and has an approved dissertation committee. At that time, advising will be the responsibility of the student's dissertation director.

Entering students should make an appointment with the Director of the Ph.D. Program when they arrive at Wright State. In the initial meeting, the student will be advised of procedure and policies of the Ph.D. program. The student's background and experience will be evaluated and an initial course of study will be recommended.

Continuing doctoral students should meet with the Director of the Ph.D. at least once each academic year. In this meeting, the Director of the Ph. D. Program and the student will discuss the annual review and goals for the upcoming year.

#### **Progress Guidelines**

These guidelines are provided as a general timetable for completion of the milestones of the Ph.D. program. Progress of individual students will differ based upon their background when entering the program, the number of prerequisites required, and whether the student is pursuing the degree on a full time or part time basis. The guidelines given below are for full-time students.

#### **Course Work**

Prior to the completion of the Qualifying Examination, full-time students are expected to complete at least ten formal courses per academic year (4 quarters including summer) that count toward their Ph.D. program. These courses should be selected so that the student may complete the Qualifying Examination at the earliest possible time. After completion of the Qualifying Examination, students are expected to make steady progress toward the completion of the formal course credit hour requirement. Prior to the Candidacy Examination, a graduate research assistant cannot take more than one formal graduate course a quarter without the approval of the advisor.

#### **Masters Degree**

Students entering with a BS are expected to complete the requirements for a Masters Degree in Computer Science or Computer Engineering within two years of entering the program.

#### **Qualifying Examination**

Students entering with a BS degree are expected to pass the Qualifying Examination within eight enrolled quarters of admission in the program. Students entering with a MS in Computer Science or Computer Engineering are expected to pass the Qualifying Examination within five enrolled quarters.

#### **Candidacy Examination**

Within a year of passing the Qualifying Examination, the student is expected to find a dissertation advisor, a research topic, and take the Candidacy Examination.

## **IV. Graduate Student Support**

### **Graduate Teaching Assistantships**

Teaching assistantships are available on a competitive basis for students who have established strong academic credentials and can demonstrate good teaching skills and teaching potential. To ensure consideration, the application for an assistantship and all supporting documentation must be received in the department office by February 1, and the applicant must be in a CS/CEG graduate program or have an admission application on file in the School of Graduate Studies by February 1.

### **Time Limits**

Graduate students are limited to 14 (non-consecutive) quarters of departmental support, including summers, with the restriction that:

- students seeking a MS degree are limited to 4 quarters of departmental support
- students holding an MS and seeking a Ph.D. are limited to 10 quarters of departmental support

### **Sponsored Research Assistantships**

Graduate research assistantships are available for students to assist faculty in supporting externally funded grants and contracts. Such support is obtained directly from the faculty member with the grant or contract. Externally funded support does not count in the 14 quarter hour limit of departmentally funded support.

### **Continued Support**

Continuation of support is based on academic progress, the satisfaction of the supervisor with the work performed, and the availability of funding. Academic progress is defined by maintaining a grade point average of 3.3 or above and completion of milestones in the program including identifying a research advisor and topic, passing the Qualifying Examination, and passing the Candidacy Examination.

### **Off-Campus Employment**

(Adopted from the School of Graduate Studies *Policies and Procedures Manual*)

Graduate assistants must obtain written permission from the chair of the department to hold off-campus employment during the term of an assistantship.

A Ph.D. student who has had an assistantship must complete an MS thesis if the student transfers to the MS-CS or MS-CEG program.

# Appendix 1

## Sample Programs of Study

### Sample Program: Student Entering with a BS

#### Formal Courses:

CEG 720	CEG 634	MTH 607 (3 cr)
CEG 730	CS 666	MTH 680 (3cr)
CS 830	CEG 728	STT 661 (4 cr)
CEG 760	CS 711	EE 701 (4 cr)
CS 784	CS 702	
CS 884	CS 770	

Note: this program has 62 hours of formal courses (76 required) including:

- 40 hours of Computer Science, Computer Engineering courses restricted to graduate students (700/800) (40 required)
- 14 hours outside the Computer Science department (12 required)
- The Computer Engineering core courses
- 2 hours of Computer Science; Computer Engineering technical electives

#### Additional Requirements:

Ph.D. Seminar	2 hrs
Ph.D. Candidacy Examination	1 hr
Dissertation Defense	1 hr
Residency Research (3 quarters)	36 hrs
Dissertation Research	16 hrs

This sample program contains 115 credit hours (136 required). The remaining credits can be obtained by additional coursework, independent study, or dissertation research.

## Sample Program: Student Entering with an MS

For a student with a relevant Masters degree from a regionally accredited university, 91 credit hours are required at Wright State University for the Ph.D. Courses may not be transferred into the program. However, with approval from the department, courses taken in the Masters program may be used to satisfy requirements in the Ph.D. program. This example considers a student with a Masters degree from AU (Another University) that consists of the following courses.

Course	Credits	Status	Course	Credits	Status
Computer Architecture	4	g	Computer Networks	4	g & u
Software Engineering	4	g	Data Structures	4	g & u
Programming Languages	4	g & u	Adv. Fluid Dynamics	4	g
Microprocessors	4	g & u	Radar Theory	4	g
Linear Systems	4	g	Real Analysis	4	g
Artificial Intelligence	4	g			

Status: g-graduate only, g & u-graduate and undergraduate

### WSU Program

#### Formal Courses

Course	School	Status	Course	School	Status
Computer Architecture	AU	g	Artificial Intelligence	AU	g
CEG 730	WSU	g	CS 711	WSU	g
CS 740	WSU	g	CS 712	WSU	g
Software Engineering	AU	g	CS 701	WSU	g
CS 784	WSU	g	CS 702	WSU	g
CS 701	WSU	g	Real Analysis	AU	g
Programming Languages	AU	g & u	MTH 607 (3 cr)	WSU	
Microprocessors	AU	g & u	MTH 680 (3 cr)	WSU	
			STT 661 (4 cr)	WSU	

Note: This program has 66 hours of formal courses (60 required) including

- The Computer Science core
- 44 hours of Computer Science, Computer Engineering courses, restricted to graduate students (700/800) (40 required)
- 14 hours outside the Computer Science department (12 required)
  - 8 hours of graduate level Computer Science, Computer Engineering technical electives
  - 42 of the course hours were taken at WSU and count in the 91 required hours at WSU

#### Additional Requirements

Ph.D. Seminar	2 hrs
Ph.D. Candidacy Examination	1 hr
Dissertation Defense	1 hr
Residency Research (3 quarters)	36 hrs

This sample program contains 82 credit hours taken at Wright State University (91 required). The remaining credits can be obtained by additional coursework or independent study. Courses taken at other institutions that are not pertinent to a Computer Science or Computer Engineering degree, like the Fluid Dynamics and Radar Theory of our sample student, will not be counted toward the course requirement.

## **Appendix 2**

### **Ph.D. Program Forms**

The following forms are available in the office of the Department of Computer Science and Engineering.

#### **Graduate Admission Form**

Required to seek admission into the Ph.D. Program. This form describes the application process and documents needed for consideration for admission. Graduate admission forms are available from the School of Graduate Studies and from the Department of Computer Science and Engineering.

#### **Graduate Assistant Application**

Required for consideration for graduate research assistantships and graduate teaching assistantships. Graduate assistant application forms are available from the School of Graduate Studies and from the Department of Computer Science and Engineering.

#### **Graduate Course Transfer Petition**

Required for officially transferring courses taken in another graduate program. Courses transferred may have not been taken while the student was in another degree program. Complete rules for transferring credit are described in the School of Graduate Studies *Policies and Procedures Manual*.

#### **Graduate Waiver Petition**

Required for applying courses taken at another graduate program or in another degree program toward the requirements of the Ph.D. program.

#### **Program of Study**

When completed, this form lists the courses, seminars, and independent study that make up a student's Ph.D. program.

#### **Ph.D. GRA Advisor Course Approval Form**

Prior to the Candidacy Examination, a Ph.D. GRA cannot take more than one formal graduate course a quarter without the approval of the advisor.

#### **Dissertation Committee Approval Form**

Indicates formal approval of the student's dissertation committee.

#### **Candidacy Examination Form**

Indicates formal approval of the dissertation proposal and records the successful passing of the Candidacy Examination.