

PH.D. DEGREES OPTIONS

There are two Ph.D. degree programs within in the School of Computing (SoC) at the University of Utah:

- Ph.D. in Computer Science
- Ph.D. in Computing

Transfers between degree programs will be considered between semesters and will occur only once per academic year.

A Ph.D. in Computing is earned within a particular track. Students are, in part, admitted based upon the track that they have selected during the admissions process. If students wish to switch tracks, they should seek approval from DGS and from the track directors of the tracks between which they wish to switch. Some flexibility will be allowed in terms of switching tracks; however, to remain in good standing, a student has to reach certain due progress milestones as specified.

The Director of Graduate Studies (DGS) is the responsible entity for all graduate degree related issues. He/she will act in consultation with the track directors for administration of the Computing Degree program. In the information that follows: statements indicating that something will be done/approved by DGS should be understood to mean “DGS and/or the track directors”.

REGISTRATION REQUIREMENTS

Full-time graduate students in the School of Computing are ordinarily requested to register for 10 hours for TAs and 10 hours for RAs, which includes regular courses, seminars, and research credits as appropriate. This is especially the case for students being supported via research or teaching assistantships. Students who are not being supported by the school are required to take nine hours to be classified as full-time.

Graduate School policy dictates that a graduate student who receives a full tuition waiver during any semester in which he or she holds an assistantship, fellowship or traineeship is required to register for at least nine semester hours, including dissertation research and seminars. Students must be registered for at least three hours per semester, exclusive of summer semester, to remain in a graduate degree program. Students who do not maintain continuous registration and who have not been granted a leave of absence by the Graduate School are subject to being discharged from the degree program.

Students doing dissertations must be registered for at least three semester hours during the semester of the student’s thesis defense. Once a student has passed the thesis defense, the student does not have to register the next term if within the 90-day period to turn in the final dissertation.

COURSE REQUIREMENTS

All degree programs have certain course requirements. However, these represent a necessary, rather than sufficient, set of courses for graduation. To graduate, this coursework must appear on a student’s approved program of study, a customized course plan developed by the student in conjunction with their committee.

Courses that count toward graduation must be on the program of study. The following default restrictions apply to these courses:

- CS courses must have a course number of 6000 or above (CS 5470: Compiler Principles and Techniques will also be allowed)
- Non-CS courses must have a course number of 5000 or above
- A grade of B or better
- The GPA for all required courses must be at least 3.5

Ph.D. Degrees:

Ph.D. in Computer Science

Ph.D. in Computing

Tracks:

- Computer Engineering
- Data Management and Analysis
- Graphics and Visualization
- Image Analysis
- Robotics
- Scientific Computing

In the subsequent pages of this document, each degree program and/or track may specify modifications and/or additions to these restrictions. Students should also consult the Graduate School Handbook concerning any University requirements.

A student may register for CS 6020 if that student writes and publishes a peer-reviewed article based on research performed in the University of Utah School of Computing. The contribution of the student to the article should be equivalent to that conferred by first authorship. The paper should be published in a respectable outlet. It is the responsibility of the student's advisor to determine whether the student has made such a contribution, and whether the outlet is of sufficient quality. This paper must be accepted for publication prior to the end of the second year of study.

RESIDENCY

At least one year (i.e., two consecutive semesters) of the doctoral program must be spent in full-time academic work at the University of Utah. When a student proceeds directly from an M.S. degree to a Ph.D. degree with no break in the program of study (except for authorized leaves of absence), the residency requirement may be fulfilled at any time during the course of study.

CREDIT FOR PREVIOUS COURSES

PhD students may count some hours of coursework from other graduate degrees toward the coursework requirements associated with the program of study. Unlike for the MS programs, credit for previous courses for PhD students is administered by the DGS so these courses do not need to be officially transferred to the University. Approved courses are certified by inclusion of the appropriate SoC form in the student's file. All coursework on the program of study is subject to approval by the student's supervisory committee and the DGS.

Ph.D. students with a masters-level degree in a closely related discipline should work with their initial committee to create a program of study that can include graduate courses taken as part of their previous degree program. Unless explicitly specified by a degree/track, the program of study can include up to twenty total hours to be counted toward their Ph.D. requirements, and can be used to satisfy some or all of the Ph.D. required courses. Like all programs of study, it must then be approved by the DGS and the graduate school.

A student who has been accepted by the Graduate School is formally admitted to candidacy for the Ph.D. by the University at the recommendation of the student's supervisory committee. Admission to candidacy occurs after the student:

- forms a supervisory committee,
- files an approved Program of Study form,
- completes the core course requirements,
- passes the written portion of the qualifying examination, and
- passes the oral portion of the qualifying examination

An application for candidacy must be submitted to the Graduate School no later than two months prior to the semester of graduation. For the degree to be conferred, the approved Program of Study form must be completed and the dissertation completed and publicly defended.

A Ph.D. Supervisory Committee conducts the student's written qualifying examination, oral qualifying examination, and dissertation defense. This committee consists of five faculty members, at least three of whom must be from the SoC, and at least one member from outside the SoC. Any SoC regular faculty member may serve as a supervisory committee chair. Research or adjunct faculty may chair supervisory committees if accorded that privilege by the regular faculty. Individuals who are not faculty members may serve on supervisory committees if nominated by the regular faculty on the committee, and endorsed by the Graduate Studies Committee and School Director. For Computing degrees, further restrictions on committee makeup may apply. All official decisions of the committee are decided by majority vote.

QUALIFYING EXAMINATION

All Ph.D. students must pass a Qualifying Examination, as specified by the Graduate School. The Qualifying Exam consists of a written part, to be conducted first, and an oral part. The written part of the Qualifying Examination will cover the candidate's general area of specialization in sufficient depth to demonstrate their preparation for conducting Ph.D. -level research. Each internal member of the student's supervisory committee will contribute one or more questions to this exam. The external member(s) of the committee can provide question(s) if they wish to. The supervisory committee will provide a written evaluation of this part of the exam, including an indication of whether or not the student will be allowed to proceed to the oral part of the Qualifying Examination. More details on the procedures for the written part are available on the Graduate School web page.

The oral part comprises the dissertation proposal defense. At the supervisory committee's option, it may also include follow-up questions relating to the written part of the exam. A majority of the supervisory committee should certify that the proposal is ready to be defended prior to conducting the oral part of the Qualifying Exam.

PH.D. DISSERTATION

The supervisory committee must give preliminary approval of the dissertation prior to the defense. The defense can be scheduled after this approval. To schedule the defense, contact the Graduate Coordinator. Students are strongly encouraged to schedule the defense during a regular colloquium slot.

The student must provide one copy of the dissertation to the chair of the supervisory committee at least three weeks before the defense, and one copy to each of the other committee members at least two weeks prior to the defense. A complete draft of the dissertation must be delivered to the Graduate Coordinator two weeks prior to the announced time of defense. This copy will be made available for public access. Students are encouraged to place an additional copy on the School of Computing web pages at least one week prior to the announced time of defense.

After successfully defending the dissertation, the student must obtain approval from the Final Reader (typically the supervisory committee chair), School Director, and Dean of the Graduate School. A draft of the final dissertation must then be presented to the Thesis Editor. Successful completion of the defense must be reported to the Graduate School at least four weeks before the last day of examinations in the final semester.

Students should also read the document regarding copyright notices provided by the School and declare their intentions regarding granting the School the right to photocopy the dissertation before notifying the Graduate Coordinator of completion of the defense.

The student has one month after the defense to make any revisions prior to submitting the dissertation to the Graduate School Thesis Editor. There will be at most two additional months to complete any changes required by the Thesis Editor before final acceptance. If either of these deadlines are not met, the candidate must redo the oral defense. The final dissertation must be filed one week before the end of the semester of graduation.

Students are expected to offer each committee member a bound copy of the dissertation once it is completed. Detailed policies and procedures concerning the dissertation are contained in "A Handbook for Theses and Dissertations" published by the Graduate School.

The completed dissertation must be published either in its entirety (through a legitimate publisher of the student's choice or through University Microfilms) or as one or more articles accepted for publication in approved scholarly journals. An abstract of each dissertation must be published in University Microfilms' Dissertation Abstracts International.

STUDENT PROGRESS: TERMINOLOGY

Initial committee: This consists of two University of Utah faculty members and an advisor, who must meet the School of Computing requirements for advising. The initial committee is different from the full committee, who will ultimately administer the qualifier and evaluate the dissertation. The full committee must be chosen to

conform to program requirements. The initial committee is automatically dissolved when the student forms a full committee.

Good versus acceptable progress: Students completing milestones within the time frame denoted as “good” are generally considered to be in good standing in the program. Students completing milestones within the time frame denoted as “acceptable” are considered to be making acceptable progress in the program and are encouraged to continue on and attempt to meet successive milestones within the time frames denoted as “good.”

Such students may or may not be considered in good standing, depending upon evaluation of the director of graduate studies (DGS) with input from their advisor and advisory committee. Students not completing milestones within the time frame denoted as “acceptable” are not considered in good standing.

GRADUATE STUDENT PROGRESS GUIDELINES FOR THE PH.D. PROGRAM

Milestone	Good Progress	Acceptable Progress	Comments
Choose advisor and initial committee	2 Semesters	2 Semesters	
Program of study approved by advisor and initial committee	2 Semesters	3 Semesters	
Complete required courses	3 Semesters	5 Semesters	Program requirement: 5 semesters
Full committee formed	4 Semesters	5 Semesters	
Program of study approved by committee	4 Semesters	5 Semesters	U. requirement: 1 semester before defense
Written qualifier	5 Semesters	6 Semesters	U. requirement: 1 semester before defense
Oral qualifier (proposal)	5 Semesters	7 Semesters	U. requirement: After written qualifier and 1 semester before defense
Dissertation defense	9 Semesters	12 Semesters	
Final document			U. requirement: document finalized within three months of the defense

Course work listed on the approved Program of Study form must comprise at least 50 semester hours of graduate course work and dissertation research, exclusive of independent study. Graduate course work applied toward an M.S. degree may be included. At least 14 semester hours of dissertation research (CS 7970) and 30 semester hours of graduate course work must be included. Up to 12 hours of graduate level course work already applied to other degrees may be used in the program of study.

PhD students must demonstrate core knowledge in computer graphics and visualization by passing three courses from a choice of four, prior to the start of their fifth semester of study, with grades of B or better in each course and an overall GPA in the specified courses greater than 3.5. Students may place out of this requirement by substituting or transferring courses from other institutions.

TRACK FACULTY

Adam Bargteil , Martin Berzins, Elaine Cohen, **Charles Hansen (Track director)**, Chris Johnson, Mike Kirby, Miriah Meyer, Valerio Pascucci, Rich Riesenfeld, Bill Thompson, Cem Yuksel

COURSE REQUIREMENTS	
Required courses:	
CS 6610	Interactive Computer Graphics
CS 6630	Scientific Visualization
CS 6640	Image Processing
CS 6670	Computer-Aided Geometric Design

Substitute courses must be “regular” classes with exams and/or assignments, not seminar, readings, or independent study classes. Satisfactorily completing the three courses as described constitutes completion of the Comprehensive exam; this must be completed by the the end of the fourth semester.

ELECTIVE COURSES

School of Computing Computer Science courses on the Program of Study must be at the 6000 level or above, excluding independent study, and research credits. Of the required 30 semester hours, up to nine credit hours may be graduate courses outside of the School of Computing. Admissible elective courses within the School of Computing are the following:

CS 6620	Advanced Graphics II : Ray Tracing
CS 6310	Introduction to Robotics
CS 6360	Virtual Reality
CS 6210	Advanced Scientific Computing I
CS 6220	Advanced Scientific Computing II
CS 6960	Computational Geometry
CS 6540	Human/ Computer Interaction
CS 6650	Perception for Graphics
CS 6660	Physics-Based Animation
CS 6680	Computer-Aided Geometric Design II
CS 7320	3D Computer Vision
CS 7650	Realistic Image Synthesis

Courses not on the list above must be approved by the student’s committee to count toward the elective requirements. Independent study (CS 6950 and CS 7950) can not be included in the Program of Study for the PhD degree.