

COMPUTING (PHD)

Degree Requirements

Doctor of Philosophy in Computing

The interdisciplinary Doctor of Philosophy degree in Computing integrates coursework and research projects from three related disciplines: computer science, information systems, and information technology. The program emphasizes advanced discovery and the development of solutions to research-focused problems in the areas of cyber assurance, risk assessment, forensics, and data analytics. Ph.D. graduates are eligible for research positions in academia, industry, and government.

The Ph.D. degree is awarded to candidates who have demonstrated a capacity for conducting original research, have made a meaningful contribution to knowledge in the computing discipline, and have successfully defended a dissertation.

If you have any questions, please contact the SoC Director of Graduate Studies, Dr. Debra Chapman - dchapman@southalabama.edu

Requirements for Admission

To apply to the Ph.D. in computing degree program, please visit the University of South Alabama (USA) Graduate School website.

In addition to the general admission requirements of the USA Graduate School, admission requirements for the Computing Ph.D. program are:

1. A baccalaureate or graduate degree in Computer Science, Information Systems, Information Technology or a closely related field. A graduate degree is not required for admission.
2. An undergraduate minimum GPA of 3.3 (4.0 scale) for all completed post-secondary coursework or a 3.5 overall (4.0 scale) for a **completed graduate program**.
3. Official scores for the Graduate Records Examination (GRE) including the AW portion.
 - Any applicant with an undergraduate or graduate degree from a regionally accredited U.S. institution is not required to provide GRE scores.
4. A statement of purpose indicating the student's personal goals and research interests. Because prospective students are matched with a faculty mentor, competitive applications will align with the research areas of School of Computing graduate faculty.
5. Three letters of recommendation from persons able to speak directly to the applicant's ability to engage in advanced discovery and contribute new knowledge to the discipline.
6. Curriculum vita.
7. An official transcript from each college or university attended.
8. A completed application for admission to the Graduate School.
9. For international students, an official TOEFL, IELTS, DuoLingo, iTEP, or Pearsons (PTE Academic) score, or an equivalent level of competence as exhibited by a bachelor or graduate degree from a regionally accredited university in the United States is required. See the policy of the Graduate School: <https://www.southalabama.edu/bulletin/> (<https://www.southalabama.edu/bulletin/>).

Admission may be granted by the Director of Graduate Studies, when supported by a vote of the Graduate Faculty, in special cases where a holistic evaluation of the applicant's credentials is appropriate.

Admission is competitive and the decision is based on a review of all submitted admission materials. A personal interview may be requested. Applicants are encouraged to submit samples of prior work. All admissions materials should be submitted online at:

<https://explore.southalabama.edu/apply/?sr=15732969-d778-4ade-a6c6-4678cd7b7221>

Graduate Assistantships

A limited number of graduate assistantships are available on a competitive basis and are awarded on the recommendation of the School of Computing. Applications are available on-line at: <https://www.southalabama.edu/departments/eforms/graduateschool/graduateassistantapptform.pdf>. Applications must be received by April 1st for fall applicants or November 1st for spring applicants.

Program Requirements

To qualify for the Ph.D. in Computing, a minimum of 72 semester hours of approved graduate credit is required and the following program of study must be completed with a grade of "B" or better in all course work.

Core Courses

(18 hours)

You should expect a lot of reading and writing of academic material in each of these courses. The purpose of the core courses is to provide you with a broad view of the relevant academic literature in computing and to prepare you to become an independent researcher and help you narrow down research topics that may interest you. The goal is to have a general idea of your dissertation topic at the completion of your core course work.

Code	Title	Hours
CSC 612	Cybersecurity	3
CSC 626	Advanced Big Data	3
ISC 629	Comp Ecosystems	3
ISC 673	Digital Investigations	3
ISC 675	Information Systems	3
ISC 686	Risk Analysis	3
Total Hours		18

Candidacy

After successfully completing the 6 core courses, PhD students must pass a Qualifying Exam to achieve candidacy. The purpose of the Qualifying Exam is to demonstrate the candidate's preparedness to successfully write a dissertation.

1. This requires that a Dissertation Committee Chair has been identified
2. Students will schedule this exam with their Dissertation Committee Chair

A doctoral student is admitted to candidacy upon successful completion of a comprehensive examination. Candidacy indicates the student has completed the required coursework and is eligible to begin the dissertation research project.

Comprehensive Examinations

Doctoral students must pass a comprehensive examination. The format of the examination will be determined by the comprehensive examination committee. Normally the examination is based on the required coursework. Failure to pass the comprehensive examination within three attempts will result in dismissal from the program.

Electives

(24 Hours)

Student will complete 24 semester hours of 500-level or higher approved graduate coursework.

Courses must be offered within the SoC, with a prefix of CIS, CSC, or ISC, unless approved by your Dissertation Committee Chair and the Director of Graduate studies.

A maximum of 6 semester hours of CIS 694 Directed Study may be counted towards fulfilling the electives requirement.

Any student without an academic research background should take CIS 518 (Research Methodologies) or other similar research course as an elective.

If you are planning on conducting dissertation research that requires statistical analysis, you should take elective courses in statistics. Options include ST 540 and ST 545 (Stats in Research I & II) or ST 550 (Environmental Stats), or BA 602/702 (Applied Stats) and BA 604/704 (Multivariate Analysis), and for students using causal models BUS 610/BA 799 (Structural Equation Modeling). You should consult with your advisor or Dissertation Committee Chair to determine which course(s) to take.

Dissertation

(30 Hours)

A primary educational objective of the Ph.D. program is for students to develop the ability to conduct advanced research and contribute new knowledge to the discipline. To that end, the student will complete 30 hours of CIS 799 Dissertation.

Dissertation Hours and Defense

Students cannot enroll in CIS 799 (Dissertation) until they have achieved doctoral candidacy.

With the approval of the Director of Graduate programs and under the supervision of your Dissertation Committee Chair, CIS 694 Directed Study credit may be taken to complete preliminary preparation for the dissertation study. These hours may be substituted for CIS 799.

Students should work out a schedule and estimated timeline with their Dissertation Committee Chair to appropriately schedule the number of hours of CIS 799 to take each semester.

While only 30 hours of CIS 799 may be counted toward the degree, a student must continuously enroll in at least 1 credit hour of dissertation during the fall and spring semesters until the dissertation is successfully defended. Failure to enroll continuously without the written approval of the Director of the Graduate program may lead to dismissal from the program.

The Dissertation is completed only when the student has successfully completed an oral defense of the research project and the dissertation has been accepted by the Graduate School - regardless of how many hours of CIS 799 has been taken. Students must be enrolled in at least 1 hour of CIS 799 in the semester they defend their dissertation.

Your dissertation, once completed and approved by your committee and the Director of Graduate Studies, will be submitted to the USA Graduate School to meet final program requirements. Graduate School Submission deadlines are set by the USA Graduate School and can be found on their

website - <https://www.southalabama.edu/colleges/graduateschool/thesis.html>

1. The document submitted for the "First Submission" is your fully defended and updated copy approved by your committee and the SoC Director of Graduate Studies.
2. The "Final Submission" must include all corrections identified by the USA Graduate School after the first submission.

Time Limit

All requirements for the PhD in Computing degree must be completed within ten (10) calendar years from the date of matriculation as a School of Computing PhD student. This ten calendar year constraint also applies to all transfer credit.

After reaching candidacy, a student has a maximum of 3 years to complete the dissertation. A student may apply to the Director of Graduate programs for an extension to complete the degree.

Transfer Credit

A maximum of 24 semester hours of graduate credit earned at a regionally accredited, or approved, graduate school may be counted toward the Ph.D. program. Transfer credit may be approved after the completion of nine (9) semester hours of credit at the University of South Alabama. Transfer credit must be approved by the School of Computing Director of Graduate programs and the Dean of USA Graduate School with the recommendation of the student's advisor or Dissertation Committee Chair.

Academic Standards

Student must maintain a cumulative 3.0 GPA in order to be in good standing. Failure to maintain a cumulative 3.0 GPA will result in the student being placed on academic probation. The School of Computing Director of Graduate Programs may recommend dismissal of a student who does not maintain good academic standing or is not making sufficient progress.

Student Expectations

The PhD Program requires independent work. Faculty members take on much more of a mentoring role than teacher/student. Students are expected to:

- Work independently
- Be responsible for their own academic progress
- Build relationships with faculty members (you will need committee members and people to write letters of recommendation later)
 - a. Identify Dissertation Committee Chair, and other members
- Become a Researcher
 - a. Attend available and relevant distinguished lecture presentations, research group meetings, participate when appropriate.
 - b. Attend appropriate conferences - these allow you meet other researchers in your area of study.
 - i. Limited funding for graduate students to attend conferences is available through the USA Graduate School. This is typically used to support students who are presenting their accepted papers at the conference.
 - ii. Students working on funded research grants may also have limited travel funding available as part of the grant budget.
 - c. Seek out opportunities to collaborate with faculty on research projects.
 - d. Volunteer to help in a research lab.

- e. Identify your own areas of research and develop dissertation topic.

Academic Advisor

Upon entry into the PhD program, the Director of Graduate Studies will serve as your initial academic advisor. As you discover a research interest and develop relationships with our researchers, you will identify a SoC researcher who can help guide your research and serve as the Chair of your Dissertation Committee. At the time, your Dissertation Committee Chair will take over as your primary academic advisor.

- You must ask the researcher if they are willing to serve as your Dissertation Committee Chair. They can say no - it is a voluntary position.

Dissertation Work

A primary educational objective of the PhD program is for students to develop the ability to conduct advanced research and contribute new knowledge to the discipline. Your thesis or dissertation is a significant and time-consuming undertaking that must reflect a mastery of your field, contribute to the existing body of knowledge of your field and demonstrate the level of high quality expected by the Graduate School and USA. A dissertation can take several years to complete. You, as the independent researcher, with the support and direction of the SoC graduate faculty, are responsible for identifying your dissertation topic, Dissertation Committee and Committee Chair. Your Dissertation Committee Chair can assist you in identifying appropriate committee members.

- Dissertation Committee — Your dissertation committee must consist of a minimum of 4 members:
 - a. One-half of the committee must be members of the USA Graduate Faculty (members are listed here - <https://www.southalabama.edu/colleges/graduateschool/faculty.html>) but consist of most of the tenured or tenure-track assistant, associate, or full professors).
 - b. The Dissertation Committee Chair must be a full member of the USA Graduate Faculty.
 - c. One committee member must be from outside the SoC.
 - d. Committee members may be external to USA or someone is not a member of the graduate faculty, if it benefits the research. This person cannot serve as Chair, but may be Co-Chair. An Outside Member Committee Appointment Form (<https://www.southalabama.edu/departments/eforms/graduateschool/thesisdissertationcompcommitteeapptnongradfaculty.pdf>) must be submitted to the Director of Graduate Studies.
 - i. A committee member who is external to USA would also meet the requirement for a member outside the SOC.
 - e. The Committee is formed with the submission of the Dissertation Committee Form (<https://www.southalabama.edu/colleges/graduateschool/resources/thesisdissertationcompcommitteeappt111523.pdf>) to the Director of Graduate Studies.
 - f. Your Dissertation Committee and, especially your Dissertation Committee Chair should be identified as early in the process as possible so they can help guide you in the choice of electives and participation in research activities.
 - g. Committee Changes — It is possible that your committee will change after it has been established. Members may decide they no longer want to work on your committee, you may want to replace members of your committee, faculty members may leave, etc. **It is the responsibility of the student to identify new committee members and/or chair as necessary.** Students will not be able to progress in the dissertation process without a Dissertation Committee Chair and a full committee.
- Dissertation Prospectus — Your dissertation will begin with the prospectus, which is a written document that identifies the problem you have chosen to study, why it is important, and your anticipated research methodology. It will, once approved, establish expectations between you and the SoC graduate faculty as to what is expected from your dissertation work.
 - a. Key Components - A prospectus is a written document that contains the following key elements:
 - i. Problem/topic
 - ii. Review of existing body of knowledge
 - iii. Description of study (must include subjects, procedures, equipment, materials, schedule, and other pertinent information)
 - iv. Anticipated nature of results
 - v. Description of anticipated method of analysis
 - vi. Implications and impact on existing body of knowledge
 - b. Your prospectus must be presented to your committee during an oral defense meeting.
 - i. A complete Dissertation Committee is required for a prospectus defense.
 - ii. All members of your committee must attend (in person or virtually) the Prospectus Defense meeting.
 - iii. You must be prepared to answer questions regarding your prospectus.
 - iv. A successful defense of your prospectus **MUST** be completed before you begin work on your research project, including any data collection.
 - 1. NOTE: This requirement does not apply to a 3-paper model dissertation. In this case, papers may be in progress prior to the successful prospectus defense.
 - v. See the USA Graduate School website (<https://www.southalabama.edu/colleges/graduateschool/>) for additional information, guidelines, and template.
- IRB Approval - If your study involves human research, you must obtain USA Institutional Review Board (IRB) approval (<https://www.southalabama.edu/departments/research/compliance/humansubjects/>) prior to data collection.
- Dissertation Writing — Your dissertation is the written document detailing the results of your research study.
 - a. Key Components (Traditional Dissertation Model) - Your dissertation must contain and address certain key elements:
 - i. Problem/topic
 - ii. Review of existing body of knowledge
 - iii. Description of study (must include subjects, procedures, equipment, materials and other pertinent information)
 - iv. Results
 - v. Analysis of results
 - vi. Implications and impact on existing body of knowledge
 - b. Requirements for a 3-Article Dissertation - A 3-Article Dissertation model may only be used with the approval of the Dissertation Chair. This model is not appropriate for all areas of research.
 - i. If approved, the Dissertation Chair will provide details on specifications, components, and requirements for this type of dissertation.

- ii. Be sure to review the School of Computing 3 Model Dissertation Model document, available from the Director of Graduate Studies.
- c. Formatting — Your dissertation must follow acceptable formatting and referencing styles. You may use APA, MLA, IEEE, etc. However, you must follow exactly the formatting requirements of the USA Graduate School as indicated in their documentation <https://www.southalabama.edu/colleges/graduateschool/thesis.html>. Be sure to review the specific requirements outlined in the Guide for Preparing Theses and Dissertations (<https://www.southalabama.edu/colleges/graduateschool/resources/thesisdissertationguide9822.pdf>) and the Thesis Template (be sure to read all of the comments as well as the text contained in the template). All dissertations completed at USA are published in the ProQuest online database.
- d. Approval Process — You will work primarily, but not exclusively, with your Dissertation Committee Chair on the writing of your dissertation. The writing process will be iterative and cyclical — be sure you allocate sufficient time in your schedule for the entire review process.
 - i. Chair Review - You will write portions or chapters of it at a time, submit it to your Committee Chair for review and feedback (this may take 1-2 weeks), make corrections, and submit again for additional review and feedback.
 1. The chair is responsible for ensuring that the dissertation has been checked for plagiarism through TurnItIn, or another similar program.
 - ii. Committee Review - Once the document has the approval of your Committee Chair, it will be sent to the entire committee for their review and feedback (this may take 1-2 weeks), make corrections, and submit again for additional review and feedback.
 1. Once the entire committee approves, a dissertation defense meeting may be scheduled.
 - iii. Director of Graduate Studies Review — You need to submit your almost finalized dissertation to the Director of Graduate Studies for review of the formatting and template requirements. This process is cyclical as well so allow adequate time for the review, feedback, and correction cycle.
 - iv. Submit a copy of your signature page to the USA Graduate School for approval before the defense meeting.
- e. Dissertation Defense — Your dissertation must be presented to your committee, and the USA Research Community, during a publicized dissertation defense meeting.
 - i. Students must be enrolled in at least one semester hour of CIS 799 during the semester they defend their dissertation.
 - ii. All members of your committee must attend (in person or virtually) the Dissertation Defense meeting.
 - iii. You must be prepared to answer questions regarding your research, including methodology, data analysis, and conclusions.
 - iv. A successful defense of your dissertation, including all indicated updates and corrections, MUST be completed before it can be submitted to the USA Graduate School.
- f. Defense Submission
 - i. Once your dissertation has been successfully defended, the members of your committee and the Director of Graduate Studies must sign your approved signature page. This may be done electronically.
 - ii. The finalized copy of dissertation must be submitted to the Director of Graduate Studies for final review and approval.
 - iii. The members of your committee and the Director of Graduate Studies must also sign your Dissertation Submission form. This may be done electronically or in person.
 1. The Director of Graduate Studies will not sign the submission form until the finalized copy of the dissertation has been submitted to them and approved.
 - iv. The student will electronically submit the signed signature page, the dissertation document (as a searchable pdf or word document), and the signed Dissertation Submission Form to the USA Graduate School. Scanned pdf's and paper copies will not be accepted. Be sure to be aware of the submission deadline dates as indicated on the USA Graduate School (<https://www.southalabama.edu/colleges/graduateschool/thesis.html>) website.

Graduation

PhD students must apply for graduation in the term they submit their finalized and approved dissertation to the USA Graduate School.

For specific information see the Registrar's Website. (<https://www.southalabama.edu/departments/registrar/>)

- Due to the cyclical review process and the graduate school submission deadlines, it may not be possible to know which semester you are going to graduate until after the posted graduation application deadline.
- Many PhD students complete a Late Graduation Application (https://www.southalabama.edu/departments/eforms/registrar/late_graduation_application.pdf) to avoid having to apply for graduation multiple times, as the graduation fee is required to be paid every time you apply for graduation. This does incur a small late fee.
- PhD students who participate in the USA Graduation ceremony will be hooded on stage by their Dissertation Committee Chair, or other committee member if the Chair is not available.

Graduation Plan

Course	Title	Hours
First Year		
Fall		
ISC 673	Digital Investigations	3
CSC 612	Cybersecurity	3
ISC 629	Comp Ecosystems	3
Elective	Elective	3
Hours		12
Spring		
ISC 686	Risk Analysis	3
CSC 626	Advanced Big Data	3
ISC 675	Information Systems	3
Elective	Elective	3
Hours		12
Second Year		
Fall		
CIS 799	Dissertation	3
CIS 799	Dissertation	3
Elective	Elective	3
Elective	Elective	3
Hours		12
Spring		
CIS 799	Dissertation	3

CIS 799	Dissertation	3
Elective	Elective	3
Elective	Elective	3
Hours		12
Third Year		
Fall		
Elective	Elective	3
CIS 799	Dissertation	3
CIS 799	Dissertation	3
CIS 799	Dissertation	3
Hours		12
Spring		
Elective	Elective	3
CIS 799	Dissertation	3
CIS 799	Dissertation	3
CIS 799	Dissertation	3
Hours		12
Total Hours		72