CHAPMAN UNIVERSITY | SCHMID COLLEGE OF SCIENCE AND TECHNOLOGY

Computational and Data Sciences (CADS) PhD Handbook

Policies, Procedures, and Guidelines
August 2020

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WELCOME TO THE COMPUTATIONAL AND DATA SCIENCES PROGRAM:

Welcome from the Director of Graduate Programs in Computational and Data Sciences

Graduate education is a way to advance in a professional and academic career. During your time in the Computational and Data Sciences (CADS) program, you will experience a graduate program and university that are dedicated to helping you into the next generation of scientific leaders. CADS is an interdisciplinary program in which computers are used to reduce the need for expensive and time-demanding experimental scientific investigations, utilizing modeling and simulation of biological and physical scientific processes. Computational and data scientists construct mathematical models, develop quantitative analysis techniques, and use computers to analyze and solve scientific real-life problems. Our mission is to provide graduates with innovative tools and a collaborative approach to meet tomorrow's challenges. It is important for us to have you embedded in our university community and for that, we are always looking for ways to create an environment in which you will continue to grow and thrive. Here at Chapman University, not only are we building a community that will support your academic journey but also we are fostering an environment of collaboration, cooperation and seeking opportunities beyond the classroom setting. We welcome you to the Computational and Data Sciences Graduate programs and we are confident that you will be successful.

Sincerely,

Dr. Hesham El-Askary

Conditions of Accuracy and Conflict with Catalog Statement

The information within this handbook is accurate as of the time of publication. Students are responsible for informing themselves of and satisfactorily meeting all requirements pertinent to their relationship with the University. Students and others who use this handbook should be aware that the information changes from time to time at the sole discretion of Chapman University and that these changes may alter the information contained in this handbook. More current and complete information may be obtained in the appropriate department, school, or administrative offices. The University reserves the right, at any time and without notice, to make any changes to all rules, policies, procedures, and any other information that pertains to students or to the institution including, but not limited to, admission, registration, tuition and fees, attendance, curriculum requirements, conduct, academic standing, candidacy, and graduation. This handbook does not constitute a contract or terms or conditions of a contract between the student and Chapman University.

In Cases of Conflict Between the Handbook and Graduate Catalog:
The Graduate Catalog is considered the official representation of program requirements for all graduate programs at Chapman University. If a conflict between the information in this handbook and the Graduate Catalog arises, the information in the Graduate Catalog prevails.

PROGRAM CONTACT LIST:

Schmid Faculty

Schmid Staff

COURSES:

The most current information on Schmid College of Science and Technology's courses are listed in detail in Chapman's Graduate Catalog.

REGISTRATION/ENROLLMENT:

Academic Calendar

Academic Advising

The University assists the student in making appropriate decisions by providing academic advising. However, the decisions made in the academic advising process are those of the student. The program director, program coordinator and faculty advisors will track each student's progress throughout the program.

- A detailed education plan will be available to students after admission to the program and will be updated each year based on their progress.
- Students will be required to update their academic plan during their annual meetings with the dissertation chair in the first two weeks of June. Updated academic plan will be shared and approved by program director by the end of June.
- Early planning and development of the student's program is very important. Courses are not always offered each year and early identification of courses makes it possible to plan the program to best serve specific research interests.
- Students will be advised to enroll in classes for fall semester by mid-July as this is important for financial aid decisions, tuition support, and graduate teaching and research assistantships where applicable.
- Students not enrolled by designated deadlines might risk lack of support and assistantships opportunities.

DOCTORAL (PHD) PROGRAM:

Academic Plan

Policies Applicable to the Academic Plan

Students pursuing a Doctorate in Computational and Data Sciences are held to the University's Academic Policies and Procedures. These specific degree standards apply:

- Completion of prerequisite or foundation courses
- Minimum grade "C+" or above required in all coursework
- Maintain 3.0 GPA in the degree
- Complete and defend a Ph.D. dissertation

Ph.D. in Computational and Data Sciences Curriculum

Prerequisites: equivalent preparation may be used to satisfy the following knowledge areas: Differential Equations, Computer Programming, Data Structures, Probability and Statistics.

Foundation courses (9 credits)**:** For admitted students who have verified potential, but require supplementary support for success in the CADS program. Students can acquire the knowledge in the prerequisite areas by taking introductory Computation for Scientists, Applied Methods in Mathematics and Statistical Methods. These courses do not count toward the degree total credit requirement.

- Students will be notified in writing which foundational courses they will be required to take prior to being accepted to the program.

Core courses (13 credits): These courses provide a common foundation for conducting research in computational and data sciences. None of these core courses can be waived but can be replaced with more advanced courses after passing the qualifying exam (*Qualifying Exam pg. 5). These courses are namely CS 510: Introduction to Scientific Computing, CS 520 Mathematical Modeling, CS 530 Data Mining and CS 555 Multivariate Data Analysis.

- Applicants with MS degrees showing previous documented knowledge in the core course areas can request to take the qualifying exam without taking the core courses. Upon passing the relevant section of the qualifying exam, core course credits will be replaced with more advanced course work.

Elective and research credits (45 credits, with a minimum of 15 credits at the 700 level): Elective credits provide deeper investigations into areas of application for computational and data sciences. Research credits are more specialized credits and are personalized, matching the specific research topics of interest to students.

- Students may not exceed 21 credits of CS 799: Doctoral Studies during their time in the program.

Dissertation credits (12 credits): These are credits for work on the doctoral dissertation.

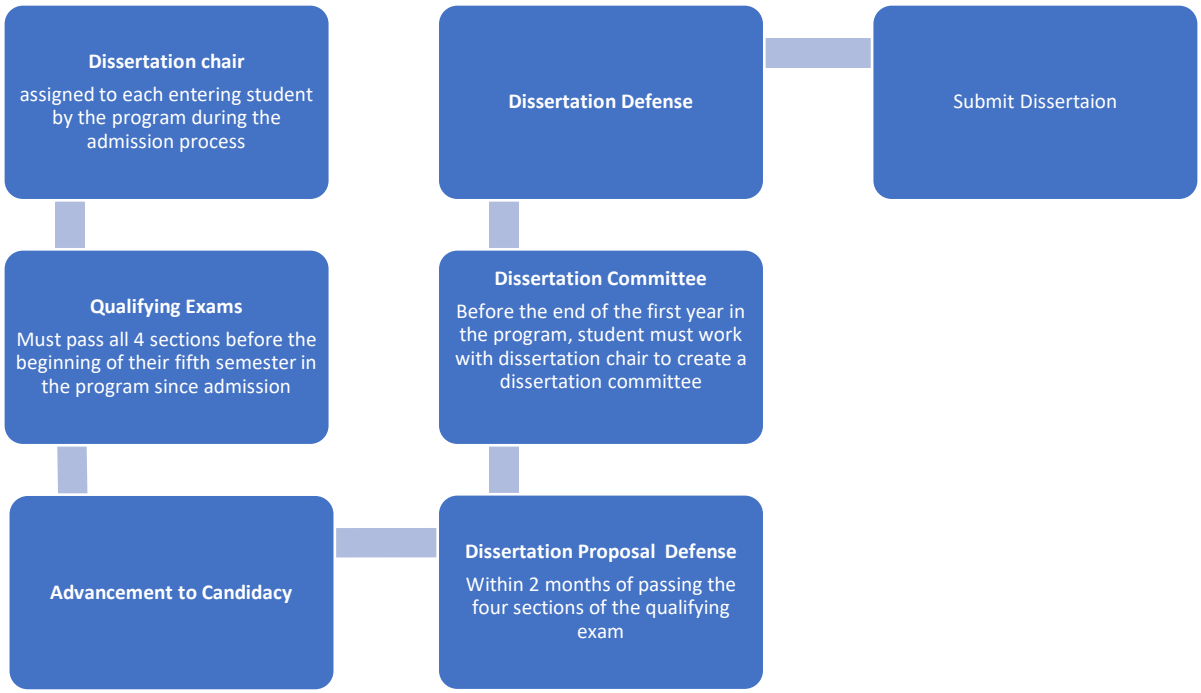
Total credits: 70

Transfer of Graduate Credit

Students admitted in the CADS PhD program are allowed to transfer up to 18 credits from their previous earned graduate degree in related fields as seen applicable and approved by the program director during the first year of their admission. Students will be notified in writing which transfer credits will be approved prior to being accepted to the program.

Residency

Dissertation Procedures*:*



Students writing a dissertation will work closely with their dissertation chair to arrange for a dissertation committee and observe that the requirements below are met.

- A dissertation defense/oral examination is required. Official notification attesting to the satisfactory completion of the dissertation, including the defense/critique/oral examination, must be provided to the Office of the University Registrar.

<u>Dissertation Chairs:</u>

Based on the academic interests identified by the applicant, a dissertation chair will be assigned to each entering student by the program steering committee during the admission process.

- The dissertation chair must be a Chapman full-time faculty member.
- The dissertation chair shall have primary responsibility for the supervision of the student's work, setting deadlines, and guiding the student's progress.
- In consultation with the program director, the dissertation chair assists the student in building an academic plan to meet the degree requirements.
- The dissertation chair will ensure that dissertation committee members attend an annual in-person committee meeting and approve of the resulting annual progress report submitted to the program director.
- Occasionally, a student's research may diverge from that of the dissertation chair, or irreconcilable differences may occur between the student and the dissertation chair.
    - In such cases, the student or the dissertation chair may request a change in assignment from the program steering committee.

    - If the program steering committee decides to grant the request, the student should secure another suitable dissertation chair to be approved by the program steering committee.
    - If the program steering committee declines to grant the request, a student or a dissertation chair must present their request to the dean for final decision.
- In the rare case where a student's dissertation research is in an advanced stage and the dissertation chair is no longer available, the student should secure another suitable dissertation chair in consultation with the program director to be approved by the program steering committee.
    - This may also require that a new member be added to the dissertation committee before the draft dissertation is evaluated, to keep the reconstituted committee in compliance with the University requirements.
- In the event that a student's dissertation chair leaves Chapman University or becomes emeritus, that faculty may continue to serve as the dissertation co-chair; however, a full-time Chapman faculty member must be appointed as the dissertation chair.

Dissertation Proposal

Within 2 months of passing the four sections of the qualifying exam, students must present a proposal of their dissertation topic to their dissertation committee. The purpose of this proposal is to allow the dissertation committee to review the quality and feasibility of the proposed research.

- It is the student's responsibility to choose an appropriate dissertation topic in consultation with the dissertation chair. This will facilitate the faculty member's agreement to chair or serve on the student's dissertation committee.
- A student should prepare a dissertation proposal outlining research idea, methodology and preliminary literature review to the dissertation committee at least one week before scheduling the in-person dissertation proposal defense.
- The dissertation proposal must follow the NSF's proposal and award policies and procedures guide (PAPPG) formatting requirements.
- The dissertation committee shall sign off the advancement to candidacy form once the dissertation proposal is approved.

Dissertation Committee Structure:

Before the end of the first year in the program, each student must work with their dissertation chair to create a dissertation committee consisting of at least three faculty members, two of whom must be full time Chapman University faculty members. While the dissertation chair is responsible for regular guidance of the student's research, the remaining dissertation committee members provide guidance on the direction of the research, as well as provide objective feedback on the progress the student is making toward completion of the doctoral degree in annual progress meetings.

- A student may add a co-chair to their dissertation committee in consultation with their dissertation chair.

- A dissertation committee must be in place for all students before attempting the qualifying exam.
- The student, together with the dissertation chair will inform the dissertation committee on any updates on the academic plan and the doctoral research courses that the student will take.
- Progress is documented and approved by the dissertation committee members during the annual progress meeting.
- With the permission of the dissertation chair, one of the members of the dissertation committee may be drawn from faculty from other academic units in the university, or from emeritus faculty.
- A student may request to change a member to the dissertation chair through a formal email. With the approval of the dissertation committee chair, the student may be granted the change in the composition of the committee at any time prior to scheduling the defense.
- Changing the composition of the dissertation committee after a failed defense attempt is prohibited. In extreme circumstances, an exception to this policy may be granted by the program steering committee if the student and advisor can provide detailed, compelling, and documented evidence of why the change is necessary.

<u>Ph.D. Qualifying Examination</u>

This four-part qualifying examination requires the ability to coherently and analytically integrate knowledge gained from core courses (CS 510, CS 520, CS 530 and CS 555) and to relate it to different situations or applications. In order to advance to doctoral candidacy, every student is required to pass all four sections of the qualifying examination. Students do not need to take all four sections in the same testing cycle; however, a minimum of two sections must be taken in each testing cycle.

- Students must pass all four qualifying examinations before the beginning of their fifth semester in the program since admission. Exams are administered by current CADS faculty on the Friday and Saturday before the beginning of the spring and fall semesters. Other program steering committee members or the CADS program director can administer exams. Make-up exams will be held at the discretion and approval of the program steering committee.
- Two attempts on each of the four parts are permitted (first attempt, one retake).
- Successful completion of coursework alone does not assure the student of passing the qualifying examinations.
- Students who complete the MS in CADS at Chapman and want to transition into the Ph.D. program are expected to pass all four sections of the qualifying examination at the first possible opportunity before starting coursework in the Ph.D. program.
- Possible outcomes for each section of the qualifying examinations are:
    - Pass
    - Fail

- For failures after first attempts at the exam section, recommendations for corrective action within a time limit will be provided by faculty who administered the exam section (e.g., taking a specific class, in person interview, assigned project, re-take examination – either all sections or certain specified sections etc.) and approved by the program steering committee. Third attempts are not permitted for any of the sections of the qualifying examination.
- A second exam attempt will be arranged between the student, program director and the faculty member responsible for the section(s) the student failed.
- For failures after second attempts at the exam section, the student will be recommended for dismissal from CADS program: by the program steering committee.

Advancement to Candidacy

The advancement to candidacy for the doctoral degree is an acknowledgment of a student's potential to successfully complete the specific requirements of the program.

- A student advances to candidacy upon the successful completion of the qualifying examination and successful defense of the dissertation proposal. Advancement to candidacy is required before a student can enroll in dissertation research credits.
- The student's program evaluation must not show any incomplete courses.
- Students are reminded of the university's seven-year limitation on credit for all courses toward degree conferral; see Graduate Catalog.
- Candidacy is confirmed on the Application for Advancement to Candidacy and communicated to registrar by the program director.

Dissertation Proposal Defense

- The student and the dissertation chair are responsible for scheduling a meeting to present and defend the proposal. All dissertation committee members must be present at this meeting either in person, via conference call, or by any acceptable manner that allows them to evaluate the presentation and proposal.
- At the end of this meeting, the dissertation committee members must sign the Doctoral Dissertation Proposal Approval Form and indicate their approval/disapproval of the proposal document. This form should then be submitted to the program director. If the student is required to make revisions, an addendum is required with the written approval of each member of the committee, stating that the proposal has been revised to their satisfaction.

- As a student's research progresses, modifications from the dissertation proposal must be provided and documented in the annual progress reports and approved by the dissertation committee.
- In a review for advancing to candidacy, the dissertation committee may not approve the dissertation proposal and hence, does not recommend the student for advancement to

candidacy. This may result in the dismissal of the student from the program. The program director will communicate the decision to the student in writing and orally. The student may submit a written request for reconsideration. The program steering committee in consultation with the dissertation chair and dissertation committee will respond in writing to the appeal.

Dissertation Defense

- Candidates must be registered in dissertation units CS 798, 798A or 798B, and the candidacy must be valid during the semester in which the defense is held.
- A dissertation defense, during which an oral examination takes place, is required in order to assess the candidate's command of the field of study and to confirm readiness for scholarly pursuits. This examination is scheduled after the dissertation committee has approved the dissertation draft.
    - Students must submit their dissertation draft to the dissertation committee and the program director two weeks in advance of the specified defense date.
    - The dissertation defense is open to all members of the Chapman community, as well as the general public.
    - Candidates for a Ph.D. must demonstrate significant and novel contributions to their fields of scholarship during their time in the CADS program, as approved and documented by the dissertation committee in annual progress reports. Authorship on scholarly work that has been published/accepted for publication in peer-reviewed venues or in well-recognized conferences as deemed appropriate by the dissertation chair and dissertation committee is highly recommended.
- Once a defense date has been scheduled, the student must inform the program coordinator using the Application for Dissertation Defense Form at least 2 weeks prior to the defense.
    - The program director will then inform the community of the date and location of the dissertation a minimum of 72 hours before the time of the defense.
- At the conclusion of the defense, the dissertation committee will immediately hold a closed session with the candidate for further discussion followed by another closed session without the candidate present, to deliberate their final decision.
    - The committee may take into account any questions or concerns raised by the general audience.
    - The decision of the dissertation committee is final.
- If the dissertation committee determines that the defense was not successful, the candidate may defend again after noted deficits in the dissertation work have been addressed.
    - At most, one dissertation defense may be attempted in a given semester.
    - More than two total defense attempts requires the approval of the program steering committee.

Formatting, Checklist, & Submission of Dissertation:

Full detailed instructions for library submission, contact information and downloadable forms for all steps of the process may be found on the Leatherby Libraries website.

GRIEVANCE PROCEDURES:

Students who have concerns about campus academic policies, procedures, other policies, treatment by faculty or concerns about college operations are encouraged to bring those concerns to the vice provost for graduate education.

For academic matters, the process normally begins with the faculty member involved. Appeals typically go to the department chair, the academic dean, the Graduate Academic Council and then the vice provost for graduate education (who will act on the matter or refer it to the provost). For non–academic matters (issues related to departments such as residence life, facilities management, business office, etc.), students should first discuss the matter with the head of the appropriate department with appeals to the appropriate supervisor. Students wishing to discuss or report concerns about harassment should contact the vice president for student affairs.