

CDS Graduate Studies Handbook

Introduction

This handbook describes policies and procedures related to the various degrees and other academic programs offered by the Department of Computational and Data Sciences (CDS) in the College of Science (COS) at George Mason University. The research and teaching activities of CDS reflect the recognized role of computation as part of a triad with theory and experimentation, leading to a better understanding of nature, and to the solution of complex problems in science, engineering, and society. Additional information regarding curriculum and entrance requirements may be obtained through the CDS website www.cds.gmu.edu.

CDS Academic Programs

- Computational Sciences and Informatics, PhD
- Computational Science, MS
- Computational Social Science, Graduate Certificate
- Computational Techniques and Applications, Graduate Certificate
- Nanotechnology and Nanoscience, Graduate Certificate

Admission to CDS Programs

There are several different types of admissions status used in the CDS department, as explained below:

1. **PhD Degree Status** - Full admission as a degree-seeking student in one of the doctoral programs offered by CDS. The student may be enrolled either full-time or part-time.
2. **Provisional PhD Status** - Provisional admission into one of the doctoral programs offered by CDS.
3. **MS Degree Status** - Full admission into one of the Master's programs offered by CDS.
4. **Provisional MS Status** – Provisional admission into one of the Master's programs offered by CDS.
5. **Certificate Status** - Full admission into a Certificate program.
6. **Non-Degree Status** - Non-degree students may take up to 12 credit hours of coursework which may be applied towards a degree program at a later date if approved. Students who later choose to seek admission into a degree program must reapply for admission using the regular graduate application.

Note: Provisional admission into one of the degree programs offered by CDS may be offered to students who have a GPA below 3.00 or who may require remedial preparation in either Science, Mathematics, or Computation. In such cases, the admissions letter will indicate courses that the student must take (usually before enrollment or during the first semester in the CDS program). Upon successful completion of the indicated courses with a minimum average GPA of 3.33, the student will be notified by letter that he/she has advanced from provisional status to degree status. This change in status will also be documented in the student's file. All credits of graduate level work earned during provisional status will be applied towards the student's degree program unless otherwise indicated.

CDS Student Orientation

Students are encouraged to attend an orientation session with the Chair and Faculty of the CDS department during the first week of the Fall and Spring semesters. This meeting provides incoming students with an overview of CDS and GMU resources, including computer facilities, library facilities, offices, and staff. Staff members from CDS and other GMU units will also attend to answer questions. Topics include policies and procedures for the academic programs and for addressing student concerns.

Temporary Advisor

The student will be assigned a temporary academic advisor upon acceptance into the program whether the status is degree, provisional, or certificate. The name and phone number of the temporary advisor are included in the acceptance letter. It is imperative that the temporary advisor be contacted as soon as possible to discuss enrollment in classes. Several forms should be completed during the meeting with the advisor as follows:

1. Room Access Form - Request access to the CDS computer lab.
2. Computer Account Form – Request an account to use the CDS computer cluster.

These forms must be returned to the CDS office on the 3rd floor of the Research Building.

CDS Student Meetings

Students meet as a group once each semester with the chair of the CDS department and with the CDS graduate program coordinator to discuss general issues and concerns.

CDS Student Mailboxes

The CDS department assigns mailboxes to all full-time students and also to those part-time students who request one. The mailboxes are located in the CDS office on the 3rd floor of the Research Building. Students should check their folder frequently for important notices and announcements.

CDS Student Offices

Full-time doctoral students in the CDS department are assigned cubicles in the Research Building. Students may request a cubicle by notifying the CDS office. Full-time students are given first priority, but we do try to accommodate all students who request space. In some cases, cubicles may be shared by two individuals. Students may not change cubicles or use a desk that has not been assigned to them.

Doctoral Program Procedures

The PhD programs within CDS include several important milestones that are documented in the student's file using a series of **Program Forms** that are available in the CDS website, www.cds.gmu.edu.

I. Proposed Coursework

The student should meet with the temporary advisor to create a preliminary listing of anticipated coursework, which is documented on **Form #1**. Credits from a previous graduate program should be listed on this form. Credits taken in Extended Studies at GMU should also be listed. This form should be completed during a meeting with the temporary academic advisor and filed with the CDS office.

II. Doctoral Dissertation Committee

1. Once a student has completed over half of the 48 credits of coursework, the student should begin to work with the assigned temporary academic advisor to select a general area of scientific investigation and to identify possible dissertation directors. The student communicates with the faculty members, and is encouraged to sign up for a directed reading/research course as a means of investigating the area of research they might wish to pursue.
2. The student selects a faculty member who is willing to become the dissertation director. The dissertation director has the primary responsibility for leading the technical direction and content of the student's research. The dissertation director must be approved by both the Graduate Coordinator and the COS graduate dean.
3. Once the dissertation director is selected and approved, the student forms a Dissertation Committee, which consists of a minimum of four members including the dissertation director and the committee chair (who is usually the dissertation director). The chair and at least one other committee member should be regular full time professors of the CDS department. One member of the committee should have primary affiliation outside the CDS department. Once the committee is formed, the membership is listed in **Form #2**, which must be signed by all committee members and the Graduate Coordinator, before being forwarded to the COS Academic Affairs Office for approval by the COS graduate dean.
4. The chair of the committee should be familiar with CDS and university policies and procedures regarding the advancement of a student through the entire process leading to the doctorate. The chair is responsible for organizing all meetings of the committee and ensuring that the proper procedures are followed.
5. The purpose of the dissertation committee is to guide the student through the research and writing of the dissertation, and also to evaluate whether the student is prepared to advance to doctoral candidacy. One of the primary roles of the committee is to prepare and administer the student's doctoral candidacy examination in accordance with the policies of the CDS department and the College of Science.
6. A faculty member may leave the committee at any time. The replacement member must receive the consent of the rest of the dissertation committee members, the Graduate Coordinator, and the COS graduate dean. If the committee membership is modified, then a revised Form #2 must be completed and submitted for approval.

III. Program of Study

The student develops a detailed program of study including COS coursework taken in degree status as well as graduate courses taken prior to admission. All committee members and the Graduate Coordinator must approve the program of study as reported on **Form #3**, which is filed with the CDS office. Once the program of study is approved, the student can register in CSI 998 Dissertation Proposal. All course transfer and reduction forms should also be approved and filled at this time.

IV. Candidacy Examination

1. The Candidacy Examination consists of written, oral, and computational parts. All parts are mandatory, according to the regulations of the individual degree program, as explained in the details below.
2. The Candidacy Examination should determine mastery of fundamental knowledge and familiarity with current research in topics that contribute directly to the dissertation research area.

3. The composition of the Candidacy Examination is defined by a list of topics that are reasonably well understood in the scientific and technical community. Material covered may include content from courses taken by the student. After agreement is reached between the student and the committee, the list of exam topics and the proposed exam date of are documented on **Form #4**, which is filed with the CDS office.
4. The written and computational parts of the exam must be submitted to the program director by the Chair of the student's committee at least one week prior to the examination.
5. The written portion will be administered and taken on campus and completed without collaboration, in a room assigned by the committee chair. In most cases, it is expected that the student will have the option of choosing a subset of questions to answer.
6. After completion of the written portion of the exam, the computational project is assigned, if applicable. In general, the student will have two weeks or less to complete the computational project.
7. The oral exam will be scheduled and administered by the committee, and can include discussion of the student's computational project, the student's proposed dissertation research, and the student's performance on the written portion of the exam.
8. The Candidacy Examination is graded by the committee, which informs the student of the results in a timely manner. The entire exam process should be concluded within one semester.
9. Students have two opportunities to pass the Candidacy Examination.

V. Results of Candidacy Examination

Upon successful completion of all portions of the exam, **Form #5** is filled out and signed by the committee members and the Graduate Coordinator and forwarded along with the graded exam to the CDS office for addition to the student's file.

VI. Doctoral Dissertation Proposal

1. Students must prepare a detailed Dissertation Proposal and present the proposal to their committee for the approval. Proposals must be approved by the dissertation director and the dissertation committee and will also be reviewed by the Graduate Coordinator.
2. The proposal should contain sufficient text, illustrations, tables, equations, and bibliography.
3. The proposal should include a detailed description of the work to be undertaken; its relation to previous published work; and the scientific, mathematical, and computational methods to be employed. Proposals should also include a clear set of goals, methods, and models, and a discussion of the expected results and their anticipated significance. The discussion should also include any limitations on the generality of these results.
4. Proposals should discuss hardware/software issues including computational tools, techniques, and algorithms to be utilized in the research.
5. An abstract of the proposal is submitted on **Form #6**, and the complete proposal is attached and forwarded to the CDS office.

VII. Advancement to Candidacy

1. After successful completion of all portions of the Candidacy Examination and the approval of the Dissertation Proposal, the student is advanced to Doctoral Candidacy. Advancement to candidacy is documented by **Form #7**, which should be attached to the dissertation proposal and forwarded to the Graduate Coordinator for review and approval.
2. After submission of **Forms #5, #6, and #7**, the student will be advanced to candidacy and the COS Academic Affairs Office will notify the GMU Registrar. At that time, the student's academic status will formally convert to doctoral candidate.
3. Once advanced to candidacy, students must be continuously enrolled in a minimum of three credit hours per semester (however, see item 3 below for exceptions).

VIII. Dissertation Research Hours (CSI 999, CSS 999, NEUR 999)

1. Once a student has a fully approved dissertation committee and is within one semester of taking the Candidacy Examination, the student may register for 998, Doctoral Dissertation Proposal, in order to develop a proposal for submission to the dissertation committee.
2. Once a student has reached candidacy by passing the Candidacy Examination and having the Dissertation Proposal approved by the committee, then the student must maintain continuous enrollment in 999, Doctoral Dissertation, until the dissertation is completed.
3. The total number of credit hours of 998/999 must be at least 24 for graduation (however only 24 can be included on the graduation application). Furthermore, the number of 999 hours must be at least 12 credits. Having reached doctoral candidacy, the student must enroll in at least 3 hours of 999 each semester until 24 hours of CSI 998/999 have been completed, after which the student may register for one credit of 999 each semester and be considered a full-time student. The student must also take at least one credit of 999 during the semester of their graduation.

IX. Doctoral Dissertation

1. A dissertation is a written piece of original, independent work that demonstrates the doctoral candidate's mastery of the subject matter, methodologies, and conceptual foundations in their chosen field of study.
2. Content should:
 - a. be relevant and current in the chosen area
 - b. demonstrate an understanding of theoretical/experimental research and development issues
 - c. demonstrate a mastery of computational tools and techniques
 - d. make a contribution through either new results or new techniques
 - e. be acceptable for publication in a refereed journal
3. **Note: The dissertation must be submitted directly to the Library along with all approval signatures per their requirements and instructions.**

Guidelines for the content and general format of the doctoral dissertation may be found at www.gmu.edu/library/specialcollections/dtwebguide.htm. Please contact Robert Vay at (703) 993-2222, Fenwick Library, for step-by-step instructions on preparing the dissertation.

X. Graduation Procedures

1. Students may access Graduation information on the web at **www.cos.gmu.edu**. They must complete and submit a Graduation Intent Form, which can be filled out on-line.
2. The *Application for Graduation* must be completed by the student, reviewed by the Chair of the dissertation committee and approved by the Graduate Coordinator. This form is forwarded by the Graduate Coordinator to the COS Academic Affairs Office for review and approval by the COS graduate dean. A copy is made for the student's file and for verification of the program requirements. The approved graduation application is forwarded to the graduation section of the Registrar's office for final processing. The graduation application is also available on-line.

Application for Graduation Dates

Spring	March 31
Summer	March 31
Fall	October 31

Dissertation Due Dates

Spring	March 31
Summer	July 15
Fall	November 15

Please note that the above dates are approximate and can change each semester. Check the COS website, www.cos.gmu.edu, for current information.

XI. Dissertation Defense

1. When the doctoral dissertation thesis is completed, a candidate must arrange with his/her committee to schedule the final defense, which is open to the public. After verifying a date with members of the committee, contact the COS Academic Affairs Office to schedule a room.
2. **A pre-defense of the dissertation must occur at least one month prior to the final defense.**
3. It is the responsibility of the candidate and his/her committee to correct any errors in thesis content. After review by Robert Vay, rvay@gmu.edu, Special Collections, Fenwick Library, the candidate must bring a draft to the Johnson Center Library for review by the GMU community. The COS Academic Affairs Office staff will prepare a flyer announcing the candidate's dissertation topic and final defense date. This will be distributed to the GMU community and must be posted at least two weeks prior to the final defense.
4. After the final defense, the candidate must obtain all required signatures (in black ink) and must submit the following documents to Robert Vay, wing 2C, Fenwick Library:
 - a. Three original signature sheets (black ink). Please type out the members' names next to their signatures on bond paper.
 - b. Two original copies of the complete dissertation printed on 100% cotton bond paper.
 - c. One copy for microfilming along with a check for \$55.00 and completed application form for UMI Dissertation Services.

- d. Completed National Research Council Survey.
 - e. Form #8 is filed with the CDS department, and a copy of the student dissertation should be filed with the COS Academic Affairs Office.
5. The candidate is responsible for getting his/her thesis bound for the COS archives. We suggest brown or rust color with dissertation title and the candidate's name on the spine of the book. Please refer to the COS graduates' theses available for review in the COS office. They may not be removed from that office.