



Program Guide

**Department of Computational and Data Sciences
Doctoral Program in Computational Social Science**

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Dear CSS PhD Student,

Welcome to the Computational Social Science (CSS) PhD program within the Department of Computational and Data Sciences (CDS) at George Mason University.

The core objective of the program is to train graduate students to be professional computational social scientists in academia, government, or business. The program offers a unique and innovative interdisciplinary academic environment for systematically exploring, discovering, and developing skills to successfully follow careers in one of the areas of computational social science.

This manual will cover some of the basics of being a CSS PhD student. You will find general guidance on what the program is about in practice, what you should expect and prepare for, and how to maximize the benefit of being here. There are some practical diagrams and tables, and suggested programs of study to help you get started.

It is important that you understand the official rules of the program as laid out in the University catalog that corresponds to your term of admission or any subsequent change of catalog year you may request. Another important source of information within the catalog is the graduate policies section, which outline general rules that all graduate students at George Mason University must follow. Our program complies with both the College of Science and George Mason University rules. Students should also be mindful of the university calendar, updated regularly, which specifies a variety of information including dates for finals, dates for submission of important documents (including dissertations).

Important supplementary documents/links:

[GMU Academic Graduate Policies](#)

[COS graduate/faculty Handbook](#)

[University Calendars \(part of the University Registrar's website\)](#)

The CDS department website contains additional information

[Department website](#)



Computational and Data Sciences Department Officers

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Brief Description of the PhD Milestones

To complete the PhD program, students need to satisfy various requirements. In summary, a student must complete:

- 1) coursework/credits requirements,
- 2) research activity supervised by their research adviser, and
- 3) general examinations which include, in order, the candidacy exam, doctoral dissertation proposal, and dissertation defense. These examinations require the formation of a dissertation committee.

These requirements have certain rules and need to be achieved in a certain sequence.

Coursework requirements and reduction of credit

This PhD program consists of a total of 72 credits distributed as follows: 12 core, 6 extended core, 15 social science, 15 general electives, and 24 dissertation credits obtained through CSS 998 and CSS 999 courses.

With a conferred master's degree from a regionally accredited U.S. academic institution, CSS students may be eligible for up to a 30-credit reduction.

Research requirement and research advisor

Although there is a large course requirement, a PhD is fundamentally a research degree. Students need to maintain this foremost in their planning. Students, part-time or full-time, should seek a research advisor promptly. *Ideally, by the end of the first year after the start of their PhD, students should have explored supervision options and be finalizing arrangements with a research advisor.* Students who delay in this process may encounter administrative complications and possible termination from the program due to various factors including an inability to meet certain university deadlines. Typically, research advisors should be chosen from among department faculty members, although in a few cases, a advisor from another department may be more appropriate.

To find a research advisor, discuss with several department faculty members whose research interests match yours. Mention any possible funding needs and opportunities in these discussion. It is also a good idea to discuss with each member their supervision expectations, style, and even to discuss with their other current graduate students so that you know what to expect.

Your research advisor will help set up your dissertation committee (see rules on dissertation committee below which discuss the case of a advisor outside CDS), candidacy exam, dissertation proposal, and ultimately your dissertation and defense. Some of your coursework beyond the basic core courses and some area of emphasis courses should also be discussed with your research advisor.

Candidacy Examinations

It is highly recommended that students take a proactive approach to completing these examinations in a timely manner. The rules for each of these examinations are explained in detail later in the manual.

Advancement to Candidacy

Advancement to candidacy includes:

- Completing all coursework
- Passing candidacy/comprehensive exam
- Successfully defending dissertation proposals

Students have six years minus one semester from their admission into the PhD program to advance. Deadlines for completing above and submitting the appropriate forms to the academic programs' administrator are as follows:

SEMESTER	PAPERWORK DUE
Spring	November 8
Summer	March 8
Fall	May 25



Sources of Funding

University Presidential Fellowships (cover tuition, stipend including summers, and university health insurance):

These are available only to new PhD students who have not yet taken any courses of the PhD program. University Fellowships are offered for 4 years for students that received them in a fall term, and 3.5 years for students that receive them in the spring term. The university assigns each PhD program a limited number of these fellowships and, consequently, they are not always available to new students in a given admissions cycle.

Departmental teaching assistantships (cover tuition, stipend, and university health insurance):

The department is currently able to support a number of PhD students simultaneously via teaching assistantships (GTA), distributed equitably between the CSI and CSS PhD degrees (both offered by the CDS department). Any student holds a GTA for 1 year at a time. A GTA can be renewed on the basis of good simultaneous academic (course work and research) and teaching performance, and it is ultimately granted at the discretion of the department. It is current department policy to grant GTA positions only to those students who hold a prior MS or have completed at least 18 graduate credits as recognized by GMU. Also, only full-time students are eligible for GTA support. A student holding a GTA is considered to be enrolled full-time with 6 credit hours. *This funding source requires initial college training when you first take it on (schedule of trainings is updated yearly and requires the recipient to be available before the start of the semester).* Students holding assistantships may not engage in other on- or off-campus employment, including additional assistantships, during the period they hold an assistantship without explicit written approval from the department chair, program director, or dean.

Grant-based graduate research assistantships (cover 9 credits of tuition, stipend, and university health insurance):

Departmental faculty holding grants can support graduate research assistants, as allowable per grant, for varying periods. The grant Principal Investigator (PI) is the supervising entity, and the graduate researcher can work 20 hours per week, receives a stipend, 9 credits of in-state tuition and is eligible for health insurance. Graduate research positions are handled by the PI. In general, these assistantships are set up in 1-year increments, renewable on the basis of performance and funding. Students holding assistantships may not engage in other on- or off-campus employment, including additional assistantships, during the period they hold an assistantship without explicit written approval from the department chair, program director, or dean.

Departmental graduate lecturer positions (paid salary based on Mason adjunct faculty salary matrix):

The department hires graduate lecturers on an as-needed basis. It is current department policy to hire graduate lecturers only when students hold a prior MS or have completed at least 18 graduate credits as recognized by GMU. A graduate lecturer must be a student in good academic standing and hires are made based on a review of relevant qualifications not limited to academic standing. These positions are advertised via the departmental website and listservs.

Departmental graduate STARS positions (paid hourly wages):

The department hires between 2-4 graduate STARS (CDS Student Teaching Assistants) on an as-needed basis. The graduate STAR serves as an in-class teaching assistant, helping students as needed via one-on-one methods, and assists the instructor with grading homework assignments in lower-level classes. This position pays an hourly rate salary based on hours worked per week. The graduate STAR reports to the STARS program coordinator and is asked to attend meetings and training, as required. These positions are advertised via the departmental website and listservs.

Provost Office grants for specific purposes or specific groups:

The University Provost offers a number of funding opportunities for a variety of purposes and groups. These funding sources are explained in detail at <https://provost.gmu.edu/academics-and-research/graduate-education/awards-and-grants>, and include grants for thesis completion, travel, and access and inclusion.

External funding sources:

For students that do not have department or university support, it is encouraged that they seek support from external funding bodies including NSF, foundations, private funders, or (for foreign students) governments.

Help with External Fellowship applications:

The George Mason Office of Graduate Fellowships is an information and support center dedicated to helping graduate students search for and apply to external fellowships that can help them pay for their graduate studies. Consult with them if you are considering preparing applications to external fellowships and/or sources of funding. Website: <https://gradfellows.gmu.edu/>



Where to start each process

Process	First point of contact
Filing program of study (preliminary)	CDS Academic Programs Administrator
Reduction of credit	CDS Academic Programs Administrator
General academic questions (e.g. more appropriate course)	Director of Graduate Studies or Research Advisor
General administrative questions (e.g. procedures to follow)	CDS Academic Programs Administrator
Candidacy examination	Committee Chair
Dissertation Proposal	Committee Chair and/or Research Advisor
Dissertation Defense	Committee Chair and/or Research Advisor



Explanation of Course Requirements

The CSS PhD is a 72-credit program. Course credit requirements are divided in the following categories:

Core Courses (12 credits)

- CSS 600
- CSS 605
- CSS 610
- CSS 620

Extended Core Courses (6 credits from the following)

- CSS 625
- CSS 635
- CSS 645
- CSS 692

Discipline-Based Social Science Courses (15 credits)

Select 15 credits of discipline-based social science courses in a specific area such as anthropology, economics, geography, history, linguistics, political science, or sociology, as approved by the student's advisor, to provide domain-specific knowledge.

Electives (15 credits)

Select 15 credits of electives or independent research, as approved by the student's advisor, to provide further substantive or methodological specialization as needed.

Dissertation credits (24 credits)

Dissertation research credits are required in order to demonstrate doctoral-level originality and research excellence. These credits include:

- **CSS 998: Doctoral Dissertation Proposal (1-12 credits)**
Covers development of research proposal, which forms basis for doctoral dissertation, under guidance of dissertation director and doctoral committee.
Notes: Candidates must complete a combined minimum of 12 credits of doctoral proposal (CSS 998) and doctoral dissertation research (CSS 999), of which at least three credits must be of CSS 999. A combined maximum of 24 credits of CSS 998 and CSS 999 may be applied to the degree
These are labeled CSI 998 and CSI 999. You can take CSI 998 once you have an approved dissertation committee.
- **CSS 999: Doctoral Dissertation (1-12 credits)**
Once a student advances to candidacy, he/she registers for CSS 999 and must maintain continuous enrollment until final dissertation is submitted to the library. Students must register for a minimum of 3 credits of 999 until a

combine total of 24 dissertation credits are reached. Once 24 is reached with a minimum of 3 credits, students can register for one credit until the final dissertation is submitted.

Seminar/Colloquium

One credit seminars (CSS 898) are offered each semester on Friday afternoons. Though not a requirement of the CSS PhD program, faculty encourage students to attend. Registration is not required; however, registration of 3 credits of CSS 898 (throughout 3 semesters) would count for a 3-credit elective course with an approved substitution/waiver.



Explanation of Candidacy Examination

The candidacy exam is taken after students have completed all core requirements and a majority of additional coursework (18 plus 15 credits), which typically corresponds to the fifth semester in the program. The exam consists of two parts – written (chosen from one of the three options listed below) and an oral. The purpose of the candidacy exam is to assess the student's substantive and methodological knowledge in CSS as a whole and in the chosen focus area, the ability to integrate materials from different courses, and the potential for a successful dissertation.

CSS students have 3 options to complete the examination process:

1. Answer 6 questions; possible outcomes are either pass or fail--if the latter then the student gets one chance to retake the exam.
2. Submit 1 research paper and answer 3 questions over 3.5 days; possible outcomes are either pass or fail on the paper and pass or fail on the exam--failing either part means the student gets one chance to redo the failed part.
3. Submit 2 research papers; possible outcomes are each paper can pass or fail, and any that fail can be resubmitted once.

For options 1 & 2,

- 1) The composition of the written 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 are documented on Form #3, which is filed with the CDS office.
- 2) The written and computational parts of the exam must be submitted to the Director of Graduate Studies by the chair of the student's committee *at least one week prior to the examination*.
- 3) The written portion will be administered and taken on campus and completed without collaboration, in a room assigned by the committee chair. The exam can be designed so that the student has the option of choosing a subset of questions to answer.
- 4) 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.
- 5) 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.
- 6) Students have two opportunities to pass the Candidacy Examination. In some cases, only some parts of the exam may require retaking.

Rules for research papers:

- Papers must be solely written by the student, possibly with a Mason faculty member as co-author.
- Papers must be 'journal quality', meaning either (a) accepted for publication or published, or (b) judged by examiners to be journal quality.
- At most one of the papers may be 'conference quality', meaning either (a) accepted for presentation at a conference, or (b) judged by examiners to be conference quality, but only if this is something new that the student has not worked on before. That is, if a student submits a paper that is a refined version of work done as a term project for a class it must be 'journal quality.'

Dissertation committee requirement

To organize the candidacy exam, a student must have identified a research advisor and formed a dissertation committee with the help of the advisor. In case the research advisor is not core faculty of the CDS department, the candidacy exam will require a *committee chair* that is CDS core faculty. If the research advisor is a CDS core member, then they also function as chair of the committee., with the consent of his/her advisor, informs the CSS Director of Graduate Studies of his/her readiness to take exam and which option. Once the written exam is completed, the Director of Graduate Studies selects an exam committee consisting of the Director along with two other faculty members within the Department. Once the written portion is graded, an oral exam is scheduled.

Results of Candidacy Examination

Upon successful completion of all parts of the exam, the Results of Candidacy form is completed and signed by the dissertation committee members and added to the student's file by the Academic Programs Administrator. ~~along with the graded exam.~~



Formation of Dissertation Committee

The CSS PhD program requires at least 3 members to serve on the committee, satisfying the category of Mason Graduate Faculty. The following rules have to be observed:

- 1) At least two members of the committee must be core faculty members of the CDS department, one of which will serve as chair.
- 2) The third core member may come from CDS or from another Mason department.
- 3) If a member of the committee is not a core faculty member of GMU, they must then be submitted for approval as Mason Graduate Faculty through the CDS office. This requires that the committee member possess a PhD, and a CV and possibly other documents are required to complete this process.
- 4) It is possible to have a fourth member on the dissertation committee. This is normally done when the student's research can benefit from the expertise of an external member of the scientific community. Typically, such committee members need to be approved by the full committee and Director of Graduate Studies.

Who are core faculty members of CDS: The PhD program core faculty is composed of tenured and tenure-track members of the Mason faculty whose primary affiliations are with the CDS Department. **Term faculty members** of CDS can be committee chairs with written permission from the College of Science. The approval process will begin with notifying the Academic Programs Administrator.



Doctoral Dissertation Proposal

Students must prepare a detailed Dissertation Proposal and present the proposal to their committee for approval. Proposals must be approved by the research advisor and the dissertation committee and will also be reviewed by the Director of Graduate Studies.

The proposal should contain sufficient text, illustrations, tables, equations, and bibliography to represent a clear explanation of the student's proposed research project.

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 the expected results.

Proposals should discuss hardware/software issues including computational tools, techniques, and algorithms to be utilized in the research.

An abstract of the dissertation proposal is submitted on the Dissertation Proposal form.



Doctoral Dissertation

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. Another term of the dissertation is a thesis.

The content of the dissertation should:

- 1) be relevant and current in the chosen research area,
- 2) demonstrate an understanding of theoretical/experimental research and, when applicable, development (as in R&D) issues,
- 3) demonstrate a mastery of computational tools and techniques,
- 4) make a research and/or development contribution through either new results and/or new techniques, and
- 5) be acceptable for publication in a refereed journal.

A *pre-defense in front of the committee* should take place a month prior to the dissertation defense. This allows the committee to make final recommendations and corrections to the student in preparation to the final public defense of the dissertation.

The final dissertation defense is done as a public presentation, arranged with the dissertation committee. Upon the successful completion of the defense, the dissertation form is signed and completed by the student and dissertation committee, and submitted to the CDS office for further processing.

Students are responsible for coordinating date/time/place of predefense and defense and informing the Academic Programs Administrator so that a room can be reserved. An announcement of a public defense must be made at least two weeks prior.

Note: The written dissertation volume must be submitted 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 <https://library.gmu.edu/udts/process>.



Checklist for Research Advisors (including Forms)

To help research advisor help their students remain in both good standing and making progress towards the completion of their PhD, the following list of recommendations is offered:

- 1) **Be aware of your students Program of Study:** this helps to keep an eye of a student's progress and adherence to academic and research plans.
- 2) **Know your student's deadlines:** be aware of the term they entered the program, how long they have to advance to candidacy and to graduate.
- 3) **Remember the steps involved in moving the student through the PhD requirements:**
 - a. **Form dissertation committee** – Complete Dissertation Committee form
 - b. **Organize and administer candidacy exam:** if you are not in CDS, coordinate with the committee chair who must be a CDS tenured or tenure track faculty member)
 - c. **Organize Dissertation Proposal approval** by the Dissertation Committee – Complete Dissertation Proposal form.
 - d. **Organize Pre-defense** about a month before final dissertation defense.
 - e. **Organize Dissertation Defense** – Complete Dissertation Defense form



Table of forms and requirements

Requirement
Program of study
Dissertation Committee
Candidacy exam results
Dissertation Proposal abstract
Dissertation Proposal
Approval of Dissertation proposal and advancement to candidacy
Doctoral Defense

Where to find department forms

All department forms can be found on the CDS department *website*.

Some other frequently used forms

Re-enrollment form: Required if a PhD student misses two consecutive semesters

<https://registrar.gmu.edu/wp-content/uploads/GRE-Graduate-Re-Enrollment-8.8.18-1.pdf>

Reduction of Credit: Students with a conferred MS/MA degree from a regionally accredited U.S. academic institution may be eligible for a reduction of credit

<https://registrar.gmu.edu/wp-content/uploads/ROC.pdf>

Substitution/Waiver: Request that a requirement in an academic program be met by: 1) a transfer course even though not considered equivalent to a Mason course, or 2) a Mason course not usually applied to meet the requirement. Also, to request that, on some clearly detailed basis, a requirement in the student's academic program be waived (does not waive or give credit hours).

https://registrar.gmu.edu/wp-content/uploads/SWF_0514.pdf

For additional registrar forms, <https://registrar.gmu.edu/forms/>



Reductions and Transfers of Credit

Reductions of credit are a process by which a student who has *completed another graduate degree* before joining the PhD can request that credits from that prior degree be accepted in lieu of required credits in the CSS PhD.

Transfers of credit are a process by which a student who has *taken graduate level courses that do not form part of a graduate degree* before joining the PhD can request that those credits be accepted in lieu of required credits in the CSS PhD.

Rules for reductions and transfers:

- 1) normally granted towards the electives and colloquium credit requirement,
- 2) limited to a maximum of 30 credits,
- 3) for every course used as part of a reduction or transfer request, the course syllabus must be submitted, and
- 4) the process should be done in the first year of the student's study.

This process should be initiated with the Academic Programs Administrator.



PHD COMPLETION TIMELINE GUIDE

Actions	Fall	Spring	Summer	Comments
File to graduate	Check out Registrar's website for deadlines for online and paper applications: https://registrar.gmu.edu/students/graduation/timelines/			
Draft Dissertation to Committee Chair	1 st week of August	1st week of December	1st seek of March	
Draft to Committee	1 st week of September	1 st Week of January	1 st Week of April	
Predefend	1 st week of October	1 st Week March	1 st Week of June	Poll committee members to get date/time then let Academic Programs know so she can schedule a room for predefense
Defend	Mid November	1 st Week of April	1 st Week of July	Same as above.
Dissertation Title and Abstract to Academic Programs Manager for advertising the defense		Minimum of 2 weeks before defense	Minimum of 2 weeks before defense	You will be sent a template when the time comes to prepare your defense announcement.
Submit Dissertation to Library	Check out library's website for submission procedures and deadlines: http://library.gmu.edu/udts			

IMPORTANT: Frequently visit the University Dissertation and Thesis Services website for procedures/timelines: <http://library.gmu.edu/udts>



Useful Resources/Contacts

Graduate Admissions

masongrad@gmu.edu

703-993-9700

Office Location: 213 Johnson Center (2nd Floor)

Director of Graduate Programs, College of Science

Melissa Hayes

cosgrad@gmu.edu

Suite 1450 Exploratory Hall

703-993-9532

mhayes5@gmu.edu

Office of International Programs and Scholars

(703) 993 2970

<https://oips.gmu.edu/>

Student Health Services

703-993-2831

<https://shs.gmu.edu/>

Counseling and Psychological Services

703-993-2380

<https://caps.gmu.edu/>

Disability Services

703-993-2474

<https://ds.gmu.edu/>

Office of Compliance, Diversity, and Ethics

(703) 993-1000

<https://diversity.gmu.edu/title-ix>

Office of the University Registrar (including FERPA)

703-993-2441

<https://registrar.gmu.edu/>

University Library

703-993-2240

<https://library.gmu.edu/>

Stearn Center Student Support Resources Webpage

Many of the links above, as well as many other University offices and resources useful students can be found in the link below

<https://stearnscenter.gmu.edu/knowledge-center/knowing-mason-students/student-support-resources-on-campus/>