

# Program Change Request

Date Submitted: 04/28/21 10:48 am

Viewing: **SC-PHD-CSS : Computational Social Science, PhD**

Last approved: 02/23/21 4:45 pm

Last edit: 08/25/21 2:41 pm

Changes proposed by: kunderwo

## Catalog Pages

### Using this Program

[Computational Social Science, PhD](#)

## In Workflow

1. CDS Chair
2. SC Curriculum Committee
3. SC Associate Dean
4. SC CAT Editor
5. Assoc Provost-Graduate
6. Registrar-Programs: Duration
7. Registrar-Programs

## Approval Path

1. 04/28/21 3:20 pm  
Jason Kinser  
(jkinser): Approved for CDS Chair

## History

1. Oct 23, 2017 by clmig-jwehrheim
2. Feb 15, 2018 by rzachari
3. Jan 15, 2019 by Tory Sarro (vsarro)
4. Feb 23, 2021 by Johanna Riemen (jriemen)

Are you completing this form on someone else's behalf?

Yes

Requestor:

Name	Extension	Email
DALE ROTHMAN	36754	drothma@gmu.edu

Effective Catalog: 2022-2023

Program Level: Graduate

**Program Type:** Doctoral

**Degree Type:** Doctor of Philosophy

**Title:** Computational Social Science, PhD

**Banner Title:** Computational Social Sci PhD

Is this a retitling of  
an existing

**Registrar/OAPI Use  
Only – SCHEV  
Status**

Approved

**Registrar's Office  
Use Only –  
Program Start Term**

**Registrar/OAPI Use  
Only – SCHEV  
Letter**

**Registrar/OAPI Use  
Only – SACSCOC  
Status**

**Concentration(s):**

**Registrar/IRR Use  
Only –  
Concentration CIP  
Code**

**College/School:** College of Science

**Department /  
Academic Unit:** Computational & Data Sciences

**Jointly Owned  
Program?** No

### Justification

What: Add CSS 635 to the extended core.

Why: The justification is that almost all CSS PhD dissertations involve agents representing humans making decisions and the discipline-based courses discussion lists many social sciences but not cognitive foundations. So, it is possible that our students would never have had any classes on human cognition or decision-making. Adding this course to the Extended Core Courses would encourage students to develop an academic background in human decision-making.

**Total Credits  
Required:** Total credits: 72

**Registrar's Office Use Only - Program Code:**

SC-PHD-CSS

**Registrar/IRR Use  
Only – Program CIP  
Code****Admission  
Requirements:**

## Admissions

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University-wide admissions policies can be found in [Graduate Admissions Policies](#).

To apply for this program, please complete the [George Mason University Admissions Application](#).

### Eligibility

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Applicants should have as background a bachelor's degree in one of the social sciences; computer science, engineering, or a relevant discipline; and undergraduate courses in these and related areas. Bachelor's degrees in the physical or biological sciences are also eligible, but applicants may be advised to take additional courses in social science or computer science as prerequisites to admission. Minimal requirements also include one undergraduate course in calculus and knowledge of a computer programming language, preferably object-based.

### Application Requirements

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Applicants should have an undergraduate degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent with a GPA of at least 3.25. To apply, prospective students should complete the [George Mason University Admissions Application](#), copies of official transcripts from each college and graduate institution attended, a current résumé, an expanded goals statement not to exceed 2,000 words, and the names of two Mason faculty members who may be suitable advisors. Applicants should also include three letters of recommendation from faculty members or individuals with direct knowledge of the student's academic or professional capabilities. The letters must arrive directly from the senders. Applicants should also submit an official report of scores obtained on the GRE-GEN. TOEFL scores are required for all international applicants.

**Program-Specific  
Policies:**

## Policies

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For policies governing all graduate degrees, see [AP.6 Graduate Policies](#).

### Reduction of Credit

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Students entering the doctoral program with a master's degree in a related discipline may request that the required credits for the doctoral degree be reduced by a maximum of 30 credits with approval of the director of graduate

## Transfer of Credit

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Students who have prior graduate coursework that has not been applied to another degree may request to have a maximum of 24 of these graduate credits transferred, with approval of the director of graduate studies and the associate dean and in accord with university policy. More information can be found in [AP.6.5.3 Transfer of Credit](#).

## Academic Advising

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During the first year, each student will form a graduate studies committee, called the first-year committee, consisting of the student's advisor plus two or three appropriately qualified individuals. The committee assists the student in designing a specific plan of study and evaluating the student's progress by the end of the first year. During the second year, the student forms a doctoral committee, with membership approved by the CSS program director. The committee will advise the student on preparing for the doctoral candidacy exams and preparing, developing, and defending the doctoral dissertation.

### Degree Requirements:

Students should refer to the [Admissions & Policies](#) tab for specific policies related to this program.

## Core Courses

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<a href="#">CSS 600</a>	Introduction to Computational Social Science	3
<a href="#">CSS 605</a>	Object-Oriented Modeling in Social Science	3
<a href="#">CSS 610</a>	Agent-based Modeling and Simulation	3
<a href="#">CSS 620</a>	Origins of Social Complexity	3
Total Credits		12

## Extended Core Courses

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Select 6 credits from the following:		6
<a href="#">CSS 625</a>	Complexity Theory in the Social Sciences	
<a href="#">CSS 635</a>	<b>Cognitive Foundations of Computational Social Science</b>	
<a href="#">CSS 645</a>	Spatial Agent-Based Models of Human-Environment Interactions	
<a href="#">CSS 692</a>	Social Network Analysis	
Total Credits		6

## Discipline-based Courses

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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.		15
Total Credits		15

## Electives

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

Total Credits 15

Students with a strong background in computing, for example, a prior MS in computer science, but weaker social science training will be required to use all or most of these electives in a substantive social science. Conversely, students with a strong background in social science, for example, a BS in economics, will be required to use most or all of these electives in computing courses.

## 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 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. The exam consists of written and oral parts.

## Dissertation Proposal

Upon passing the candidacy examination, each student shall prepare and, within a year, defend a dissertation proposal, written in the form of an extramural research grant proposal. The student shall develop the dissertation proposal in consultation with the dissertation committee. With successful defense of the proposal, a student becomes a PhD candidate.

### Dissertation Research

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

Select 24 credits from the following: 24

- CSS 998
- Doctoral Dissertation Proposal
- CSS 999
- Doctoral Dissertation

Total Credits 24

### Example Dissertation Areas

Areas for dissertation research include, but are not limited to, the following:

- Agent-based computational economics: trade, finance, decision making under risk
- Computational political economy: voting, institutions, norms, inequality
- Computational linguistics: generative grammars, parsing, classifiers, inference
- Social network analysis: connectivity, structure, evolution of the Internet, social media, cyber warfare
- Computational anthropology: emergence of hierarchy, settlement patterns
- Computational political science: systems of government, conflict and war, cooperation
- Computational sociology: segregation, collective action, leadership, trust
- Complexity theory: power laws, potential theory, criticality, bifurcation

- Computational methodology: multiagent systems, evolutionary computation
- Agent-based computational geography: land use change, humanitarian assistance, urban modeling

## Doctoral Dissertation Defense

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The PhD dissertation is the detailed written report of an original and significant research contribution to computational social science. It is defended before the dissertation committee in a forum open to fellow students and interested faculty and staff. The dissertation committee recommends that the graduate faculty of George Mason University accept the student candidate for the PhD degree upon a successful defense and completion of any final revisions.

**Retroactive  
Requirements  
Updates:**

**Plan of Study:**

**Honors  
Information:**

**Accelerated  
Description/Dual  
Degree  
Description:**

**INTO-Mason  
Requirements:**

**College  
Requirements &  
Policies:**

**Department /  
Academic Unit  
Requirements &  
Policies:**

**Program Outcomes**

## Additional Program Information

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*This information is required by the Office of Accreditation and Program Integrity.*

**Courses offered via distance (if applicable):**

Indicate whether

**What is the primary delivery format for the program?**  
Face-to-Face Only

**Does any portion of this program occur off-campus?**

No

**Are you working with a vendor / other collaborators to offer your program?**

No

**Related Departments**

**Could this program prepare students for any type of professional licensure, in Virginia or elsewhere?**

No

**Are you adding or removing a licensure component?**

No

## Additional SCHEV & SACSCOC Information

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**Are you changing the total number of credits required for this program?**

No

**Are you changing the delivery format in any way (e.g adding an online option)?**

No

**Are you adding/removing a licensure option which was approved by SCHEV?**

No

**Will any portion of this program be offered at an off-campus location?**

No

What off-campus location(s)? List all

What percentage of credits toward this program a

Will this program change affect any specialized accreditation?

No

Is the content of the new program closely related to that of an existing approved program?

No

Which existing approved program(s)?

Is this new program considered to be "advancing the degree level of a currently approved program" (i.e. existing content is at lower degree level, new content is at the higher degree level)?

No

Which existing approved program(s)?

Is this new program considered to be "lowering the degree level of a currently approved program" (i.e. existing content is at higher degree level, new content is at the lower degree level)?

No

Which existing approved program(s)?

Does this change represent a repackaging of content in an existing approved degree/certificate program?

No

Which existing approved program(s)?

Percentage of total credits containing new course content, excluding gen ed courses for undergraduate program: ("New content" means content that is not currently included in an existing approved degree/certificate program.) Please choose a percentage (i.e. 0%-100%)

less than 25%

Are the total credits for the program increasing or decreasing by more than 3 credits?

No

Will any additional equipment/facilities be needed?

No

Description of institutional impact:

Will any additional faculty be required?

No



Description of institutional impact:

Will any additional financial resources be needed?

No

Description of institutional impact:

Will any additional library/learning resources needed?

No

Description of institutional impact:

### OAPI Use Only – Determination of SACSCOC Impact

Comments or Notes

### Green Leaf Program Designation

Is this a Green Leaf program? No

#### Green Leaf

Sustainability-focused academic programs require at least one green leaf course. Sustainability-focused academic programs require at least one sustainability-related course.

Relationship to

Relationship to

List sustainability-focused courses currently required

Sustainability-related academic programs either require at least one s

List sustainability-related courses currently required

Does this program cover material which crosses into another department?

No

Impacted

Additional Attachments

[Syllabus-CSS-635-2021.pdf](#)

SCHEV Proposal

Executive Summary

**Reviewer  
Comments**

**Additional  
Comments**

**Is this course required of all students in this degree program?**

%wi\_required.eshtml%

**Attached**

Key: 26