Program Change Request

Date Submitted: 03/13/26 11:42 am

Viewing: **SC-PHD-CSI : Computational Sciences and Informatics, PhD**

Last approved: 04/26/24 11:36 am

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Changes proposed by: jbazaz

Catalog Pages Using this Program

[Computational Sciences and Informatics, PhD](#)

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

Yes

Requestor:

Name	Extension	Email
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Effective Catalog: 2026-2027

Program Level: Graduate

Program Type: Doctoral

Degree Type: Doctor of Philosophy

Title: Computational Sciences and Informatics, PhD

Banner Title: Computat Sci & Informatics PhD

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

Is there an embedded degree as part of a program?

Justification

What: (i) The requirement of GRE scores for admission to this program is removed. Previously the GRE scores were required with a waiver. All other admission requirements remain as currently listed in the 2025-26 catalog. (ii) The new course CSI 671 has been approved in 2025 and has not yet been included in the GMU catalog.

Why: (i) The CDS Department has assessed that the GRE scores are not required for admission to the CSI PhD. This assessment was validated by a favorable majority vote of the CDS faculty. (ii) The CSI 671 course, was approved to be an Elective within the CSI PhD as stated in its course proposal.

Total Credits Required: Total: 72 credits

Registrar's Office Use Only - Program Code:

SC-PHD-CSI

Registrar/IRR Use Only – Program CIP Code

Admission Requirements:

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog. International students and students having earned international degrees should also refer to Admission of International Students for additional requirements.

Eligibility

Students interested in applying for admission should have a bachelor's degree in computational science, any natural science, mathematics, engineering, or computer science with a minimum GPA of 3.00 in their last 60 credits of study from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent.

Applicants to the PhD program should have a mathematics background up to and including differential equations and should also have knowledge of a computer programming language such as C, C++, Fortran, Python, etc.

Application Requirements

To apply for this program, prospective students should submit the George Mason University Admissions Application and its required supplemental documentation, two letters of recommendation, and a goals statement. ~~statement, and GRE scores unless the applicant holds a master's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent.~~ GRE scores are not required for admission into this program.

For additional information, please contact the CSI graduate coordinator.

Policies

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

Transferring Previous Graduate Credit into this Program

Previously earned and relevant graduate credits may be eligible for transfer into this program; details can be found in the [Credit by Exam or Transfer](#) section of this catalog. Please note that this program does not accept the transfer of previous research credits, including master's thesis credits.

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

General Core Courses

Select two courses (6 credits) from the following:		6
CSI 690	Numerical Methods	
CSI 695	Scientific Databases	
CSI 702	High-Performance Computing	
CSI 703	Scientific and Statistical Visualization	
Total Credits		6

Areas of Emphasis Courses

Select 18 credits from the courses listed below. The selected courses may include 'General Core Courses' not applied toward those requirements.

Select six courses (18 credits) from the following:		18
CSI 500	Computational Science Tools [1]	
or CSI 501	Computational Science Programming	
CSI 672	Statistical Inference	
CSI 674	Bayesian Artificial Intelligence	
CSI 678	Times Series Analysis and Forecasting	
CSI 685	Fundamentals of Materials Science	
CSI 709	Topics in Computational Sciences and Informatics	
CSI 721	Computational Fluid Dynamics I	

CSI 740	Numerical Linear Algebra	
CSI 742	The Mathematics of the Finite Element Method	
CSI 745	Robust Optimization for Decision Making	
CSI 747	Nonlinear Optimization and Applications	
CSI 758	Visualization and Modeling of Complex Systems	
CSI 772	Data-Driven Modeling and Learning	
CSI 773	Statistical Graphics and Data Exploration	
CSI 777	Principles of Knowledge Mining	
CSI 780	Principles of Modeling and Simulation in Science	
CSI 782	Statistical Mechanics for Modeling and Simulation	
CSI 783	Computational Quantum Mechanics	
CSI 786	Molecular Dynamics Modeling	
CSI 873	Computational Learning and Discovery	
Total Credits		18

[1]
Only one 500-level course may be applied toward the 18 credit requirement.

Colloquium/Seminar

The department offers weekly colloquia and seminar series to ensure that students are exposed to the latest developments at area research institutions. One credit may be chosen from:

CSI 898	Research Colloquium in Computational Sciences and Informatics	1
or CSI 899	Colloquium in Computational and Data Sciences	
Total Credits		1

Electives

Electives should be chosen to bring the total number of coursework credits to 48. Courses must be approved by the student's advisor and the graduate coordinator. Additionally,

- A maximum of 2 credits of CSI 898 Research Colloquium in Computational Sciences and Informatics and/or CSI 899 Colloquium in Computational and Data Sciences may be applied as electives.
- A maximum of two 500-level courses may be applied between both the 'Areas of Emphasis Courses' requirement and the 'Electives' requirement.
- CSI 796 Directed Reading and Research and CSI 996 Doctoral Reading and Research may be used as electives.

- The following courses may not be used as electives: CSI 798 Practicum Project, CSI 799 Master's Thesis, CSI 998 Doctoral Dissertation Proposal, and CSI 999 Doctoral Dissertation.
- Suggested elective courses include:
  - Any course in the 'Areas of Emphasis' not applied toward those requisites.
  - Other CSI courses such as: CSI 671 Natural Language Processing for Complex Systems in Science, CSI 739 Topics in Bioinformatics, CSI 779 Topics in Computational Statistics, CSI 789 Topics in Computational Physics, and CSI 986 Advanced Topics in Large-Scale Physical Simulation.
  - Other interdisciplinary graduate courses across Mason's offerings. These courses should be chosen with the student's research supervisor for guidance on enhancing the student's ability to perform doctoral research within the emphases. Endorsement of the Computational and Data Sciences Department for applying these courses toward the 'Electives' requirement is required.

Doctoral Research

No more than 24 combined credits from CSI 998 Doctoral Dissertation Proposal and CSI 999 Doctoral Dissertation may be applied toward satisfying doctoral degree requirements, with a minimum of 6 credits of CSI 999 Doctoral Dissertation.

Students become eligible to register for CSI 998 Doctoral Dissertation Proposal upon having an approved dissertation committee. Upon advancement to candidacy, students will be eligible to register for CSI 999 Doctoral Dissertation.

Select 24 credits from the following:		24
CSI 998	Doctoral Dissertation Proposal	
CSI 999	Doctoral Dissertation	
Total Credits		24

Candidacy Examination

The student must successfully complete separate written, computational, and oral candidacy examinations prepared and administered by the student's dissertation committee.

Dissertation Proposal and Advancement to Candidacy

Students advance to doctoral candidacy by fulfilling the following requirements:
- The student must successfully complete all coursework and candidacy examinations as stated above.
- The student prepares a dissertation proposal describing in detail the planned dissertation research. The proposal must be approved by the dissertation committee.
- Following successful completion of the research proposal and candidacy exams, the committee will recommend the student for advancement to doctoral candidacy to the graduate coordinator and the college's associate dean.

Dissertation Research and Defense

After advancing to candidacy, the student will work on a doctoral dissertation while enrolled in <u>CSI 999</u> Doctoral Dissertation. The dissertation is a written piece of original contribution that demonstrates a doctoral candidate's mastery of the subject matter. A student is expected to produce new and original research worthy of publication in peer-reviewed journals. After the dissertation is completed, the committee will review the dissertation and examine the student in a public oral dissertation defense.

Retroactive Requirements Updates:

Plan of Study:

Program Outcomes

Additional Program Information

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

Courses offered via distance (if applicable):

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

Is this change a simple retitling of an existing program, with no other changes, to any existing program content, curriculum requirements, etc?

No

Does this change represent a repackaging of content in an existing approved degree/certificate program at the same instructional level (i.e., baccalaureate, master's, or doctoral)?

No

Percentage of total credits containing new course content. ("New course content" is defined by SACSCOC as content that is not currently included in an existing approved degree/certificate program at the same instructional level. Do not exclude gen ed credits in calculations for undergraduate programs.)

0%-24%

Does this change include the addition of a distance education or face-to-face method of delivery for this program?

No

Does this change include the addition of a course/credit-based competency-based education delivery option?

No

Will any additional equipment/facilities be needed?

No

Will any additional faculty be required?

No

Will any additional financial resources be needed?

No

Additional library/learning resources needed?

No

Have you reached out to the Libraries to determine whether there are adequate resources to support your program? If not, please email Meg Meiman, Associate University Librarian for Learning, Research, and Engagement at mmeiman2@gmu.edu.

OAPI Use Only – Determination of SACSCOC Impact

Comments or Notes

Green Leaf Program Designation

Is this a Green Leaf program?   No

Does this program cover material which crosses into another department?

No

Additional Attachments

SCHEV Proposal

Executive Summary

Reviewer Comments

Additional Comments

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

%wi_required.eschtml%

Key: 25