# Program Change Request

Date Submitted: 10/26/23 2:43 pm

## Viewing: SC-BS-CDS : Computational and Data Sciences, BS

Last approved: 04/06/23 12:17 pm

Last edit: 11/13/23 3:17 pm

Changes proposed by: jbazaz

**Catalog Pages Using this Program**

Computational and Data Sciences, BS

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

Yes

**Requestor:**

| Name | Extension | Email |
|---|---|---|
| Estela Blaisten-Barojas | 1988 | blaisten@gmu.edu |

**Effective Catalog:** 2024-2025

**Program Level:** Undergraduate

**Program Type:** Bachelor's

### In Workflow

1. **CDS Chair**
2. **SC Curriculum Committee**
3. SC Assistant Dean
4. Assoc Provost-Undergraduate
5. Registrar-Programs

### Approval Path

1. 10/26/23 5:50 pm Jason Kinser (jkinser): Approved for CDS Chair

### History

1. Oct 23, 2017 by clmig-jwehrheim
2. Feb 3, 2019 by Estela Blaisten-Barojas (blaisten)
3. Nov 13, 2020 by Tory Sarro (vsarro)
4. Feb 24, 2022 by Tory Sarro (vsarro)
5. Apr 6, 2023 by Jennifer Bazaz Gettys (jbazaz)

| | |
|---|---|
| **Degree Type:** | Bachelor of Science |
| **Title:** | Computational and Data Sciences, BS |
| **Banner Title:** | Computational & Data Sci BS |
| **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: The Mason Core and Electives Credits category has a list of courses that includes CDS 410 Numerical Analysis II or MATH 447 Numerical Analysis II. This course is moved to the Extended Multidisciplinary Core category.

Why: Gathering together the mathematics courses in the Extended Multidisciplinary Core is clearer for the students and the advising. Expected implementation is the 2024 summer semester.

What: a) The required credits of the Extended Core category are increased to 24 from its previous 18 credits; b) the listed total number of Elective and Mason Core credits is modified to be 57-58 credits, in accordance with item (a).

Why: The Extended Core list of courses was increased in 2022 without changing the total number of required credits. The CDS department assesses that an increase of 6 credits

requirements in this category is consistent with the advances in Data Science and will serve to enhance the instruction in the field. The modification in (b) is consistent with (a) in what concerns the total number of not required credits within a minimum of 120 credits to obtain the CDS BS.

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|---|---|
| **Total Credits Required:** | Total credits: minimum 120 |
| **Registrar's Office Use Only - Program Code:** | SC-BS-CDS |
| **Registrar/IRR Use Only – Program CIP Code** | 51.2208 - Community Health and Preventive Medicine. |
| **Admission Requirements:** | |

# Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.
To apply for this program, please complete the George Mason University Admissions Application.

**Program-Specific Policies:**

# Policies

Students must fulfill all Requirements for Bachelor's Degrees, including the Mason Core.
The university's writing intensive requirement for the major will be met upon successful completion of CDS 302 Scientific Data and Databases (Mason Core).
For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

**Degree Requirements:**

Students should refer to the Admissions & Policies tab for specific policies related to this program.

## Core Required Courses

| | | |
|---|---|---|
| CDS 130 | Computing for Scientists (Mason Core) | 3 |
| CDS 151 | Data Ethics in an Information Society | 1 |
| CDS 230 | Modeling and Simulation I | 3 |
| CDS 301 | Scientific Information and Data Visualization | 3 |
| CDS 302 | Scientific Data and Databases (Mason Core) | 13 |
| CDS 303 | Scientific Data Mining | 3 |
| Total Credits | | 16 |

**1**
Fulfills the writing intensive requirement.

## Extended Core Courses

| | | |
|---|---|---|
| ~~Select 18 credits from the following:~~ | | ~~18~~ |
| Select 24 credits from the following: | | 24 |
| CDS 101 | Introduction to Computational and Data Sciences (Mason Core) | |
| & CDS 102 | and Introduction to Computational and Data Sciences Lab (Mason Core) | |
| CDS 201 | Introduction to Computational Social Science | |
| CDS 205 | Introduction to Agent-based Modeling and Simulation | |
| CDS 251 | Introduction to Scientific Programming | |
| CDS 292 | Introduction to Social Network Analysis (Mason Core) | |
| CDS 403 | Machine Learning Applications in Science | |
| CDS 411 | Modeling and Simulation II | |
| CDS 421 | Computational Data Science | |
| CDS 461 | Molecular Dynamics and Monte Carlo Simulations | |
| CDS 468 | Image Operators and Processing | |
| CSI 500 | Computational Science Tools | |
| CSI 501 | Computational Science Programming | |
| Total Credits | | 24 |

## Extended Multidisciplinary Core Courses

| | | |
|---|---|---|
| Mathematics | | |
| Select 10-11 credits from the following: | | 10-11 |
| MATH 113 | Analytic Geometry and Calculus I (Mason Core) | |
| MATH 114 | Analytic Geometry and Calculus II | |
| MATH 125 | Discrete Mathematics I (Mason Core) | |
| MATH 203 | Linear Algebra | |
| MATH 446 | Numerical Analysis I | |
| or MATH 447 | Numerical Analysis II | |
| or CDS 410 | Numerical Analysis II | |
| Statistics | | |
| Select 6 credits from the following: | | 6 |
| STAT 250 | Introductory Statistics I (Mason Core) | |
| STAT 350 | Introductory Statistics II | |
| STAT 344 | Probability and Statistics for Engineers and Scientists I | |
| STAT 346 | Probability for Engineers | |
| Science or Engineering | | |
| Select 6 credits from the following options: | | 6 |
| Additional Mason Core: Natural Science or Mason Core: Information Technology courses. | | |
| Any STEM course offered by the College of Science or the College of Engineering and Computing. | | |
| Total Credits | | 22-23 |

**Retroactive Requirements Updates:**

**Plan of Study:**

**Honors Information:**

**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?**

Hybrid

**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 instructiona 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

## 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** | Computational and Data Sciences, BS _ George Mason University.pdf |
| **SCHEV Proposal** | |
| **Executive Summary** | |
| **Reviewer Comments** | |
| **Additional Comments** | |

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

%wi_required.eschtml%

Key: 21