Course Change Request

Date Submitted: 09/10/25 6:49 pm

Viewing: GGS 366 : Spatial Computing

Last approved: 03/26/21 5:02 am

Last edit: 09/10/25 6:49 pm

Changes proposed by: nburtch

Catalog Pages referencing this course	Applied Computer Science, BS Department of Geography and Geoinformation Science Geographic Information Systems Minor Geography and Geoinformation Science (GGS) Geography, BS

Select modification type:

Substantial

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

No ~~Yes~~

Effective Term: Spring 2026

Subject Code: GGS - Geography & Geoinformation Science **Course Number:** 366

Bundled Courses:

Is this course replacing another course? No

Equivalent Courses:

Catalog Title: Spatial Computing

In Workflow

1. **GGS Chair**
2. **SC Curriculum Committee**
3. SC Assistant Dean
4. Assoc Provost-Undergraduate
5. Registrar-Courses
6. Banner

Approval Path

1. 09/10/25 6:52 pm Nathan Burtch (nburtch): Approved for GGS Chair

History

1. Mar 26, 2021 by Timothy Leslie (tleslie)

Banner Title: Spatial Computing

Will section titles vary by semester? No

Credits: 3

Schedule Type: Lecture

Hours of Lecture or Seminar per week: 3

Repeatable: May be only taken once for credit, limited to 3 attempts (N3)

Max Allowable Credits: 9

Default Grade Mode: Undergraduate Regular

Recommended Prerequisite(s): 30 credits

Recommended Corequisite(s):

Required Prerequisite(s) / Corequisite(s) (Updates only):

Registrar's Office Use Only - Required Prerequisite(s)/Corequisite(s):

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?

Registration Restrictions (Updates only):

Registrar's Office Use Only - Registration Restrictions:

Field(s) of Study:

Class(es):

Level(s):

Degree(s):

School(s):

Catalog Description: Comprehensive introduction to spatial computing using modern computing environments with emphasis on programming and problem solving. Introduces students to modern programming practices using both paradigms of imperative and object-oriented programming. Topics include 1) working with geospatial objects, such as points, lines and polygons; 2) hands-on experience in processing spatial data; 3) solving classic spatial computing problems, such as point-in-polygon tests and line segment intersection tests efficiently; 4) techniques for spatial navigation, such as shortest path algorithms spatial networks; 5) technical challenges such as storing, reading and parsing geospatial data. Tutorials and instruction assume no prior programming experience in Python or other programming languages.

Justification: What: updated prereqs

Why: The new language will conform to the way we recommend prereqs for most of our 300-level courses (recommend a sophomore standing minimum)

Does this course cover material which crosses into another department? No

Learning Outcomes:

By the end of the course each student will be able to:

- Solve simple problems and tasks using imperative programming
- Solve more complex problems using object-oriented programming
- Have a broad knowledge of data analysis techniques for spatial data.
- Understand and apply basic geometric algorithms.
- Utilize existing packages for advanced spatial analysis and data science
- Articulate and effectively communicate concepts and ideas related to spatial computing to experts, non-experts, and other professionals.
- Have the ability to appropriately apply the knowledge acquired in the course for real-world data.
- Analyze a given dataset in a team

Will this course be scheduled as a cross-level cross listed section?

Attach Syllabus ~~GGS 366 - Syllabus.pdf~~

Additional Attachments

Specialized Course Categories:

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

Additional Comments:

Reviewer Comments

Key: 17093