



THE OHIO STATE UNIVERSITY

Geographic Information Science (GIS)

Geography: Spatial Analysis

Majors Information Session

Department of Geography



Topics we will cover:

- What is Geographic Information Science and Spatial Analysis?
- What does the GIS major offer?
- What does the Spatial Analysis major offer?
- What can I do with one of these degrees?
 - Careers in GIS/Spatial Analysis
- What does this degree require?
 - Bachelor of Science GE requirements
 - GIS major requirements & course sequencing
 - Spatial Analysis major requirements & course sequencing
- Next steps



What is Geographic Information Science?

- Also known as cartography or spatial analysis
- Combines knowledge from data analytics, computer programming and graphic design to manage and manipulate spatial data so it can be used by companies/clients in decision making processes
- You are making maps!



What do these majors offer?

- OSU is designated a Center for Academic Excellence in Geospatial Sciences by the National Geospatial Intelligence Agency.
- Opportunity to learn the tools and methods needed for effective management and analysis of geographic information
- Advanced technical knowledge and expertise in spatial data management, statistical analysis, and geovisualization



How does the GIS major differ?

- Advanced technical knowledge and expertise in spatial data management, statistical analysis, and geovisualization
 - Additional required courses

- GIS is not an engineering degree, but you can pursue a professional certification after graduation.
 - Become a certified GIS Professional (GISP)
 - More info = GIS Certification Institute (leading certification organization in the US)



How does a student declare the GIS or Spatial Analysis major?

- Major has no application, no required courses or minimum GPA to declare
 - However – CSE 1114 and STAT 1450 are required as pre-requisites to courses in the major.
 - **Strongly recommended that students be in good academic standing and have successfully completed Math 1151 or making progress to that completion.**

- Students can declare after attending a major information session
 - A follow-up appointment with a GIS academic advisor to review progress to degree and courses needed next term is expected.
 - Please call 614-292-6961 to schedule this appointment.



What are the career options?

- Geospatial Analyst/Consultant
- Cartographer for the US Defense Mapping Agency or the US Geological Survey
- Manager/Planner for:
 - Transportation
 - Urban development
 - Health services
 - Land use
- GIS Software Developer
- Geospatial Database Administrator
- Market Research/Analyst



Additional Careers

- Growing industries
 - Information Technology – software developer, IT specialist, database manager
 - City and regional planning/development
 - Transportation and Logistics
 - Environmental mapping and analysis
 - National defense and intelligence
 - Engineering firms – civil and environmental engineering, especially energy companies
 - Financial services – marketing

- Helpful websites
 - esri.com/careers
 - GISjobs.com



GIS and Spatial Analysis are Bachelor of Science (BS) degrees in the College of Arts & Sciences

BS general education requirements apply

- <https://artsandsciences.osu.edu/academics/current-students/advising/ge>
- 13 categories
- Math 1151
- Foreign Language Proficiency
 - (1101, 1102 and 1103 in the same language) -- 3 terms to complete
- Three natural sciences; two physical & biological with a lab
- Separate courses for 2nd Writing and Literature categories
- Major/GE Overlap Exception
 - Data Analysis



Required Courses

Required prerequisites or supplements for the Major

CSE 1114 Intro to Databases Using MS Access

STAT 1450 Intro to the Practice of Statistics (*STAT 2450, STAT 3470*)



Required Courses for GIS Major (11 courses / 33 hours)

GIS major requirements (24 hours)

GEOG 5100	Spatial Data Analysis
GEOG 5200	Cartography and Map Design
GEOG 5201	GeoVisualization
GEOG 5210	Fundamentals of GIS
GEOG 5212	Geospatial Databases for GIS
GEOG 5222	GIS Algorithms and Programming
GEOG 5223	Design and Implementation of GIS
GEOG 5225	Geographic Applications of Remote Sensing

Major electives: Choose three of the following (9 hours)

GEOG 5226	Spatial Simulation and Modeling in GIS
GEOG 5229	Emerging Topics in GIS
GEOG 5***	One 5000-level topical course in Geography
CSE 2122	Data Structures using C++
CSE 2123	Data Structures using Java
CSE 3241	Introduction to Database Systems
CSE 5242	Advanced Database Management Systems



Course Offerings and Prerequisites

Major Required Course	Offered	Prerequisites
5100 Spatial Data Analysis	AU, SP	<i>STAT 1450</i>
5200(S) Cartography and Map Design	AU, SP	None
5201 GeoVisualization	AU, SP	5200(S)
5210 Fundamentals of GIS	AU, SP, SU	None
5212 Spatial Databases for GIS	AU, SP	5210 and <i>CSE 1114</i>
5222 GIS Algorithms and Programming	AU, SP	5212
5223 Design and Implementation of GIS	SP	5222
5225 Geographic Applications of Remote Sensing	AU,SP	None

Major Elective Course	Offered	Prerequisites
5226 Spatial Simulation and Modeling in GIS	AU	None
5229 Emerging Topics in GIS	SP	5210



Course Offerings and Time to Completion for GIS

Minimum = four semesters to complete major course sequence

Provided:

Student begins sequence in autumn and enrolls in GEOG 5210 and CSE 1114 concurrently

Starting in spring = minimum of five semesters

Curriculum sequence requires MINIMUM of four semesters to complete

GEOG 5210 & CSE 1114 → 5212 → 5222 → 5223 (offered SP only)

May coincide with 3 semesters of foreign language for GE requirement



Required Courses for Spatial Analysis Major (11 courses / 33 hours)

Spatial Analysis major requirements (18 hours)

GEOG 5100	Spatial Data Analysis
GEOG 5200	Cartography and Map Design
GEOG 5201	GeoVisualization
GEOG 5210	Fundamentals of GIS
GEOG 5212	Geospatial Databases for GIS
GEOG 4101	Undergraduate Research and Professionalization Seminar


Major electives: Choose five of the following (15 hours; one must be human geography course)

GEOG 5222	GIS Algorithms and Programming
GEOG 5223	Design and Implementation of GIS
GEOG 5225	Geographic Applications of Remote Sensing
GEOG 5226	Spatial Simulation and Modeling in GIS
GEOG 5229	Emerging Topics in GIS
GEOG 5300	Geography of Transportation
GEOG 5402	Land Use Geography
Choice	Any 3000 to 5000-level human geography course
Choice	Any 3000 to 5000-level physical geography course
CSE 2122 OR 2123	Data Structures using C++ OR Data Structures using Java



Course Offerings and Time to Completion for Spatial Analysis

Geography: Spatial Analysis

- May allow for less time to graduation
Curriculum requires 2 term sequence (GEOG 5210  5212)
& CSE 1114
- Allows for additional Geography courses



Graduation Requirements

Courses

A grade of C- or better is required for all major courses.

Major courses cannot be taken pass/non-pass.

No more than half of the credit hours on your major program may consist of transfer credit.

GPA

Cumulative GPA of 2.0 is required.



Honors

Must apply through the ASC Honors Office

- <http://aschonors.osu.edu>
- GPA = 3.5 required
- Need to do early to allow time for completion of requirements



Additional Options

For Minors with Major

- Computer and Information Science (CIS)
- Engineering Sciences
- City and Regional Planning
- Environmental Science
- Global Public Health

As a Minor with Your Major

- Geographic Information Science (GIS)
- Geography



Get Involved!

Student Organization

- Geography Club

Research

- Seek out faculty members

Internship

- Geography 5191
- Opportunity for experience and credit



Next Steps

- ✓ Complete Major Information Session **Form**.
- ✓ If you want to **declare major or minor in GIS**, schedule follow-up appointment with Geography Advisor. Call 614-292-6961.
- ✓ If you want to **declare a CIS or Engineering minor**, schedule follow-up appointment with an advisor in that department.
- ✓ **Adjust class schedule** to new major/minor as needed. Use your degree audit.



Questions?

