

**College of Natural Resources and Environment (CNRE)  
Department of Geography**

**Minor in Geographic Information Science (GIS)**

Available to students who are **NOT** majoring in Geography or Meteorology  
(See minor in GIS-G for more information)

*For student date of entry under UG Catalog 2023-2024*

**A minimum of 18 credit hours to include:**

**Required Courses (12 credits)**

- \_\_\_\_\_ CS 1064 Introduction to Programming in Python (3)
- \_\_\_\_\_ GEOG 2084 Principles of Geographic Information Systems (3)
- \_\_\_\_\_ GEOG/GEOS 4084 Modeling with Geographic Information Systems (Pre: GEOG 2084) (3)
- \_\_\_\_\_ GEOG/GEOS 4354 Introduction to Remote Sensing (3)
- \_\_\_\_\_ **OR** FREC 4214 Forest Photogrammetry and Spatial Data Processing (3)

**Geographic Information Science Options (6 credits)**

**Choose two courses:**

- \_\_\_\_\_ FREC 4114 Information Tech for Natural Resource Mgt (Pre: FREC 2214 or GEOG 2314) (3)
- \_\_\_\_\_ GEOG 3314 Cartography (3)
- \_\_\_\_\_ GEOG 4254 R-Programming for Geospatial Analysis (Pre: GEOG 4084) (3)
- \_\_\_\_\_ GEOG 4314 Spatial Analysis in Geographic Information Systems (Pre: GEOG 4084) (3)
- \_\_\_\_\_ GEOG 4324 Algorithms in Geographic Information Systems (Pre: GEOG 4084, CS 1064) (3)
- \_\_\_\_\_ GEOG 4334 Geospatial Information Technology for Land Change Modeling (Pre: GEOG 4084) (3)
- \_\_\_\_\_ GEOG 4374 Remote Sensing and Phenology (Pre: GEOG 4354) (3)
- \_\_\_\_\_ GEOG 4394 Intro to Web Mapping (Pre: GEOG 2314 or GEOG 3314 or GEOG 4084) (3)
- \_\_\_\_\_ GEOG 4404 Geovisualization (Pre: GEOG 2084, GEOG 3314) (3)

**A minimum overall GPA of 2.0 in these courses is required to complete the minor.**

**All minors must include 6 or more credits at 3000 level or above.**

**All courses must be taken for an A-F grade unless they are only offered P/F.**

**Steps for completing the minor in Geographic Information Science for Non-Majors:**

- Declare minor using a 'Minor Declaration Form' found on the CNRE Advising Center website: [www.cnre.vt.edu/advising](http://www.cnre.vt.edu/advising)
- Include minor information when updating the application for degree in Hokie Spa.
- Students cannot graduate until they have either (1) satisfied the requirements for the minor or (2) withdrawn from the minor by notifying CNRE Academic Programs office in 138 Cheatham and revised their DARS.