Geography

Degrees Offered

- Master of Arts
- Doctor of Philosophy

Nature of the Program

Geography is a diverse and innovative field of study that bridges humanities, social sciences and natural sciences. Geographers engage with the most pressing issues of our time, including global environmental change, social inequality and transformations of our economy, politics, ecology and culture in the shifting terrain of the 21st century. Our geographers are trained in cutting-edge approaches to understand and make a difference in our rapidly changing world.

West Virginia University offers master’s and doctoral degrees in geography. Our graduate program has a large faculty with expertise in the sub-disciplines of human geography, environmental geography and geographic information science. Using qualitative and quantitative research methods, our faculty research in south Asia, Latin America, sub-Saharan Africa, the Middle East, east Asia and the U.S., including Appalachia.

Our interdisciplinary learning environment featuring state-of-the-art computing and spatial analysis facilities offers students the chance to develop innovative research projects and learn valuable skills to help solve some of the major challenges facing our world today.

The Graduate Program in Geography has been designated a program of excellence by the West Virginia University Board of Governors since 1998. This award is given to superlative degree programs in recognition of their contribution to higher education in West Virginia and national recognition.

Research

Students who are interested in pursuing research in an area other than these may do so provided the research area matches the interest of a faculty member in the department who agrees to supervise the student’s program. The Graduate Program in Geography at WVU has strong links with the University’s Regional Research Institute, the State GIS Technical Center, the Geology Program, the Water Research Institute, the International Studies Program, the West Virginia Geological and Economic Survey, the Center for Women’s and Gender Studies, and the Center for Resilient Communities.

Computing Facilities

The Geography program has extensive computing facilities housed in Brooks Hall, a modern 98,000 square foot building dedicated exclusively to geography and geology. Brooks Hall has five computer laboratories dedicated to teaching and research. The department has ESRI ArcGIS, ERDAS Imagine, and ENVI site licenses. In addition, the faculty teach several programming languages for GIS and data science including R, Python, and Bash. Faculty engaged in qualitative data analysis teach using tools including Nvivo and Atlas.ti. The department’s geovisualization research group operates an immersive four-wall 3-D display environment or CAVE. The remote sensing program operates an ASD full-range portable spectroradiometer.

FACULTY

CHAIR

- Brent McCusker - Ph.D. (Michigan State University)
  Social theory, development

ASSOCIATE CHAIR

- Jaime Toro - Ph.D. (Stanford University)

PROFESSORS

- Amy Hessl - Ph.D. (University of Arizona)
  Past climate, dendrochronology
- Randall Jackson - Ph.D. (University of Illinois at Urbana-Champaign)
  Regional Research Institute, regional economic development
- Brent McCusker - Ph.D.
  (Michigan State University) Social theory, development

ASSOCIATE PROFESSORS

- Jamison Conley - Ph.D. (Penn State University)
  GIScience, health
- Karen Culcasi - Ph.D. (Syracuse University)
Political Geography, Middle East
• Cynthia Gorman - Ph.D. (Rutgers University)
  Gender, migration, human rights, refugee communities
• Brenden McNeil - Ph.D. (Syracuse University)
  Forest ecosystems, GIScience
• Bradley Wilson - Ph.D. (Rutgers University)
  Social theory, political ecology

ASSISTANT PROFESSORS
• Aaron Maxwell - Ph.D. (West Virginia University)
  Remote Sensing, GISc, Physical Geography
• Maria Alejandra Perez - Ph.D. (University of Michigan)
  Human Geography, Science & Society, Speleology, Latin America
• Jamie Shinn - Ph.D. (Penn State University)
  Environmental Governance, Political Ecology, Adaptation to Climate Change

CLINICAL ASSISTANT PROFESSORS
• Megan Govindan - MA
  (WVU) Center for Resilient Communities
• Rick Landenberger - Ph.D. (West Virginia University)
  Forest ecology, land management

PROFESSOR EMERITUS
• Greg Elmes - Ph.D. (Penn State University)
  Geographic Information Science
• Trevor Harris - Ph.D. (University of Hull)
  Geographic Information Science
• Ken Martis - Ph.D. (University of Michigan)
  Political, Electoral and Historical Geography
• Timothy Warner - Ph.D. (Purdue University)
  Remote Sensing

ASSOCIATE PROFESSOR EMERITUS
• Robert Hanham - Ph.D. (Ohio State University)
  Regional Development
• Steve Kite - Ph.D. (University of Wisconsin)

Admissions
M.A. and Ph.D. applicants are all required to name potential advisor(s) in their statement. All applicants are strongly encouraged to contact potential faculty advisors prior to submitting their application. Prospective students who establish these connections typically have much stronger applications.

M.A. IN GEOGRAPHY
In addition to the university’s requirements for admission (http://catalog.wvu.edu/graduate/graduateeducationatwestvirginiauniversity/#classificationtext), prospective M.A. applicants must have a cumulative undergraduate GPA of at least a 3.0. Applicants must submit a two-page statement defining the applicant’s interest in geography and career intentions, and two letters of recommendation from people who are familiar with the student’s undergraduate training. G.R.E. scores are not required.

PH.D. IN GEOGRAPHY
In addition to the university’s requirements for admission (http://catalog.wvu.edu/graduate/graduateeducationatwestvirginiauniversity/#classificationtext), prospective Ph.D. students must hold an M.A. or M.S. degree with a cumulative GPA of at least 3.0 in their previous graduate work. Students with degrees in other non-geography disciplines are encouraged to apply, but may be asked to make up deficiencies in geography during their first year in the program. Ph.D. applicants must submit a two-page statement defining the applicant’s interest in geography and career intentions and three letters of recommendation from people who are familiar with the student’s preparation for graduate school. G.R.E. scores are not required.

ASSISTANTSHIPS
All accepted applicants will be considered for a small number of graduate assistantships that are competitively awarded by the Geography program on an annual basis. Graduate teaching assistants are employed to work in support of undergraduate courses. Graduate research assistantships are
sometimes available through funded faculty member research. Students who qualify for available research assistantships will be contacted by the relevant faculty member with details. Applicants who wish to be considered for a graduate assistant position should make that request known in their application.

**List of Admission Requirements:**

- See the steps to apply for admissions and access the application here (https://graduateadmissions.wvu.edu/how-to-apply/)
- International applications should view additional requirements here (http://catalog.wvu.edu/graduate/graduateeducationatwestvirginiauniversity/ #internationaltext) and here (https://graduateadmissions.wvu.edu/how-to-apply/apply-for-2020-2021/international-graduate-applicant/)
- Letters of recommendation (the M.A. requires two, the Ph.D. three)
- Statement of purpose

**International Applicants:**

- See the steps to apply for admissions and access the application here (https://graduateadmissions.wvu.edu/how-to-apply/)
- International applications should view additional requirements here (http://catalog.wvu.edu/graduate/graduateeducationatwestvirginiauniversity/ #internationaltext) and here (https://graduateadmissions.wvu.edu/how-to-apply/apply-for-2020-2021/international-graduate-applicant/)
- Language proficiency is required in order to hold a graduate teaching assistantship. See here (https://elli.wvu.edu/testing-resources/english-proficiency-gtas/).

**Application Deadlines:**

- To receive full consideration, including consideration for funding opportunities, all applications for Fall admission must be submitted by January 15<sup>th</sup>
- In exceptional circumstances, we will review applicants received after the January 15<sup>th</sup> deadline
- Exceptional applicants may be nominated by the Geography Program for competitive University Fellowships. Qualified applicants will be notified if they are nominated. More information on WVU fellowships can be found here (https://graduateeducation.wvu.edu/fellowships/).

Certain application requirements may be waived based on a preliminary review of an application by the program.

**Admission Requirements 2023-2024**

The Admission Requirements above will be the same for the 2023-2024 Academic Year.

MA Major Code: 1444

PhD Major Code: 1476

For specific information on the following program, please see the link to the right:
- Geography, M.A.

For specific information on the following program, please see the link to the right:
- Geography, Ph.D.

**Degree Progress**

**MASTERS DEGREE:**

- **Thesis/Project Proposal Defense:** The thesis/project proposal defense occurs when the advisor and the committee agree that a defendable copy of the proposal is completed, and no later than Oct/Mar 31 of the student's third semester. The defense date must be advertised to the department at least two weeks in advance. Proposal defenses are not normally scheduled between June 15 and August 15. In accordance with College requirements, original signatures are required on the shuttle sheet form specifying the outcome of the defense.

- **Thesis/Project Defense:** The thesis/project defense occurs when the advisor and the committee agree that a defendable copy of the thesis is completed, no later than the end of the student's fourth semester. The defense date must be advertised to the department at least two weeks in advance. Thesis defenses are not normally scheduled between June 15 and August 15. In accordance with College requirements, original signatures are required on the shuttle sheet form specifying the outcome of the defense. Students should work closely with their advisors to establish expectations for length and structure of the thesis.

- **Annual Evaluation:** The academic progress of every graduate student is reviewed each year. Students must submit a self-evaluation signed by their advisor by January 15. The Graduate Committee will conduct its annual review of students in February and communicate with students by March, if needed. Waivers to deadlines, timing requirements, and other rules may be requested from the Graduate Director. Waivers are only given under extraordinary circumstances.

- **Required Deadlines:**

  Thesis option
First year

• First semester: File plan of study
• Second semester: Form committee

Second year

• Third semester: Written proposal given to committee by Oct./Mar. 1st and complete oral proposal by Oct./Mar. 31st
• Fourth semester: Defend thesis by the end of semester

Professional option

First year

• First semester: File plan of study
• Second semester: Form committee

Second year

• Third semester: Professional option must be chosen by Oct./Mar. 1st. Get approval of written plan from the thesis committee and request permission from the graduate committee by the end of semester.
• Fourth semester: Defend project by the end of semester

DOCTORAL DEGREE:

• Comprehensive Examinations: The student is required to pass an oral and three written comprehensive examinations no later than the fourth semester. The student will be examined in two specialty areas and a third area closely related to the proposed dissertation research topic.

• Dissertation Proposal Defense: Upon successful completion of the comprehensive examination and no later than the end of the fifth semester, the student will be expected to defend a dissertation research proposal. Dissertation Proposal defenses are not normally scheduled between June 15 and August 15. In accordance with College requirements, original signatures are required on the shuttle sheet form specifying the outcome of the proposal defense.

• Dissertation Defense: The dissertation defense occurs when the advisor and the committee agree that a defendable copy of the dissertation is completed. The defense date must be advertised to the department at least two weeks in advance. Dissertation defenses are not normally scheduled between June 15 and August 15. In accordance with College requirements, original signatures are required on the shuttle sheet form specifying the outcome of the defense. Students should work closely with their advisors to establish expectations for length and structure of the dissertation.

• Annual Evaluation: The academic progress of every graduate student is reviewed each year. Students must submit a self-evaluation signed by their advisor by January 15. The Graduate Committee will conduct its annual review of students in February and communicate with students by March, if needed. Waivers to deadlines, timing requirements, and other rules may be requested from the Graduate Director. Waivers are only given under extraordinary circumstances.

• Required Deadlines:

  First year: Course work
  • First semester: File plan of study
  • Second semester: Form committee

  Second year: Course work
  • Third semester: Form committee, if not yet completed
  • Fourth semester: Oral and Written comprehensive exams
  Third year: Defend proposal/Field work/Data collection
  • Fifth semester: Defend dissertation proposal by the end of semester
  • Sixth and Spring semesters: Collect data/conduct fieldwork as necessary
  Fourth year: Dissertation writing

Graduate Certificate in GIS and Spatial Analysis

CERTIFICATE CODE - CG37

Required Courses
Select four of the following courses:
COURSES

GEOG 520. Methods for Open Science. 3 Hours.
New approaches in data science are enabling collaboration and discovery at unprecedented rates and scales. Students will learn how to rapidly download data; use the terminal to search, organize, and edit large numbers of files; develop a workflow, functions, and loops in open programming language (Unix-like and R); and use version control software (GitHub) to enable collaboration and reproducibility.

GEOG 550L. Geographic Information Science Laboratory. 0 Hours.
PR: Corequisite of GEOG 550. Geographic Information Science - GEOG 550 Laboratory.

GEOG 551. Open-Source GIScience. 3 Hours.
PR: GEOG 550 or students must complete an equivalent course or undergraduate GIS coursework and obtained instructor permission. The goal of this course is to introduce students to open-source software tools and standards for working with spatial data and undertaking spatial analysis. Topics explored include open data standards, open metadata standards, open licensing options, and undertaking geospatial data science in currently available open source environments including QGIS, GRASS, SAGA, Orfeo Toolbox, and WhiteboxTools.

GEOG 591. Advanced Topics. 1-6 Hours.
PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

GEOG 593. Special Topics. 1-6 Hours.
A study of contemporary topics selected from recent developments in the field.

GEOG 594. Seminar. 1-6 Hours.
Special seminars arranged for advanced graduate students.

GEOG 600. Geography Research Colloquium. 1 Hour.
PR: Consent. Lectures and presentation on recent and current research by resident and visiting scholars.

GEOG 601. Geographic Thought. 3 Hours.
This seminar explores formative theories and ideas in contemporary geographic thought. It covers some of the essential history of geographic thought, but the course is not a comprehensive survey of the "traditions" of the Geographic discipline. Rather, we examine the key epistemologies that have animated our discipline since mid 20th century.

GEOG 602. Geographic Research-Design. 3 Hours.
PR: GEOG 300 and GEOG 601. Choosing, preparing, and developing research problems of geographic interest. Emphasizes proposal writing and research design alternatives.

GEOG 603. Qualitative Research in Geography. 3 Hours.
PR: GEOG 601. Analysis of qualitative research in geography and related fields. Examine methodological approaches and techniques that explore and interpret issues in the development of geographical research projects.

GEOG 612. Gender, Society and Space. 3 Hours.
PR: GEOG 601 or Consent. Examines how gender and feminist perspectives are an integral part of how space is used, distributed, and perceived in society. Overviews of major developments in the field including diversity and difference, representation, identity, and nature.

GEOG 640. Geopolitical Perspectives. 3 Hours.
This course uses geopolitical perspectives to critically examine the linkages between power and places. Seminal literatures in the sub-field of geopolitics are read and critiqued, including critical geopolitics, feminist geopolitics and post-colonial theory.
GEOG 650. Political Ecology Seminar. 3 Hours.
Critical examination of some of the world's most pressing social-ecological challenges, including the impacts of and responses to climate change and issues of environmental justice, based on scholarship from the social and biophysical sciences. Students will explore foundational texts, core themes and debates, and future trajectories in political ecology.

GEOG 651. Geographic Information Science: Technical Issues. 3 Hours.
PR: GEOG 350. Current issues in GIS research. Technical aspects of GIS operations, algorithms, theory of geographical data structures, and error handling. Labs focus on tools, data structures, database languages and macros. (2 hr. lec., 1 hr. lab.).

GEOG 654. Environmental Geographic Information Systems Modeling. 3 Hours.
Provides background and hands-on experience needed to answer scientific questions about the environment within a raster-based GIS Framework. Students should have introductory level GIS background.

GEOG 655L. Remote Sensing Principles Laboratory. 0 Hours.

GEOG 657. Open-Source Spatial Analytics. 3 Hours.
PR: GEOG 550. Prepare, analyze, and model geospatial data using the R language and computational environment. Topics covered include coding in R, data wrangling, data visualization and mapping, vector-based and raster-based spatial analysis, spatial predictive modeling using machine learning, and presenting results.

GEOG 662. Digital Cartography. 3 Hours.
PR: GEOG 550. Use cartographic principles, geographic information systems (GIS), graphic design software, and digital data to generate reference and thematic maps appropriate for an intended audience. Learn to generate effective maps and visualizations by exploring cartographic standards, geospatial datums and projections, data visualization techniques, scale and generalization, typology and labeling, use of color, and parameterization of symbols.

GEOG 663. Client-Side Web GIS. 3 Hours.
PR: GEOG 550. Explore client-side web technologies and tools for serving data and developing web maps and applications. Define web content using hypertext markup language (HTML), style web content using cascading style sheets (CSS) and Bootstrap, and add functionality to a website using JavaScript, jQuery, and web mapping APIs.

GEOG 691. Advanced Topics. 1-6 Hours.
PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

GEOG 692. Directed Study. 1-6 Hours.
Directed study, reading, and/or research.

GEOG 693. Special Topics. 1-6 Hours.
A study of contemporary topics selected from recent developments in the field.

GEOG 694. Seminar. 1-6 Hours.
Special seminars arranged for advanced graduate students.

GEOG 695. Independent Study. 1-9 Hours.
Faculty supervised study of topics not available through regular course offerings.

GEOG 696. Graduate Seminar. 1-3 Hours.
PR: Consent. Each graduate student will present at least one seminar to the assembled faculty and graduate student body of his her program.

GEOG 697. Research. 1-9 Hours.
PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U).

GEOG 698. Thesis or Dissertation. 1-6 Hours.
PR: Consent. This is an optional course for programs that wish to provide formal supervision during the writing of student reports (698), or dissertations (798). Grading is normal.

GEOG 699. Graduate Colloquium. 1-6 Hours.
PR: Consent. For graduate students not seeking coursework credit but who wish to meet residency requirements, use of the University's facilities, and participate in its academic and cultural programs. Note: Graduate students who are not actively involved in coursework or research are entitled, through enrollment in their department's 699/799 Graduate Colloquium to consult with graduate faculty, participate in both formal and informal academic activities sponsored by their program, and retain all of the rights and privileges of duly enrolled students. Grading is P/F; colloquium credit may not be counted against credit requirements for masters programs. Registration for one credit of 699/799 graduate colloquium satisfies the University requirement of registration in the semester in which graduation occurs.

GEOG 701. Quantitative Spatial Analysis. 3 Hours.
This course covers methodological issues in the use of statistics for analysis of geographical data, such as sampling, inference, and the modifiable areal unit problem. It also covers a series of specific quantitative techniques tailored to student needs, such as spatial regression, measures of spatial autocorrelation, and geostatistical interpolation.
GEOG 753. Exploratory Spatial Data Analysis. 3 Hours.
Develop expertise in spatial analytical techniques for use in geographical data analysis and GIS.

GEOG 755. Advanced Remote Sensing. 3 Hours.
PR: (GEOG 655 or GEOL 655) and Coreq: GEOG 755L or consent. Collection, processing, and classification of remotely sensed data, including optical, thermal, radar, and topographic information. (Also listed as GEOL 755.)

GEOG 780. Non-Thesis Project. 3 Hours.
Research activities leading to a non-thesis project report.

GEOG 791. Advanced Topics. 1-6 Hours.
PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

GEOG 792. Directed Study. 1-6 Hours.
Directed study, reading, and/or research.

GEOG 793. Special Topics. 1-6 Hours.
A study of contemporary topics selected from recent developments in the field.

GEOG 794. Seminar. 1-6 Hours.
Special seminars arranged for advanced graduate students.

GEOG 795. Independent Study. 1-9 Hours.
Faculty supervised study of topics not available through regular course offerings.

GEOG 796. Graduate Seminar. 1-3 Hours.
PR: Consent. Each graduate student will present at least one seminar to the assembled faculty and graduate student body of his or her program.

GEOG 797. Research. 1-9 Hours.
PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)