

GEOGRAPHY (GEOG)

Subject-area course lists indicate courses currently active for offering at the University of Louisville. Not all courses are scheduled in any given academic term. For class offerings in a specific semester, refer to the Schedule of Classes (https://csprd.louisville.edu/psp/ps_class/EMPLOYEE/PSFT_CS/c/COMMUNITY_ACCESS.CLASS_SEARCH./x/?state=62dab551a0d600a5e8237359c50704e59007&duo_code=sjUx20STj21pWVE-03271YBjHys9aV).

500-level courses generally are included in both the undergraduate- and graduate-level course listings; however, specific course/section offerings may vary between semesters. Students are responsible for ensuring that they enroll in courses that are applicable to their particular academic programs.

Course Fees

Some courses may carry fees beyond the standard tuition costs to cover additional support or materials. Program-, subject- and course-specific fee information can be found on the Office of the Bursar website (<https://louisville.edu/bursar/tuitionfee/university-fees/>).

GEOG 157. Elements of GIS

3 Units

Term Typically Offered: Fall, Spring

Description: Elements of geographic information systems: focus on introductory GIS functions including; spatial database development, analysis, graphical output, digital data generation, overlapping & updating.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 200. Human Geography in a Changing World - SB

3 Units

Term Typically Offered: Fall, Spring

Description: The basic theme of this course is human geography as the study of place and the power that place has in the conduct of human affairs. Students will study the geographic distributions of human activities at global, regional and local scales, and the causes and consequences of those activities. Specific topics covered include population distribution and movement, economic activity, sustainable development, urban and rural settlements, and cultural and political environments. Students will also become acquainted with the tools that geographers use to understand, map, and analyze current affairs across world regions and gain good knowledge of how those tools are applied to real-world problem solving.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 256. Introduction to Quantitative Methods in Geography and Geosciences - QR

3 Units

Term Typically Offered: Fall Only

Prerequisite(s): Appropriate math placement score or equivalent coursework or completion of any QR course.

Description: This course is designed to teach introductory statistics to undergraduates majoring in the social sciences. It will acquaint students with some fundamental quantitative and statistical techniques for practical data analysis and problem solving. A wide variety of real-world examples that are both relevant to social sciences and of interest to students will be used in the class. Student will also learn how standard statistical techniques can be applied in a spatial context. This course is intended to be practical. In addition to lectures, the class involves in-class discussions, exercises, and take-home assignments which aim to provide students with hands-on experience in using various quantitative and statistical methods.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 300. Globalization and Diversity - SB

3 Units

Term Typically Offered: Fall Only

Description: A contemporary approach to world regional geography that focuses on human diversity and the geographic changes that accompany today's rapid rate of globalization.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 301. Geography of Kentucky

3 Units

Term Typically Offered: Occasionally Offered

Description: Spatial patterns and processes of the Commonwealth; emphasis on human-environment interaction, population, settlement, and economic base.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 305. Historical Geography of the United States

3 Units

Term Typically Offered: Fall Only

Description: Analysis of the changing cultural landscape and settlement patterns of the United States. Emphasis on the changing spatial relationships of ethnic minorities to the majority group.

Note: Cross-listed with HIST 305.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 308. Understanding China: People, Environment and Development 3 Units**Term Typically Offered:** Occasionally Offered

Description: The diversity of China's environment and people is integral to understanding the ways in which economic and sociocultural changes have taken place. This course is designed to help students gain a better understanding of China under globalization. The course explores modern China around two leading themes: (1) China's spatial organization, including its growing links to the global system, and (2) the human occupancy and use of the many types of environments. It will examine how transformations of China's land, people, economy, and society are reshaping its internal divisions and repositioning China in a rapidly changing world.

Note: Cross-listed with AST 308.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 314. Africa: Environment and Resources 3 Units

Description: Natural and human potentials of the African continent, with particular reference to Sub-Saharan Africa. Exploration of social, cultural, economic and political factors influencing use of African resources.

Emphasis on factors degrading the environment and constraining optimum use of natural and human resources.

Note: Cross-listed with PAS 386.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 316. Geography of South Asia 3 Units

Description: An analysis of the Indian subcontinent; emphasis on the physical and cultural setting, political disturbances, population problems, and economic development.

Note: Cross-listed with AST 316.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 320. Geopolitics 3 Units

Description: This course introduces students to the main concepts and research themes in contemporary geopolitics. Geopolitics represents a broad engagement with the interactive relationships between power and place, and the construction, contestation and reconfiguration of political spaces that results. During the semester we will examine the formation of geopolitical images of the world, where these images come from, and how they have shaped our thinking and politics over time.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 324. Race and Place 3 Units**Term Typically Offered:** Spring Only

Description: In this course, students will explore the many ways race is socially constructed and intimately tied to space and place. Topics covered include: the spatiality of plantations, segregation vs. separation, the Great migration, race in urban and rural spaces, the intersection between race, gender and place, and race and place beyond the United States.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 327. Economic Geography 3 Units**Term Typically Offered:** Fall Only

Description: The distribution of economic activity and its associated characteristics that give character to place.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 328. Urban Geography 3 Units**Term Typically Offered:** Fall Only

Description: Examination of the association of activities in urban areas as they are expressed in patterns of land use and occupancy features.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 331. Population Geography 3 Units**Term Typically Offered:** Spring Only

Description: An examination of spatial variations in human population, with emphasis on population characteristics, growth, and mobility.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 340. Environmental Conflict in the United States: Historical Foundations & Contemporary Problems - SBH 3 Units**Term Typically Offered:** Occasionally Offered

Description: A review of various environmental conflicts throughout the United States, including the legal, economic, and policy processes behind them and the reasons why conflict exists. This course explores environmental issues in a variety of United States contexts. This course places particular emphasis on the historical foundations of contemporary environmental conflict and dynamics of identity-based inequalities rooted in differences such as race and socio-economic class.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 350. Introduction to Mapping and Geospatial Technologies 3 Units**Term Typically Offered:** Fall Only

Description: Introduction to the concepts and methods of map construction and visualization, including scale, location, projection, design, symbolism, and compilation. Exploration of these concepts and methods through the use of geospatial technologies.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 355. Introduction to Remote Sensing 3 Units**Term Typically Offered:** Fall Only

Fee: An additional \$80.00 is charged for this course.

Description: This course provides an introduction to the theory and application of remote sensing data with weekly lab reports for hands-on-experience in the acquisition and utilization of remotely-sensed data in geographical/environmental research. This course prepares for GEOG 556. Prior completion of GEOS 200, GEOS 350, or GEOS 301, or PHYS 111 or equivalent is recommended, but not required.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 356. Introduction to Spatial Statistics Term Typically Offered: Spring Only Prerequisite(s): GEOG 256. Description: Introduction to multivariate statistical analyses and spatial statistics, i.e. statistical methods that use space and spatial relationships directly in their mathematical computations. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	GEOG 370. Introduction to Field Methods in Geography Term Typically Offered: Fall Only Description: This course focuses on methodologies in field-based, quantitative and qualitative research within Geography, with emphasis on research theory, study and sampling design, data collection and organization, and preliminary data analysis and interpretation. Students will learn more about the scientific process: (1) how to form hypothesis, research questions, and objectives, (2) how to design a research project to answer questions/test hypotheses, (3) how to collect, interpret, and present data, and (4) how to write up a scientific report or progress and/or findings. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units
GEOG 360. Qualitative Methods for Undergraduates Description: The course introduces students to the basic tools and concepts of qualitative social research and their geographic application. The readings and in-class exercises have been selected to introduce you to the scope of qualitative methodological approaches used in geography and provide a sampling of references and resources that will help you work through your own research process. In examining how we generate and interpret data from the field-the social, environmental and political space where we learn about the world-we will critique and apply a variety of qualitative methods. In the process, you will have a chance to explore these methods in the context of your own planned or ongoing work and interest. We will focus on a wide range of methods but pay close attention to: conducting interviews, constructing questionnaires, participant observation and discourse analysis. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	GEOG 385. Introduction to Programming for GIS and Spatial Data Analysis Term Typically Offered: Spring Only Description: There are two primary goals for this course. First, students will learn introductory computer programming concepts and features. Students will deconstruct examples from a variety of programming and scripting languages (primarily Python, R, VBA, and IDL), learning how to identify common logic, flow control and syntactic features. Students will learn the purpose of these structures and how to start using the programming and scripting environments of common statistics, geographic information systems (GIS) and remote sensing (RS) platforms. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm) GEOG 390. Special Topics Term Typically Offered: Fall, Spring Description: Investigation of topics not offered in regular courses. Topics will be announced in Schedule of Courses. Note: May be repeated for different topics up to a limit of 12 hours. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units
GEOG 361. Sustainable Human Environments - WR Term Typically Offered: Spring Only Prerequisite(s): Natural sciences general education requirements. Description: An inquiry into the human impact on the environment and human adjustment to environmental disruptions. Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR). For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	GEOG 391. Independent Study Term Typically Offered: Fall, Spring, Summer Prerequisite(s): Minimum grade point average of 3.0 overall; minimum grade point average of 3.5 in the department, and at least 18 semester hours credit in the department. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	1-3 Units
GEOG 362. Disease, Ecology and Environmental Management in Africa - WR Term Typically Offered: Occasionally Offered Description: Relationship between disease agents and the human and physical environment in Africa. Impact of urbanization, industrial pollution and multinational corporations on disease causation and distribution. Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR). Note: Cross-listed with PAS 384. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	GEOG 399. Senior Honors Seminar - WR Prerequisite(s): Junior class standing; admission to the departmental honors program. Description: Investigation of a major scientific or social issue within the field of geography. Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR). For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units
GEOG 367. Applications Development for GIS Prerequisite(s): GEOG 357 or GEOG 558. Description: Instruction in the fundamentals of Visual Basic for Applications, object oriented programming, basics of ArcObjects, syntax of writing VB statements, branching and looping structures, and design of user forms. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	

<p>GEOG 401. Cooperative Internship 3 Units Term Typically Offered: Fall, Spring, Summer Prerequisite(s): Department sponsorship and approval. Description: Cooperative Internship in Geography/Geosciences. Course Attribute(s): CBL - This course includes Community-Based Learning (CBL). Students will engage in a community experience or project with an external partner in order to enhance understanding and application of academic content.</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>GEOG 510. Urbanism in the Global South: Cities and Space 3 Units Term Typically Offered: Occasionally Offered Description: This course is a reading-based seminar. We learn about processes and practices within the Latin American and African city from a spatial, cultural, economic and political perspective. Note: Cross-listed with LALS 510 and URBS 687.</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>GEOG 441. Senior Thesis Proposal - WR 3 Units Term Typically Offered: Fall Only Prerequisite(s): GEOG 256 and GEOG 558; no concurrent enrollment of either prerequisites allowed. Description: GEOG 441 is the first of 2 steps Geography & Geosciences senior take to accomplish a College of Arts & Sciences culminating undergraduate experience (CUE). The students are expected to holistically apply disciplinary knowledge acquired at the Department of Geography & Geosciences. The course concludes with the development and presentation of a senior thesis proposal. Note: Approved for the Arts & Sciences upper-level requirement in written communication (WR) For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>GEOG 520. Geography and Nutrition Among African and African-American Populations 3 Units Prerequisite(s): Consent of instructor. Description: Comparison of geographical conditions, food culture, technology and socioeconomic factors among Africans and African-Americans affecting health and nutrition. Note: Previously cross-listed with PAS 560.</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>GEOG 442. Senior Thesis - CUE, WR 3 Units Term Typically Offered: Spring Only Prerequisite(s): GEOG 441. Description: Independent study for data collection and preparation of senior thesis. Note: Approved for the Arts & Sciences upper-level requirement in written communication (WR). Course Attribute(s): CUE - This course fulfills the Culminating Undergraduate Experience (CUE) requirement for certain degree programs. CUE courses are advanced-level courses intended for majors with at least 90 earned credits/senior-level status.</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>GEOG 521. Medical Geography 3 Units Prerequisite(s): Faculty consent. Description: Introduction to concepts, methods and tools used to investigate geographic aspects of health and disease. Application of concepts and methods through analysis of health, population and environmental data. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>GEOG 499. Senior Honors Thesis - WR 3 Units Prerequisite(s): Senior standing; admission to departmental honors program. Description: An intensive examination of a topical area in geography/geosciences undertaken with a designated faculty director. Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>GEOG 522. GIS and Public Health 3 Units Term Typically Offered: Occasionally Offered Prerequisite(s): Consent of instructor. Description: Application of tools and methods of analysis in geographic information systems (GIS) to public health. Use of ArcGIS software to manage and analyze health, census and spatial data. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>GEOG 500. Globalization Seminar 3 Units Prerequisite(s): GEOG 300 or permission of instructor. Description: A discussion-based course that focuses on current events, global economies, and cultural and environmental issues resulting from globalization. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>GEOG 524. Food and Race 3 Units Description: This course will serve as a critical analysis of the intersection between race and food/agriculture. Topics covered include: 1) production, preparation and consumption patterns; 2) food production during slavery and sharecropping; 3) modern day agricultural labor; 4) food and health; 5) food and borders; and 6) food and national identity. Note: Cross-listed with PAS 605.</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
	<p>GEOG 525. Measuring Sustainability: Our Human Planet 3 Units Term Typically Offered: Spring Odd Years Description: This course will facilitate student understanding of the United Nations Sustainable Development Goals in a spatially-explicit manner by introducing how Earth Observation data is being used to monitor and measure the SDG indicators. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>

GEOG 528. Planning, History and Issues Prerequisite(s): GEOG 328. Description: The history of planning and contemporary issues with an emphasis on role of planning, zoning and law. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	GEOG 540. Geography and Human-Environment Interactions 3 Units Description: The study of interactions between humans and the environment is inherently interdisciplinary and multi-scalar, two of the hallmarks of contemporary geographic research. Students taking this course will be exposed to the theoretical underpinnings of both social and ecological aspects of research. Through in-class discussions of both seminal and contemporary peer-reviewed literature, students will be expected to engage in an interdisciplinary exploration of how studies of human-environment interactions have evolved from disciplinary roots into the large, complex and transdisciplinary projects commonly funded today and expected in the future. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)
GEOG 529. Geography of Urban Issues Term Typically Offered: Occasionally Offered Prerequisite(s): GEOG 328, GEOG 558 or comparable Urban Geography and GIS course. Description: Advanced urban geography course with unique geographic perspective for integration of socioeconomic problems in America's metropolitan areas. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	GEOG 545. Unoccupied Aerial Systems and Geospatial Applications 3 Units Term Typically Offered: Spring Odd Years Description: This course introduces unmanned aerial system (UAS) technology, application and the underlying principles of remote sensing and photogrammetry that inform the utilization of UAS data in geographical/environmental research. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)
GEOG 530. Transportation Geography Term Typically Offered: Occasionally Offered Prerequisite(s): GEOG 200 or consent of instructor. Description: An analysis of distribution and transportation systems as functional entities capable of introducing and reacting to change within the economic region. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	GEOG 548. Special Topics in Urban Analysis Applications in GIS 3 Units Prerequisite(s): GEOG 357 or GEOG 558. Description: Introduction to the application of GIS by local governments, non-profit agencies and other urban-related groups. Note: May be repeated if topics vary.
GEOG 531. GIS & Urban Demographic Analysis Term Typically Offered: Fall Only Prerequisite(s): GIS knowledge or concurrent tutorial. Description: Demographic analysis through the use of GIS technology. Emphasis placed on metropolitan area characteristics including population change, segregation, ethnic settlement, social and economic stratification and commuting. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm) GEOG 549. Special Topics in Environmental Analysis Applications in GIS 3 Units Description: Introduction to the application of GIS to environmental problem solving. Note: May be repeated if topics vary.
GEOG 535. GIS and Retail Site Analysis Term Typically Offered: Fall Only Prerequisite(s): GIS knowledge or concurrent tutorial. Description: Retail site analysis through use of GIS technology. Emphasis placed on market demand and supply characteristics. Physical site analysis, demographics, and competitive environment will be examined. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm) GEOG 555. Remote Sensing 3 Units Term Typically Offered: Fall Only Fee: An additional \$80.00 is charged for this course. Description: This course provides an introduction to the theory and application of remote sensing data with weekly lab reports for hands-on experience in the acquisition and utilization of remotely-sensed data in geographical/environmental research. This course prepares for GEOG 556. Prior completion of GEOS 200, GEOS 350, or GEOS 301, or PHYS 111 or equivalent is recommended, but not required. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)
GEOG 536. Sustainable Transportation Term Typically Offered: Occasionally Offered Prerequisite(s): GEOG 200 or permission of instructor. Description: The course looks into the problems of developing sustainable transportation systems. We will examine the environmental and human problems associated with transportation; including climate change, air quality, consumption of non-renewable resources, safety, congestion and social equity. We will also explore possible solutions to these problems, including pricing, planning, policy, technology and education. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	

GEOG 556. Advanced Remote Sensing
3 Units

Prerequisite(s): GEOG 555 or consent of instructor.

Fee: An additional \$80.00 is charged for this course.

Description: Application of advanced techniques involved in the collection of digital imagery data from aircraft and spacecraft instruments.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 558. Introduction to Geographic Information Systems
3 Units

Term Typically Offered: Fall, Spring, Summer

Description: Introduction to geographic information systems using ArcGIS software, management of relational databases, and manipulation and graphical output of digital geo-spatial data.

Note: May not be taken for credit if credit has been earned in GEOG 357 or GEOG 557.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 559. Advanced Geographic Information Systems
3 Units

Prerequisite(s): GEOG 558.

Description: Application of advanced GIS concepts to real-world projects. An emphasis will be placed on the development of a digital spatial database.

Note: Graduate students must arrange for an additional project for graduate credit.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 561. Urban Environmental Quality
3 Units

Prerequisite(s): Consent of instructor.

Description: A study of environmental aspects of urban areas and analysis of inter- and intra-city variations in environmental quality.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 583. Spatial and Non-Spatial Database Management
3 Units

Term Typically Offered: Occasionally Offered

Prerequisite(s): GEOG 357 or GEOG 558.

Description: Provides students with "hands-on" experience in development, management and integration of spatial and non-spatial databases, using GIS and database management software.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 590. Special Topics
3 Units

Description: Investigation of topics not offered in regular courses. Topic will be announced in Schedule of Courses.

Note: Offered as needed.

Note: May be repeated for different topics up to a limit of 12 hours.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

GEOG 599. Directed Readings in Geography
1-4 Units

Prerequisite(s): Advanced courses in geography or related fields; permission of major department.

Description: Supervised readings centered around a specific region or topical field for advanced work.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)