GEOGRAPHY

Department of Geography, Environment, and Spatial Sciences

College of Social Science

113 Introduction to Economic Geography
Fall, Spring. 3(3-0)
Spatial distribution of resources, population, enterprise, trade, consumption, and production. Interaction of those distributions at local to global scales.

151 Introduction to Human Geography
Fall, Spring. 3(3-0)
Systematic study of spatial patterns and processes that have shaped human use and alteration of the world.

201 Introduction to Plant Geography
Fall of even years. 3(3-0) R: Not open to graduate students.
Geographic distribution and characteristics of plants throughout the world; relationships between biomes and aspects of the physical environment (climate, soils, landforms, disturbance); plant ecology; human impacts on vegetation; optional field trip on campus.

203 Introduction to Meteorology
Fall. 3(3-0)

204 World Regional Geography
Fall. 3(3-0)
Economic, political, cultural, environmental, and technological processes and conditions that explain the diversity of world regions.

206 Physical Geography
Fall, Spring. 3(3-0)
Geographic and functional interrelationships within the physical environment: Earth-sun relationships, weather, climate, soils, vegetation and landforms (terrain characteristics).

206L Physical Geography Laboratory
Fall, Spring. 10-2 P: GEO 113 or GEO 151 or GEO 203 or GEO 204 or (GEO 206 or concurrently) or GEO 208 or GEO 211 or GEO 215 or GEO 221
Geographic aspects of weather, climate, soil, vegetation, and terrain. Interpretation and application of maps and remotely sensed imagery.

208 Physical Geography of the National Parks
Fall of odd years. 2(2-0)
Physical features such as geology, landforms, biota, and waters of United States and Canadian national parks, forests, seashores and lakeshores. Emphasis on formation and distribution.

211 Environmental Policy and Practice
Fall. 3(3-0)
Systematic study of environmental policy and resource management practices in the United States and the broader global context, emphasizing geographical and other social sciences perspectives.

214 Geography of Drugs
Fall of even years. 3(3-0)
Physical, ecological, and human geographies of drugs, drug crops, pharmaceuticals, alcohol, and their diffusions. Cultural geographies and geopolitical implications of drugs' consumption, trade, and regulation and prohibition.

215 Sports Geography
Fall of odd years. 3(3-0)
Geographical variables that influence the location, character, and spread of sports at the national and global scale. Human cultures and diffusion. Themes associated with the geography of sports. Origin and spread of collegiate, professional, international, and Olympic sports.

221 Introduction to Geographic Information
Fall, Spring. 3(3-0)
Principles and methods of spatial data collection, handling, analysis, and display. Introduction to remote sensing, geographic information systems, and cartography.

221L Introduction to Geographic Information Laboratory
Fall, Spring, Summer. 1(2-2) P: GEO 221 or concurrently RB: Basic computer and math skills
Basic skills for working with Geographic Information Systems, remotely sensed imagery, design of maps, geospatial tools and technologies for data analysis and problem-solving.

225 Geography of Drugs
Fall of odd years. 3(3-0)
Geographic patterns of global health and environmental inequalities; the built, physical and social environment; urban design; infectious and chronic diseases.

235 Geography of Environment and Health
Spring. 3(3-0)
Geographical variables that influence the location, character, and spread of diseases.

239 Geography of Recreation and Tourism
Fall of even years. 3(3-0)
Cultural, physical, and biotic factors affecting the distribution of recreation and tourism resources and participation. U.S. and international examples and case studies.

286 Undergraduate Research in Geography
Fall of even years. 3(3-0)
Supervised research on a topic or topics determined by the instructor. Applications of geographic tools and theory.

302 Climates of the World
Fall of odd years. 3(3-0) RB: GEO 206 or GEO 203 R: Not open to freshmen.
Regional climates and underlying atmospheric circulation patterns. Climate classification, physical climatic processes, spatial and temporal aspects of climate, climate changes. Sources and use of climate data.

303 Severe and Hazardous Weather
Spring of even years. 3(3-0) P: GEO 203 or approval of department
Extratropical cyclones, freezing precipitation and ice storms, lake effect snowstorms, cold waves, blizzards, thunderstorms, tornadoes, downbursts, tropical cyclones, floods, drought, and heat waves.

306 Environmental Geomorphology
Fall of even years. 3(3-0) Interdepartmental with Geographical Sciences. Administered by Geography, P: CSS 210 or GEO 206 or GEO 333 or GLG 201 or GLG 304 or ISP 203A
Relationships of running water, weathering, gravity, ice, waves, wind, and biota (including humans) to terrain and soils. Evolution of landscapes. Classical and modern interpretations.

314 Methods for Investigation of Urban Systems
Spring. 4(3-2) Interdepartmental with Urban Planning. Administered by Urban Planning.
P: UP 201 and CSE 101 and STT 201
Models, approaches, and techniques for urban and regional problem analysis, research, program evaluation, and project management. Application of related computer software.

324 Remote Sensing of the Environment
Fall. 4(2-4) P: GEO 221 SA: GEO 224
Features and interpretation methods of remotely sensed imagery, especially black-and-white and color infrared airphotos. Basic features of radar, thermal, and multispectral imagery. Interpretation for agriculture, archaeology, fisheries, forestry, geography, landscape architecture, planning, and wildlife management.

325 Geographic Information Systems
Fall. 3(2-2) P: GEO 221 and GEO 221L
Technical and theoretical issues in the design, implementation, and use of geographic information systems for research and applications.

326 Cartographic Design and Production
Fall. 4(2-4) P: GEO 221 and GEO 221L SA: GEO 423
Map design, layout, and usability. Typography and color theory. Techniques of map production, print and digital display.

330 Geography of the United States and Canada
Spring, Summer. 3(3-0) SA: GEO 230
Regional analysis. Evolution and status of environmental, demographic, economic, and sociocultural patterns and processes.

333 Geography of Michigan and the Great Lakes Region
Spring. 3(3-0) SA: GEO 233
Michigan's physical, historical, and economic geography. Interrelationships between the physical environment (rocks, landforms, soils, climate, vegetation, hydrology) and historical and contemporary land uses. Demographic and agricultural patterns. Human history and settlement patterns. Contemporary recreational opportunities.

335 Geography of Latin America
Fall of odd years. 3(3-0)
Physical and human geography of Latin America. Current development issues, especially people-environment interaction in urban and rural areas. Topics include migration, urbanization, and industrialization.

336 Geography of Europe
Fall of even years. 3(3-0)
Major regions and nations, including their physical resources, peoples, political structures, and economies.
403 Dynamic Meteorology (W)  
Spring of odd years. 3(3-0) P: MTH 234 and GEO 203 and completion of Tier I writing requirement RB: GEO 405 R: Open to juniors or seniors or master's students or doctoral students. Principles of fluid dynamics and their application to the atmosphere.
429 Geoprocessing
Spring. 3(3-0) P: GEO 325 or GEO 802 or approval of department
Applications of computer programming to address geographic information problems. Integration of digital spatial data, geographic information systems, spatial analysis, and expert systems.

432 Environmental Ethics (W)
Fall of even years. 3(3-0) P: Completion of Tier I writing requirement. R: Not open to freshmen or sophomores.
Ethical dimensions of environmental and spatial issues and associated public policies.

435 Geography of Health and Disease
Fall. 3(3-0) R: Not open to freshmen or sophomores.
Spatio-environmental concepts and techniques applied to health problems. Disease transmission cycles, community nutrition, and health-care planning.

436 Spatial Analysis of Populations
Spring of odd years. 3(3-0) R: Not open to freshmen or sophomores.
Concepts and methods to measure and evaluate geo-spatial and temporal trends in populations and their components, such as natality, mortality, migration, and characteristics at different geographic scales. Sources of spatial population data. Visualization and analysis of data in a geographical information system.

440 Critical Geopolitics
Spring of even years. 3(3-0) R: Not open to freshmen.

441 Cultural Geography
Spring of odd years. 3(3-0) RB: GEO 151 R: Not open to freshmen.
Survey of the geographic study of world cultures, cultural ecologies, cultural landscapes, and cultural influences on societies' patterns of spatial organization.

453 Metropolitan Environments: Urban Forms and Land Uses
Spring. 3(2-2) P: GEO 221
Land use change, the physical fabric of the city, and the growth of regional centers in the American urban landscape. Issues associated with urban developments, practices and patterns in the 20th century and the resulting metropolitan form and function. Extensive use of geographic information software in spatial analysis.

454 Geography of Environment and Development
Spring of odd years. 3(3-0) RB: GEO 113 or GEO 151 or GEO 330 or GEO 333 or GEO 335 or GEO 336 or GEO 337 or GEO 338 Spatial patterns and processes associated with regional development in selected world areas.

459 Tourism in Regional Development
Fall of odd years. 3(3-0) RB: GEO 259
The role of tourism in regional development. Examples from Michigan, the United States and other nations. Environmental considerations.
GEO—Geography

837 Remote Sensing of the Biosphere
Fall of even years. 3(3-0) P: GEO 424 or approval of department
Remote sensing for environmental and global change research. Advanced image interpretation and applications with emphasis on independent research projects.

858 Gender, Justice and Environmental Change: Issues and Concepts
Fall. 3(3-0) Interdepartmental with Anthropology and Criminal Justice and Community Sustainability and Forestry and Fisheries and Wildlife and Sociology and Women's Studies. Administered by Community Sustainability. RB: Background in social science, environmental science, or natural resources.
Issues and concepts related to gender, ecology, and environmental studies. Key debates and theoretical approaches to addressing environmental issues from a gender and social justice perspective. Gender and environment issues and processes from a global perspective.

859 Gender, Justice, and Environmental Change: Methods and Application
Spring of even years. 3(3-0) Interdepartmental with Anthropology and Forestry and Fisheries and Wildlife and Resource Development and Sociology. Administered by Anthropology. RB: Background in social science, environmental science, or natural resources.
Methods and case studies related to gender, ecology, and environmental studies. Methodological and fieldwork issues from a feminist perspective in international and intercultural contexts. Qualitative and quantitative methods for integrating social and environmental data.

865 Advanced Quantitative Methods in Geography
Spring. 4(4-0) RB: GEO 363

866 Spatial Data Analysis
Fall. 4(3-2) Interdepartmental with Statistics and Probability. Administered by Geography. RB: (GEO 363 or STT 421 or STT 430) or equivalent quantitative methods courses. SA: GEO 466
Theory and techniques for statistical analysis of point patterns, spatially continuous data, and data in spatial zones.

867 Hierarchical Modeling and Computing for Spatio-temporal Environmental Data
Spring of odd years. 3(3-0) Interdepartmental with Forestry. Administered by Forestry. RB: (FW 549 or concurrently) and (GEO 866 or concurrently)

869 Geosimulation
Spring. 3(3-0) Interdepartmental with Environmental Science and Policy. Administered by Geography. RB: Basic understanding of data structures and algorithms covered in an introductory course of any programming language. R: Approval of department.
Theoretical concepts related to simulating dynamic geographic phenomena in the intersection between human and natural systems. Innovative agent-based methodology applied to complex social-environmental systems. Hands-on experience of agent-based modeling, with special emphasis on modeling human decision-making and its impact on the natural environment.

871 Seminar in Physical Geography
Fall. 3(3-0) A student may earn a maximum of 12 credits in all enrollments for this course. RB: at least one course in physical geography R: Approval of department.
Research on topics in physical geography.

872 Seminar in Human Geography
Fall. 3(3-0) A student may earn a maximum of 12 credits in all enrollments for this course. RB: at least one course in human geography R: Approval of department.
Research on topics in human geography.

873 Seminar in Human-Environment Geography
Spring. 3(3-0) A student may earn a maximum of 12 credits in all enrollments for this course. RB: at least one course in human geography and one course in physical geography. R: Approval of department.
Research on topics in human-environment geography.

874 Seminar in Geographic Information Science
Spring. 3(3-0) A student may earn a maximum of 12 credits in all enrollments for this course. RB: at least one course in geographic information science, cartography or remote sensing R: Approval of department.
Geographic information science (GIS) applications to social and environmental problems. Theory and related issues.

886 Research Design in Geography
Spring. 3(3-0) R: Approval of department.
Research and writing in geography. Identification of geographic problems and their relative importance. Structuring and stating hypotheses. Data acquisition and tests for validity.

890 Advanced Readings in Geography
Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Approval of department.
Advanced independent readings.

892 Advanced Research in Geography
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course. Advanced independent research.

999 Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 36 credits. A student may earn a maximum of 36 credits in all enrollments for this course. R: Open to doctoral students in the Geography major.
Doctoral dissertation research.