GEOGRAPHY (GEOG)

GEOG 105 Introduction to Human Geography
3 cr. Undergraduate.
How humans interact with and alter the Earth through cultural, political, and economic processes; how these processes are dependent on and affect Earth's natural resources. 2 hrs lec, 1 hr dis.
Prerequisites: none.
General Education Requirements: SS
Current Offerings: http://uwm.edu/schedule

GEOG 110 The World: Peoples and Regions
3 cr. Undergraduate.
Introduction to regional cultural geography through a study of representative and significant areas of the earth.
Prerequisites: none.
General Education Requirements: SS
Current Offerings: http://uwm.edu/schedule

GEOG 114 Geography of Race in the United States
3 cr. Undergraduate.
Contemporary geographic issues of segregation, assimilation, belonging, and exclusion facing African-American, white, Asian, Latino, Native American and either groups in the U.S. 2 hrs lec, 1 hr dis.
Prerequisites: none.
General Education Requirements: CD, SS
Last Taught: Spring 2018, Fall 2017, Spring 2017, Fall 2016.
Current Offerings: http://uwm.edu/schedule

GEOG 115 Globalization and Economic Development
3 cr. Undergraduate.
Geographic perspectives on world economy: geographic organization of contemporary production and consumption around the world; historical development of capitalist economy; economic geography of globalization processes.
Prerequisites: none.
General Education Requirements: SS
Last Taught: Fall 2012, Fall 2011, Fall 2010, Fall 2009.
Current Offerings: http://uwm.edu/schedule

GEOG 120 Our Physical Environment
3 cr. Undergraduate.
Characteristics and significance of world land form, climate, soils, vegetation, and mineral and water resources. 2 hrs lec, 2 hrs lab/dis.
Prerequisites: none.
Course Rules: Not open for cr to students w/cr in Geog 121(ER), 122(ER).
General Education Requirements: NS+
Current Offerings: http://uwm.edu/schedule

GEOG 125 Introduction to Environmental Geography
3 cr. Undergraduate.
Introduction to environmental geography and related environmental problems aimed at understanding of the earth's systems in our daily encounter with them.
Prerequisites: none.
General Education Requirements: NS
Current Offerings: http://uwm.edu/schedule

GEOG 128 Introduction to Caves and Caving
3 cr. Undergraduate.
An introduction to the science of speleology, to the underground world of caves, and to the techniques and history of caving.
Prerequisites: none.
General Education Requirements: NS
Last Taught: Spring 2018, Fall 2017, Fall 2016, Fall 2015.
Current Offerings: http://uwm.edu/schedule

GEOG 140 Our Urban Environment: Introduction to Urban Geography
3 cr. Undergraduate.
Site and situation, central functions, spatial patterns of socio-economic and demographic characteristics of urban population. Spatial patterns of urban economy.
Prerequisites: none.
General Education Requirements: SS
Last Taught: Fall 2017, Fall 2016, Fall 2015, Fall 2014.
Current Offerings: http://uwm.edu/schedule

GEOG 193 First-Year Seminar:
3 cr. Undergraduate.
The specific topics are announced in the Schedule of Classes each time the class is offered.
Prerequisites: none.
Course Rules: Open only to freshmen. Students may earn cr in just one L&S First-Year Sem (course numbers 192, 193, 194).
General Education Requirements: SS
Current Offerings: http://uwm.edu/schedule

GEOG 194 First-Year Seminar:
3 cr. Undergraduate.
The specific topics are announced in the Schedule of Classes each time the class is offered.
Prerequisites: none.
Course Rules: Open only to freshmen. Students may earn cr in just one L&S First-Year Sem (course numbers 192, 193, 194).
General Education Requirements: NS
Current Offerings: http://uwm.edu/schedule

GEOG 199 Independent Study
1-3 cr. Undergraduate.
For further information, consult dept chair.
Prerequisites: 2.5 gpa; writ cons instr, dept chair & asst dean for SAS.
Course Rules: May be retaken to 6 cr max.
Current Offerings: http://uwm.edu/schedule

GEOG 213 Geography of Asia
3 cr. Undergraduate.
Population, resources, development, and diversity. Regions discussed are East Asia, Southeast Asia, South Asia, and Central Asia.
Prerequisites: soph st.
General Education Requirements: SS
Current Offerings: http://uwm.edu/schedule
GEOG 214 Wisconsin
3 cr. Undergraduate.
Regional examination of physical features, resources, people, land
utilization, and economic development.
Prerequisites: soph st.
Current Offerings: http://uwm.edu/schedule

GEOG 215 Introduction to Geographic Information Science
3 cr. Undergraduate.
Geographic objects, their representation and analysis. Topics include
special nature of spatial data; concepts of space, mapping, spatial
relationships; and use of geographic information systems. 2 hrs lec, 2 hrs
lab.
Prerequisites: none.
Current Offerings: http://uwm.edu/schedule

GEOG 216 Geography of the United States and Canada
3 cr. Undergraduate.
Physical features, resources, peoples, and utilization and economic
development of the United States and Canada.
Prerequisites: soph st.
Current Offerings: http://uwm.edu/schedule

GEOG 225 The Language of Maps
3 cr. Undergraduate.
Maps as a visual language. An introduction to their making, conventions,
distortions, use, and significance in society. Historical examples.
Prerequisites: soph st.
Current Offerings: http://uwm.edu/schedule

GEOG 231 Geography of Islam
3 cr. Undergraduate.
Origin and main features of Islam and the diversity of Muslim cultures in
various geographical, social, cultural, and political contexts.
Prerequisites: none.
General Education Requirements: SS, SS
Last Taught: Spring 2017, Fall 2015, Fall 2014, Spring 2013.
Current Offerings: http://uwm.edu/schedule

GEOG 247 Quantitative Analysis in Geography
3 cr. Undergraduate.
Application of quantitative measures to geographic problems. Topics
include descriptive statistics, statistical inference, and bivariate
relationships. 2 hrs lec, 2 hrs lab.
Prerequisites: Math 105(P).
General Education Requirements: QLB
Last Taught: Fall 2017, Fall 2016, Fall 2015, Fall 2014.
Current Offerings: http://uwm.edu/schedule

GEOG 253 Austria: The Second German State
1 cr. Undergraduate.
Lands and people of Austria; climate, soils, and mineral resources;
settlements and economy; the role of Austria today.
Prerequisites: soph st.
Current Offerings: http://uwm.edu/schedule

GEOG 251 Austria: The Second German State
1 cr. Undergraduate.
Countries south of the Sahara.
Prerequisites: soph st.
Current Offerings: http://uwm.edu/schedule

GEOG 289 Internship in Geography, Lower Division
1-6 cr. Undergraduate.
Application of basic principles of geography in a business, organizational,
educational, political, or other appropriate setting.
Prerequisites: intro course in Geog; 2.25 gpa; cons supervising faculty
member.
Course Rules: One cr earned for academic work based on 40 hours in
internship. May be retaken to 6 cr max.
Current Offerings: http://uwm.edu/schedule

GEOG 296 UROP Apprenticeship
1-3 cr. Undergraduate.
Undergraduate research participation in a project developed with a
supervising member of the faculty or staff.
Prerequisites: acceptance into UROP; prior or conc reg in UROP seminar.
Course Rules: One credit for 45 hrs research. May be retaken to 9 cr max
in any combination of UROP apprenticeship courses. Not open to jrs &
srs.
Last Taught: Fall 2005.
Current Offerings: http://uwm.edu/schedule

GEOG 297 Study Abroad:
1-12 cr. Undergraduate.
Designed to enroll students in UWM sponsored program before course
work level, content and credits are determined and/or in specially
prepared program course work.
Prerequisites: acceptance for Study Abroad Prog.
Course Rules: One credit for 40 hours in
Last Taught: Fall 2017, Fall 2014, Spring 2014, Fall 2013.
Current Offerings: http://uwm.edu/schedule

GEOG 299 Ad Hoc:
1-6 cr. Undergraduate.
Course created expressly for offering in a specified enrollment period.
Requires only dept & assoc dean approval. In exceptional circumstances,
can be offered in one add'l sem.
Prerequisites: none; add'l prereqs may be assigned to specific topic.
Course Rules: May be retaken w/chg in topic.
Current Offerings: http://uwm.edu/schedule

GEOG 304 Human Impact on the Environment
3 cr. Undergraduate.
Geographical and temporal distribution of human effects on land and
resources; historical background of human concern for deleterious
effects of impacts on environments.
Prerequisites: jr st; intro course in Geog or a life sci recom.
General Education Requirements: SS
Current Offerings: http://uwm.edu/schedule
GEOG 306 Natural Hazards
3 cr. Undergraduate.
An introduction to processes and conditions responsible for natural hazards, reasons for geographic patterns of hazards' occurrence, and modes of adjustment to natural hazards.
Prerequisites: jr st; a physical geog course recom.
General Education Requirements: NS
Last Taught: Spring 2018, Fall 2017, Spring 2017, Fall 2016.
Current Offerings: http://uwm.edu/schedule

GEOG 309 Nationalities and Nations of the World
3 cr. Undergraduate.
Nationalities, nations and changing borders of countries. Emigration and immigration. Cultural diffusion, languages and folk and popular culture.
Prerequisites: jr st; 100-level course in Geog or Ethnic recom.
Last Taught: Fall 2017, Fall 2016, Fall 2015, Fall 2014.
Current Offerings: http://uwm.edu/schedule

GEOG 310 General Climatology
3 cr. Undergraduate.
Global patterns of climate and the processes that shape them. Climatic elements, upper-atmospheric waves, internet data, Midwest climate, climate classification, and climate change.
Prerequisites: jr st; Geog 120(R), Atm Sci 100(R), or Atm Sci 240(R).
Last Taught: Fall 2017, Fall 2016, Fall 2015, Fall 2014.
Current Offerings: http://uwm.edu/schedule

GEOG 325 Introduction to Data Science with R, Python, and GIS
4 cr. Undergraduate.
Basic concepts and practices in data science using R; introduction to practical skills for using Python and ArcGIS. 2.5 hrs lec, 2 hrs lab.
Prerequisites: jr st.
Current Offerings: http://uwm.edu/schedule

GEOG 330 Europe: East and West
3 cr. Undergraduate.
Europe's lands and peoples, physical and cultural diversities and similarities.
Prerequisites: jr st.
Current Offerings: http://uwm.edu/schedule

GEOG 332 China: Peoples, Regions, and Development
3 cr. Undergraduate.
Geographic examination and explanation of change in China, including population, resources, development processes, environment, diverse cities and regions, and integration into the global economy.
Prerequisites: jr st.
Current Offerings: http://uwm.edu/schedule

GEOG 340 Biogeography
3 cr. Undergraduate.
An introduction to the geography of the biosphere, the earth's surface, and the plants and animals which live there.
Prerequisites: jr st; a physical geog or a biology course recom.
Last Taught: Spring 2018, Fall 2016, Fall 2015, Fall 2014.
Current Offerings: http://uwm.edu/schedule

GEOG 350 Conservation of Natural Resources
3 cr. Undergraduate.
Analysis of environmental ethics; the positive and negative consequences of resource development with emphasis on strategies designed to resolve environmental conflicts.
Prerequisites: jr st or a geog course.
General Education Requirements: SS
Current Offerings: http://uwm.edu/schedule

GEOG 381 Honors Seminar:
3 cr. Undergraduate.
Selected topics in geography.
Prerequisites: soph st; Honors200(P); cons Honors College dir.
Course Rules: May be retaken w/chg in topic to 9 cr max.
General Education Requirements: SS
Current Offerings: http://uwm.edu/schedule

GEOG 400 Population, Environment, Development
3 cr. Undergraduate/Graduate.
Population processes and policies in different geographical contexts: fertility, mortality, migration, and policies affecting these; population-environment relations; interactions of population and economic development.
Prerequisites: jr st; Geog 105(P), 110(P), 114(P), or 140(P).
Current Offerings: http://uwm.edu/schedule

GEOG 403 Remote Sensing: Environmental and Land Use Analysis
4 cr. Undergraduate.
Use of aerial photographs and digital imagery in environmental and land use analysis, including urban areas. 3 hrs lec; 2 hrs lab. PC/Windows familiarity recom.
Prerequisites: jr st & Geog 215(P).
Current Offerings: http://uwm.edu/schedule

GEOG 405 Cartography
4 cr. Undergraduate.
Thematic cartography; map communication, design principles, illustration and mapping software. 3 hrs lec, 2 hrs lab.
Prerequisites: jr st & Geog 215(P).
Current Offerings: http://uwm.edu/schedule

GEOG 410 Gendered Geographies
3 cr. Undergraduate/Graduate.
Various ways feminist geographers have analyzed gender in relation to phenomena such as the body, home, work, the nation, colonization, and globalization.
Prerequisites: jr st & one of Geog 105(P) or 110(P) or Wmns 200(P) or 201(P) or equiv; or grad st.
Current Offerings: http://uwm.edu/schedule
GEOG 411 Physical Climatology
3 cr. Undergraduate/Graduate.
Analyzing climatic processes at the microclimate scale. Budgets of radiation, energy, water, and momentum at the earth’s surface, sensible-latent heat, and soil-plant-atmosphere interactions.
Prerequisites: jr st, Geog 120(P) or Atm Sci 100(P) or 240(P), & Geog 310(R); or grad st.
Last Taught: Fall 2006, Fall 2003.
Current Offerings: http://uwm.edu/schedule

GEOG 415 Hydrogeography
3 cr. Undergraduate/Graduate.
Role of water in geographic systems. Interaction of water with physical and human systems, key hydrological processes, spatial and temporal variations of water, data collection, modeling.
Prerequisites: jr st, Geog 120(P) or 125(P), & Geog 215(P); or grad st.
Last Taught: Fall 2015, Fall 2013.
Current Offerings: http://uwm.edu/schedule

GEOG 415G Hydrogeography
3 cr. Undergraduate/Graduate.
Role of water in geographic systems. Interaction of water with physical and human systems, key hydrological processes, spatial and temporal variations of water, data collection, modeling.
Prerequisites: jr st, Geog 120(P) or 125(P), & Geog 215(P); or grad st.
Last Taught: Fall 2015, Fall 2013.
Current Offerings: http://uwm.edu/schedule

GEOG 421 Geography of Latin America
3 cr. Undergraduate/Graduate.
Topical and regional analysis of physical features, discovery and exploration, processes of settlement, evolution of the landscape, and problems of development through modern times.
Prerequisites: jr st & Geog 110(P) or 120(P) or 125(P); or grad st.
Current Offerings: http://uwm.edu/schedule

GEOG 424 Karst Geomorphology
3 cr. Undergraduate/Graduate.
Description and analysis of karst (limestone) processes and landforms.
Prerequisites: jr st; Geog 004(P), 120(P) or cons instr.
Current Offerings: http://uwm.edu/schedule

GEOG 430 Geography of Transportation
3 cr. Undergraduate.
Geographic analysis of transportation, with emphasis on commodity flows and traffic patterns.
Prerequisites: jr st; Geog 115(P).
Current Offerings: http://uwm.edu/schedule

GEOG 437 Qualitative Methods in Geography
3 cr. Undergraduate.
Research design, interview, focus group, ethnography, survey, and discourse analysis; epistemological debates and the methodological and ethical issues that arise throughout the research process.
Prerequisites: jr st; Geog 105(P), 110(P), 114(P), or 140(P).
Current Offerings: http://uwm.edu/schedule

GEOG 441 Geography of Cities and Metropolitan Areas
3 cr. Undergraduate/Graduate.
Extent, localization, and geographic relations of land uses, facilities, and internal circulation, with particular reference to large North American cities.
Prerequisites: jr st & intro course in geog or acceptable course in an urban related field, e.g. Econ, UrbPlan, Urb Std; or grad st.
Last Taught: Fall 2017, Fall 2016.
Current Offerings: http://uwm.edu/schedule

GEOG 441G Geography of Cities and Metropolitan Areas
3 cr. Undergraduate/Graduate.
Extent, localization, and geographic relations of land uses, facilities, and internal circulation, with particular reference to large North American cities.
Prerequisites: jr st & intro course in geog or acceptable course in an urban related field, e.g. Econ, UrbPlan, Urb Std; or grad st.
Last Taught: Fall 2017, Fall 2016.
Current Offerings: http://uwm.edu/schedule

GEOG 443 Cities of the World: Comparative Urban Geography
3 cr. Undergraduate/Graduate.
Geographic analysis of world urban systems with emphasis on the cultural traditions, form, function and socio-economic development of cities.
Prerequisites: jr st & Geog 110(P), 115(P), or 140(P).
Current Offerings: http://uwm.edu/schedule

GEOG 450 Climates of the Past and Climate Change
3 cr. Undergraduate/Graduate.
Climatic history of the earth and climate models. Milankovitch theory, quaternary climates, temporal-spatial scales of change, general circulation, and earth system models.
Prerequisites: jr st, Geog 120(P) or Atm Sci 100(P) or 240(P), & Geog 310(R); or grad st.
Current Offerings: http://uwm.edu/schedule

GEOG 450G Climates of the Past and Climate Change
3 cr. Undergraduate/Graduate.
Climatic history of the earth and climate models. Milankovitch theory, quaternary climates, temporal-spatial scales of change, general circulation, and earth system models.
Prerequisites: jr st, Geog 120(P) or Atm Sci 100(P) or 240(P), & Geog 310(R); or grad st.
Current Offerings: http://uwm.edu/schedule
GEOG 455 Applied Climatology
3 cr. Undergraduate/Graduate.
Applications of climate processes and data. Solar energy, wind energy, food production, water usage, building design, urban environments, ecological assessment, and land form development.
Prerequisites: jr st, Geog 120(P) or Atm Sci 100(P) or 240(P), & Geog 310(R); or grad st.
Current Offerings: http://uwm.edu/schedule

GEOG 462 Cultural Geography of Latin America
3 cr. Undergraduate/Graduate.
Development of cultural landscapes, with emphasis on land use and environmental change resulting from European introductions; historical explanation of modern landscapes and environmental problems.
Prerequisites: jr st; one of Geog 105(P), 110(P), 421(P), 422(P), Hist 180(P), 388(P), 389(P), or 390(P).
Current Offerings: http://uwm.edu/schedule

GEOG 464 Environmental Problems
3 cr. Undergraduate/Graduate.
General discussion and case studies of geographical contexts and historical roots of modern environmental problems. History of human concern over adverse environmental impacts.
Prerequisites: jr st & an intro course in a life science or environmental science.
Last Taught: Spring 2018, Fall 2017.
Current Offerings: http://uwm.edu/schedule

GEOG 464G Environmental Problems
3 cr. Undergraduate/Graduate.
General discussion and case studies of geographical contexts and historical roots of modern environmental problems. History of human concern over adverse environmental impacts.
Prerequisites: jr st & an intro course in a life science or environmental science.
Last Taught: Spring 2018, Fall 2017.
Current Offerings: http://uwm.edu/schedule

GEOG 470 Geography of South Asia
3 cr. Undergraduate/Graduate.
Survey of the historical, cultural and economic geography of South Asia, including India and adjacent countries.
Prerequisites: jr st; intro Geog, Anthro, or Econ course.
Current Offerings: http://uwm.edu/schedule

GEOG 475 Geography of Soils
3 cr. Undergraduate/Graduate.
Systematic and regional study of soils, interrelationships of soils with the physical and cultural landscape. 2 hrs lec, 2 hrs lab.
Prerequisites: jr st; Geog 120(P), 121(P), or 125(P) or equiv.
Last Taught: Fall 2017, Fall 2016.
Current Offerings: http://uwm.edu/schedule

GEOG 4750 Geography of Soils
3 cr. Undergraduate/Graduate.
Systematic and regional study of soils, interrelationships of soils with the physical and cultural landscape. 2 hrs lec, 2 hrs lab.
Prerequisites: jr st; Geog 120(P), 121(P), or 125(P) or equiv.
Last Taught: Fall 2017, Fall 2016.
Current Offerings: http://uwm.edu/schedule

GEOG 475G Geography of Soils
3 cr. Undergraduate/Graduate.
Systematic and regional study of soils, interrelationships of soils with the physical and cultural landscape. 2 hrs lec, 2 hrs lab.
Prerequisites: jr st; Geog 120(P), 121(P), or 125(P) or equiv.
Current Offerings: http://uwm.edu/schedule

GEOG 475U Geography of Soils
3 cr. Undergraduate/Graduate.
Applications of climate processes and data. Solar energy, wind energy, food production, water usage, building design, urban environments, ecological assessment, and land form development.
Prerequisites: jr st, Geog 120(P) or Atm Sci 100(P) or 240(P), & Geog 310(R); or grad st.
Current Offerings: http://uwm.edu/schedule

GEOG 489 Internship in Geography, Upper Division
1-6 cr. Undergraduate.
Application of advanced principles of geography in a business, organizational, educational, political, or other appropriate setting.
Prerequisites: jr st; 300-level or above course in Geog. 2.25 gpa; cons supervising faculty member.
Course Rules: One cr earned for academic work based on 40 hours in internship. May be retaken to 6 cr max.
Current Offerings: http://uwm.edu/schedule

GEOG 496 UROP Apprenticeship, Upper Level
1-3 cr. Undergraduate.
Undergraduate research participation in a project developed with a supervising member of the faculty or staff. One credit for 45 hrs research.
Prerequisites: jr st; acceptance to UROP.
Course Rules: May be retaken to 9 cr max.
Current Offerings: http://uwm.edu/schedule

GEOG 497 Study Abroad:
1-12 cr. Undergraduate/Graduate.
Designed to enroll students in UWM sponsored program before course work levels, content, and credits are determined and/or in specially prepared program course work.
Prerequisites: jr st; acceptance for Study Abroad Prog.
Course Rules: May be retaken w/chg in topic.
Last Taught: Summer 2017, Summer 2016, Spring 2016, Fall 2014.
Current Offerings: http://uwm.edu/schedule

GEOG 499 Ad Hoc:
1-6 cr. Undergraduate.
Course created expressly for offering in a specified enrollment period. Requires only dept & assoc dean approval. In exceptional circumstances, can be offered in one add’l sem.
Prerequisites: jr st; add’l prereqs may be assigned to specific topic.
Course Rules: May be retaken w/chg in topic.
Last Taught: Fall 1999.
Current Offerings: http://uwm.edu/schedule

GEOG 515 Watershed Analysis and Modeling
3 cr. Undergraduate.
Theories and applications of analytical and modeling techniques for watershed processes, including geographic information systems (GIS), statistics, and computer simulations.
Prerequisites: jr st; working knowledge of GIS; Geog 415(R) or Geo Sci 463(R) or 562(R).
Last Taught: Fall 2016, Spring 2014.
Current Offerings: http://uwm.edu/schedule

GEOG 520 Physical Geography of the City
3 cr. Undergraduate/Graduate.
Spatial aspects and interactions of plants, animals, climate, soils, and water resources relevant to human activities in the urban environment.
Prerequisites: jr st & Geog 120(P) or 125(P); or grad st.
Last Taught: Spring 2013, Fall 2010.
Current Offerings: http://uwm.edu/schedule
GEOG 520G Physical Geography of the City
3 cr. Undergraduate/Graduate.
Spatial aspects and interactions of plants, animals, climate, soils, and water resources relevant to human activities in the urban environment.
Prerequisites: jr st & Geog 120(P) or 125(P); or grad st.
Last Taught: Spring 2013, Fall 2010.
Current Offerings: http://uwm.edu/schedule

GEOG 525 Geographic Information Science
4 cr. Undergraduate.
Geographic and information theoretical foundations of geographic information science (GIS). Use of macro languages in a software project to expand GIS functionality. 3 hrs lec, 2 hrs lab.
Prerequisites: jr st, & Geog 215(P).
Last Taught: Spring 2018, Fall 2017, Spring 2017, Fall 2016.
Current Offerings: http://uwm.edu/schedule

GEOG 531 Insurgent Cities - Global Geographies of Urban Social Movements
3 cr. Undergraduate.
Current and past social movements, activism, resistance, and revolution and their multiscalar geographies, from the urban, to the national, to the global.
Prerequisites: jr st.
Last Taught: Spring 2018.
Current Offerings: http://uwm.edu/schedule

GEOG 540 Globalization and the City
3 cr. Undergraduate/Graduate.
Spatial aspects of globalization and their impact on the city. Topics include emergence of global cities, impacts on urban development, and global era urban strategies.
Prerequisites: jr st.
Last Taught: Fall 2017, Fall 2016.
Current Offerings: http://uwm.edu/schedule

GEOG 540G Globalization and the City
3 cr. Undergraduate/Graduate.
Spatial aspects of globalization and their impact on the city. Topics include emergence of global cities, impacts on urban development, and global era urban strategies.
Prerequisites: jr st.
Last Taught: Fall 2017, Fall 2016.
Current Offerings: http://uwm.edu/schedule

GEOG 547 Spatial Analysis
4 cr. Undergraduate.
Advanced analysis techniques, including multivariate relationships and spatial modeling.
Prerequisites: jr st; Geog 247(P) or dept-approved equiv.
Last Taught: Fall 2017, Fall 2016, Fall 2015, Fall 2014.
Current Offerings: http://uwm.edu/schedule

GEOG 564 Urban Environmental Change and Social Justice
3 cr. Undergraduate/Graduate.
Spatial aspects of contributors to urban environmental change affecting social justice. Inequitable distribution of environmental risks and benefits; challenge of developing policies.
Prerequisites: jr st.
Current Offerings: http://uwm.edu/schedule

GEOG 600 Perspectives on Geography
3 cr. Undergraduate.
Seminar on concepts, methods, and approaches to geographic inquiry. Discussion of professional geographic materials, bibliographic procedures and methodologies.
Prerequisites: sr st; declared geography major; writ cons instr.
Current Offerings: http://uwm.edu/schedule

GEOG 625 Intermediate Geographic Information Science
4 cr. Undergraduate.
Concepts and techniques of geographic information science (GIS), with emphasis on GIS-based spatial analysis, associated applications, and technology. 3 hrs lec, 2 hrs lab.
Prerequisites: jr st; Geog 525(P) or UrbPlan 591(P) or 791(P); or cons instr.
Last Taught: Fall 2017, Fall 2016, Fall 2015, Fall 2014.
Current Offerings: http://uwm.edu/schedule

GEOG 647 ArcGIS Programming with Python
4 cr. Undergraduate.
Fundamentals of Python programming language; focus on programming designed to automate ArcGIS geoprocessing tasks, manipulate spatial data (including geometries and rasters), and create customized tools.
Prerequisites: jr st; C+ or better in Geog 525(P) or cons instr.
Current Offerings: http://uwm.edu/schedule

GEOG 650 Geography Field Work
3 cr. Undergraduate/Graduate.
Geographic field techniques and field problems; classroom preparations and field projects.
Prerequisites: jr st; writ cons instr.
Course Rules: Students will pay fieldwork expenses. May be retaken w/chg in topic to 9 cr max.
Current Offerings: http://uwm.edu/schedule

GEOG 654 Tropical Field Course:
3 cr. Undergraduate/Graduate.
Study of geographic field problems and techniques in the tropics. Classroom preparations, field projects and field trip to the tropics.
Prerequisites: jr st; writ cons instr.
Course Rules: Students will pay field trip expenses. May be retaken for cr w/chg of field topic & site to 9 cr max.
Current Offerings: http://uwm.edu/schedule

GEOG 696 Independent Work in Physical Geography
1-3 cr. Undergraduate.
Independent reading or project on a physical geography topic under the supervision of a geography faculty member.
Prerequisites: jr st; 2.5 GPA; writ cons instr, dept chair, & asst dean for SAS.
Course Rules: May be retaken w/chg in topic to 6 cr max.
Current Offerings: http://uwm.edu/schedule
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Type</th>
<th>Prerequisites</th>
<th>Course Rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 698</td>
<td>GIS/Cartography Internship</td>
<td>1-6</td>
<td>Undergraduate</td>
<td>Practical GIS/cartography experience with government agency or private firm under supervision of working expert and faculty member. Intern's contract specifies duties and duration.</td>
<td>Prerequisites: jr st, Geog 215(P); writ cons instr &amp; dept chair</td>
</tr>
<tr>
<td>GEOG 699</td>
<td>Independent Work</td>
<td>1-3</td>
<td>Undergraduate</td>
<td>Independent reading or project. See Advanced Independent Study.</td>
<td>Course Rules: May be retaken to 6 cr max.</td>
</tr>
<tr>
<td>GEOG 704</td>
<td>Remote Sensing: Environmental and Land Use Analysis</td>
<td>4</td>
<td>Graduate</td>
<td>Use of aerial photographs and digital imagery in environmental and land use analysis, including urban areas. 3 hrs lec; 2 hrs lab</td>
<td>Prerequisites: grad st; writ cons instr, dept chair &amp; asst dean for SAS</td>
</tr>
<tr>
<td>GEOG 705</td>
<td>Cartography</td>
<td>4</td>
<td>Graduate</td>
<td>Thematic cartography; map communication, design principles, illustration and mapping software. 3 hrs lec; 2 hrs lab</td>
<td>Course Rules: Counts as repeat of Geog 405. Not open for cr to students w/grad cr in Geog 405.</td>
</tr>
<tr>
<td>GEOG 716</td>
<td>Watershed Analysis and Modeling</td>
<td>3</td>
<td>Graduate</td>
<td>Theories and applications of analytical and modeling techniques for watershed processes, including geographic information systems (GIS), statistics, and computer simulations.</td>
<td>Prerequisites: grad st; working knowledge of GIS</td>
</tr>
<tr>
<td>GEOG 726</td>
<td>Geographic Information Science</td>
<td>4</td>
<td>Graduate</td>
<td>Geographic and information theoretical foundations of geographic information science (GIS). Use of macro languages in a software project to expand GIS functionality. 3 hrs lec, 2 hrs lab</td>
<td>Prerequisites: grad st</td>
</tr>
<tr>
<td>GEOG 730</td>
<td>Geography of Transportation</td>
<td>3</td>
<td>Graduate</td>
<td>Geographic analysis of transportation, with emphasis on commodity flows and traffic patterns.</td>
<td>Prerequisites: grad st</td>
</tr>
<tr>
<td>GEOG 731</td>
<td>Insurgent Cities - Theorizing geographies of social movements</td>
<td>3</td>
<td>Graduate</td>
<td>Investigation into how social movements use and produce various spatialities, in relation to state forms, other social movements and forces, media assemblages, the built environment</td>
<td>Prerequisites: grad st</td>
</tr>
<tr>
<td>GEOG 742</td>
<td>Urban and Regional Dimensions of Globalization</td>
<td>3</td>
<td>Graduate</td>
<td>Geographic perspectives on urban and regional change as 'developed' and 'less developed' parts of the world become more interconnected by wider international processes of change.</td>
<td>Prerequisites: grad st</td>
</tr>
<tr>
<td>GEOG 744</td>
<td>Cities, Regions, and Globalization</td>
<td>3</td>
<td>Graduate</td>
<td>Globalization process and impact on cities and regions, including emergence of global cities and regions, impact on uneven development, and global era urban strategies.</td>
<td>Prerequisites: grad st</td>
</tr>
<tr>
<td>GEOG 747</td>
<td>Spatial Analysis</td>
<td>4</td>
<td>Graduate</td>
<td>Advanced analysis techniques, including multivariate relationships and spatial modeling.</td>
<td>Prerequisites: grad st</td>
</tr>
<tr>
<td>GEOG 748</td>
<td>ArcGIS Programming with Python</td>
<td>4</td>
<td>Graduate</td>
<td>Fundamentals of Python programming language; focus on programming designed to automate ArcGIS geoprocessing tasks, manipulate spatial data (including geometries and rasters), and create customized tools.</td>
<td>Prerequisites: grad st; Geog 726(P)</td>
</tr>
<tr>
<td>GEOG 798</td>
<td>GIS/Cartography Internship</td>
<td>1-4</td>
<td>Graduate</td>
<td>Practical GIS/cartography experience with government agency or private firm under supervision of working expert and faculty member. Intern's contract specifies duties and duration.</td>
<td>Prerequisites: grad st; writ cons instr &amp; dept chair Course Rules: May be retaken to 8 cr max.</td>
</tr>
<tr>
<td>GEOG 804</td>
<td>Advanced Remote Sensing</td>
<td>3</td>
<td>Graduate</td>
<td>Advanced techniques of image processing and analysis, including classification, georegistration, and spatial modeling.</td>
<td>Prerequisites: grad st; Geog 704(P) Course Rules: Counts as a repeat of Geog 703.</td>
</tr>
</tbody>
</table>
GEOG 810 Introduction to Techniques of Research and Presentation
3 cr. Graduate.
Proseminar on the scholarly use of materials in all aspects of geography; training for effective presentation in both written and oral form.
Prerequisites: grad st.
Last Taught: Fall 2017, Fall 2014, Fall 2013, Fall 2012.
Current Offerings: http://uwm.edu/schedule

GEOG 826 Intermediate Geographic Information Science
4 cr. Graduate.
Concepts and techniques of geographic information science (GIS), with emphasis on GIS-based spatial analysis, associated applications, and technology. 3 hrs lec, 2 hrs lab.
Prerequisites: grad st; Geog 525(P) or Geog 726(P) or UrbPlan 591(P) or UrbPlan 791(P).
Course Rules: Counts as a repeat of Geog 625. Not open for cr to students w/grad cr in Geog 625.
Current Offerings: http://uwm.edu/schedule

GEOG 827 Qualitative Research
3 cr. Graduate.
Qualitative research as applied in geography, including the relationship between quantitative and qualitative approaches, issues of interpretation, and ethics of field work.
Prerequisites: grad st.
Last Taught: Spring 2017, Spring 2015, Spring 2013, Fall 2010.
Current Offerings: http://uwm.edu/schedule

GEOG 834 GIS and Society
3 cr. Graduate.
Interconnected relationship between Geographic Information Science (GIS) and society, including hidden impacts and implications of such a relationship.
Prerequisites: grad st.
Current Offerings: http://uwm.edu/schedule

GEOG 870 Contemporary Geographic Approaches:
3 cr. Graduate.
Foundations of geographic inquiry, with emphasis on the roles of sub-disciplines, and generalist/specialist approaches in the development of geographic science.
Prerequisites: grad st.
Course Rules: Retakable w/chg in topic to 6 cr max.
Last Taught: Fall 2016, Fall 2014, Fall 2012, Fall 2010.
Current Offerings: http://uwm.edu/schedule

GEOG 880 Urban Sustainability
3 cr. Graduate.
Urban sustainable challenges and opportunities that impact the built environment. Includes review of traditional and innovative sustainable practices and regulations
Prerequisites: grad st.
Course Rules: Jointly-offered w/& counts as repeat of UrbPlan 880.
Current Offerings: http://uwm.edu/schedule

GEOG 888 Candidate for Degree
0 cr. Graduate.
Available for graduate students who must meet minimum credit load requirements.
Prerequisites: grad st.
Course Rules: Fee assessed for 1 cr.
Last Taught: Summer 2015, Summer 2014, Fall 2013, Spring 2013.
Current Offerings: http://uwm.edu/schedule

GEOG 889 Internship in Geography
1-6 cr. Graduate.
Application of advanced principles of geography in a business, organizational, educational, political, or other appropriate setting. Intern's contract specifies duties and duration.
Prerequisites: grad st; Geog 810(P); writ cons instr & dept chair.
Course Rules: Retakable to 6 cr max.
Last Taught: Spring 2015, Fall 2014, Fall 2013, Spring 2013.
Current Offerings: http://uwm.edu/schedule

GEOG 890 Research and Master Thesis
1-6 cr. Graduate.
Research connected with master thesis.
Prerequisites: grad st.
Course Rules: Retakable to 6 cr max.
Current Offerings: http://uwm.edu/schedule

GEOG 904 Remote Sensing and Urban Analysis
3 cr. Graduate.
Seminar in remote sensing technologies and applications in urban analyses, including land use/land cover analysis, socio-economic information estimation, heat-island effect, sprawl monitoring, and growth modeling.
Prerequisites: grad st; Geog 403(P) or Geog 704(P); Geog 525(P) or Geog 726(P) or UrbPlan 591(P) or 791(P).
Last Taught: Fall 2015, Spring 2012.
Current Offerings: http://uwm.edu/schedule

GEOG 905 Seminar: Selected Topics in Geography:
3 cr. Graduate.
Seminar on theoretical and practical aspects of geographic research, funding, presentation, and publication.
Prerequisites: grad st.
Course Rules: Retakable to 9 cr max.
Last Taught: Fall 2017, Fall 2016, Spring 2015, Spring 2014.
Current Offerings: http://uwm.edu/schedule

GEOG 910 Techniques of Research and Presentation
3 cr. Graduate.
Seminar on theoretical and practical aspects of geographic research, funding, presentation, and publication.
Prerequisites: grad st in Geog Ph.D. program.
Last Taught: Fall 2017, Fall 2014, Fall 2013, Fall 2012.
Current Offerings: http://uwm.edu/schedule

GEOG 926 Advanced Geographic Information Science: Geographic Modeling
3 cr. Graduate.
Advanced spatial modeling with both GIS and other tools of geocomputation, including examination of conceptual models aimed at an analysis of their possible implementation.
Prerequisites: grad st; Geog 826(P).
Course Rules: Counts as a repeat of Geog 725.
Current Offerings: http://uwm.edu/schedule
GEOG 932 Seminar: Economic Geography:
3 cr. Graduate.
Analysis in depth of significant topics in advanced economic geography specializations: agricultural geography, geography of manufacturing, and geography of transportation.
Prerequisites: grad st.
Course Rules: Retakable w/chg in topic to 9 cr max.
Current Offerings: http://uwm.edu/schedule

GEOG 934 Seminar: Urban Geography:
3 cr. Graduate.
Prerequisites: grad st.
Course Rules: Retakable w/chg in topic to 9 cr max.
Current Offerings: http://uwm.edu/schedule

GEOG 940 Seminar: Physical Geography:
3 cr. Graduate.
Prerequisites: grad st.
Course Rules: Retakable w/chg in topic to 9 cr max.
Current Offerings: http://uwm.edu/schedule

GEOG 941 Seminar: Climatology:
3 cr. Graduate.
Prerequisites: grad st.
Course Rules: Retakable w/chg in topic to 9 cr max.
Current Offerings: http://uwm.edu/schedule

GEOG 942 Seminar: Geography of Land Form:
3 cr. Graduate.
Prerequisites: grad st.
Course Rules: Retakable w/chg in topic to 9 cr max.
Current Offerings: http://uwm.edu/schedule

GEOG 945 The Internal Structure of the City
3 cr. Graduate.
The interaction of forces responsible for the evolution of the city as a spatial form and the allocation of economic and social activity within the spatial configuration.
Prerequisites: grad st.
Course Rules: Geog 945 & Urb Std 945 are jointly-offered; they count as repeats of one another.
Current Offerings: http://uwm.edu/schedule

GEOG 960 Seminar: Geographic Techniques:
3 cr. Graduate.
Prerequisites: grad st.
Course Rules: Retakable w/chg in topic to 9 cr max.
Current Offerings: http://uwm.edu/schedule

GEOG 990 Research and Doctoral Dissertation
1-12 cr. Graduate.
Research projects connected with dissertation.
Prerequisites: grad st.
Course Rules: Retakable to 12 cr max.
Current Offerings: http://uwm.edu/schedule

GEOG 999 Independent Work
1-6 cr. Graduate.
Independent reading or project.
Prerequisites: grad st.
Course Rules: Retakable w/chg in topic to 12 cr max.
Current Offerings: http://uwm.edu/schedule