

GEOGRAPHY (GEOG)

GEOG 003, UNDERGRADUATE RESEARCH, 0 Credits

Engage in research activities appropriate to the discipline; and through the research experience, acquire skills, techniques, and knowledge relevant to the field of study. In consultation with a faculty mentor, engage in research activity, and make and execute a plan for a project.

GEOG 004, INTERNSHIP, 0 Credits

Provides basic personal and professional skills that can be used within and outside of a work setting. Through practice, this experience guides students in building and maintaining positive professional relationships, networking/mentoring relationships, and enhances students' understanding of the connection between theory and practice in their respective disciplines.

GEOG 100, *CLIMATE JUSTICE, 3 Credits

Unequal distribution of social, economic and political power that creates winners and losers from climate change. Case studies of climate-change-related environmental degradation, conflict, conservation, climate denial, renewable energy, and investment. Concepts and actions to promote climate justice. Lec/rec. (Bacc Core Course)

Attributes: CPDP – Core, Perspective, Difference/Power/Discrimination

GEOG 102, *PHYSICAL GEOGRAPHY, 4 Credits

Processes that shape the earth's surface. Weathering, mass movement, landforms, river systems, groundwater, biogeography, human effects on the landscape. Use of maps and imagery. (Bacc Core Course)

Attributes: CPPS – Core, Pers, Physical Science

Equivalent to: GEO 102

Available via Ecampus

GEOG 103, *THE HUMAN PLANET, 3 Credits

Introduces the study of human activities, patterns, processes and institutions—globally and in specific places. Examines human behaviors and relationships, among cultures and with the environment. Demonstrates the importance of places, networks and patterns in a range of human and environmental processes. (Bacc Core Course)

Attributes: CPCD – Core, Pers, Cult Diversity

Available via Ecampus

GEOG 105, *GEOGRAPHY OF THE NON-WESTERN WORLD, 3 Credits

An introduction to the rich variety of environments, population and settlement dynamics, cultures, geopolitical changes, and economies in Africa, the Middle East, and Asia. (Bacc Core Course)

Attributes: CPCD – Core, Pers, Cult Diversity

Available via Ecampus

GEOG 106, *GEOGRAPHY OF THE WESTERN WORLD, 3 Credits

An introduction to the rich variety of environments, population and settlement dynamics, cultures, geopolitical changes, and economics in Europe and Russia, Australia and Oceania, and the Americas. Lec/rec. (SS) (Bacc Core Course)

Attributes: CPWC – Core, Pers, West Culture; LACS – Liberal Arts Social Core

Equivalent to: GEO 106

Available via Ecampus

GEOG 199, SPECIAL STUDIES, 1-16 Credits

This course is repeatable for 16 credits.

GEOG 201, *FOUNDATIONS OF GEOSPATIAL SCIENCE AND GIS, 4 Credits

Basic physical science principles underlying geospatial technologies such as GPS, mobile devices, and online mapping and navigation tools used in GIS, remote sensing, and geovisualization. Concepts and applications in government, business, and the environment. (Bacc Core Course)

Attributes: CPPS – Core, Pers, Physical Science

Equivalent to: GEO 301

Available via Ecampus

GEOG 203, *HUMAN-ENVIRONMENT GEOGRAPHY, 3 Credits

How human societies manage resources, physical limits to sustainability, role of science in the use and management of resources, and how societal resource use adversely affects other societies, in human history and across spatial scales. Lec/rec. (Bacc Core Course)

Attributes: CPDP – Core, Perspective, Difference/Power/Discrimination

Available via Ecampus

GEOG 240, *HUMAN DIMENSIONS OF CLIMATE CHANGE, 3 Credits

Examine theories regarding human institutions and behavior. Apply these theories to understand how human behavior and institutions can change to: (1) reduce vulnerability to climate change impacts through adaptation and (2) reduce greenhouse gas emissions through climate change mitigation and societal transformation at multiple scales. (Bacc Core Course)

Attributes: CPSI – Core, Pers, Soc Proc & Inst

GEOG 241, *TRANSFORMING ENVIRONMENTAL CONFLICTS, 3 Credits

Explores the geography of environmental conflicts; an examination of how social processes and institutions influence access and use of natural resources; and the social constructs from which difference, power, and discrimination emerge. Examines the experiences of women, minority, and under-represented communities to contemplate more integrated, equitable and sustainable approaches to resources management, in the United States and beyond. Personal skills in transforming conflicts, as well as the concepts of distributive, procedural, and restorative justice, will be explored. (Bacc Core Course)

Attributes: CPDP – Core, Perspective, Difference/Power/Discrimination

GEOG 250, *LAND USE PLANNING FOR SUSTAINABLE COMMUNITIES, 3 Credits

Overview of the history and current practices of land use and community planning. Use basic geospatial tools to assess land use patterns and planning processes. (Bacc Core Course)

Attributes: CPSI – Core, Pers, Soc Proc & Inst

Available via Ecampus

GEOG 251, *GEOGRAPHY OF DISASTER MANAGEMENT, 3 Credits

Introduction to the geographic concepts and processes for effective disaster management, including response, recovery, mitigation and preparedness. Risk assessment and evidence-based best practices to prepare and respond to emergencies in a variety of geographic contexts. (Bacc Core Course)

Attributes: CPSI – Core, Pers, Soc Proc & Inst

Equivalent to: GEO 205

GEOG 295, GEOGRAPHIC FIELD RESEARCH, 3 Credits

Introduction to field research in geography. Practice skills including observation, posing of questions, and collection and analysis of data. Focus on theory-based geographic study design, proposal development, and research critiques.

Recommended: GEOG 102 or GEOG 103 or GEOG 201 or GEOG 203

Available via Ecampus

GEOG 299, SPECIAL STUDIES, 1-16 Credits

This course is repeatable for 16 credits.

GEOG 300, *SUSTAINABILITY FOR THE COMMON GOOD, 3 Credits

Geography of human relationships to the earth's systems with an emphasis on individual impacts and collective efforts to achieve environmental sustainability. Lec/rec. (SS) (Bacc Core Course)

Attributes: CSGI – Core, Synth, Global Issues; CSST – Core, Synthesis, Science/Technology/Society; LACS – Liberal Arts Social Core

Equivalent to: GEO 300, GEOG 300H

Available via Ecampus

GEOG 300H, *SUSTAINABILITY FOR THE COMMON GOOD, 3 Credits

Geography of human relationships to the earth's systems with an emphasis on individual impacts and collective efforts to achieve environmental sustainability. (Bacc Core Course)

Attributes: CSGI – Core, Synth, Global Issues; HNRS – Honors Course Designator; LACS – Liberal Arts Social Core

Equivalent to: GEO 300, GEOG 300

GEOG 311, *GEOGRAPHY OF AFRICA, 3 Credits

An introduction to the physical, historical, cultural, political, and development geography of Africa south of the Sahara. (NC) (Bacc Core Course)

Attributes: CPCD – Core, Pers, Cult Diversity; LACN – Liberal Arts Non-Western Core

Equivalent to: GEO 325

GEOG 313, *GEOGRAPHY OF ASIA, 3 Credits

Geographic analysis of Asia's lands and peoples. Emphasis on regional physical environments, resources and development potentials, population trends, and international importance to the United States. Offered once every other year. (NC) (Bacc Core Course)

Attributes: CPCD – Core, Pers, Cult Diversity; LACN – Liberal Arts Non-Western Core

Equivalent to: GEO 327

GEOG 314, *GEOGRAPHY OF LATIN AMERICA, 3 Credits

Focuses on the diverse landscapes, peoples and cultural traditions of Latin America, a vast region extending from the United States-Mexican border to the southern tip of South America. (NC) (Bacc Core Course)

Attributes: CPCD – Core, Pers, Cult Diversity; LACN – Liberal Arts Non-Western Core

Equivalent to: GEO 328

Available via Ecampus

GEOG 323, ^CLIMATOLOGY, 4 Credits

Systematic analysis of global and regional climates. Physical principles of climate, climate classifications, and distribution and characteristics of climate regimes. (Writing Intensive Course)

Attributes: CWIC – Core, Skills, WIC

Prerequisite: GEOG 102 with D- or better or GEO 202 with D- or better or GEO 221 with D- or better or ATS 201 with D- or better or OC 201 with C- or better

Equivalent to: GEO 323

Available via Ecampus

GEOG 324, ^ECOLOGICAL BIOGEOGRAPHY, 4 Credits

Spatial distributions and change over time of species, communities, and biomes. Effect of climate, tectonics, disturbance on evolution, extinction, and succession. Implications for conservation. (Writing Intensive Course)

Attributes: CWIC – Core, Skills, WIC

Prerequisite: GEOG 102 with D- or better or (BI 370 with C- or better or BI 370H with C- or better)

Equivalent to: GEO 324

GEOG 330, *GEOGRAPHY OF INTERNATIONAL DEVELOPMENT AND GLOBALIZATION, 3 Credits

Introduction to the geography of global wealth and inequality with a focus on contemporary development, underdevelopment, and globalization problems in Asian, African, Caribbean, Latin American, and Pacific Island countries. (Bacc Core Course)

Attributes: CSGI – Core, Synth, Global Issues

GEOG 331, *POPULATION, CONSUMPTION, AND ENVIRONMENT, 3 Credits

An examination of population patterns and trends, emphasizing historical growth and more recent demographic changes; using geographic tools to understand patterns of spatial distribution, to use and analyze data sources, and to gain experience interpreting and displaying data about population structure and dynamics; and developing the ability to evaluate the relationship between population, consumption, resources, and quality of life. Patterns of consumption, as individuals and societies will be examined and different future scenarios will be examined with reference to environmental, social and economic sustainability. (Bacc Core Course)

Attributes: CSGI – Core, Synth, Global Issues

Equivalent to: GEO 350

Available via Ecampus

GEOG 340, *INTRODUCTION TO WATER SCIENCE AND POLICY, 3 Credits

Policy and science of the hydrologic cycle. Emphasis on interaction between water's natural time-space fluctuations and human uses. (Bacc Core Course)

Attributes: CSST – Core, Synthesis, Science/Technology/Society

Equivalent to: CSS 335, CSS 335H, GEO 335, GEO 335H, GEOG 340H, SOIL 335

Available via Ecampus

GEOG 340H, *INTRODUCTION TO WATER SCIENCE AND POLICY, 3 Credits

Policy and science of the hydrologic cycle. Emphasis on interaction between water's natural time-space fluctuations and human uses. (Bacc Core Course)

Attributes: CSST – Core, Synthesis, Science/Technology/Society; HNRS – Honors Course Designator

Equivalent to: CSS 335, CSS 335H, GEO 335, GEO 335H, GEOG 340, SOIL 335

GEOG 350, *GEOGRAPHY OF NATURAL HAZARDS, 3 Credits

Introduction to the geography of risk, natural hazards, and disasters, focusing on concepts of vulnerability, adaptation and resilience of human society in the Pacific Northwest and globally.

Attributes: CSGI – Core, Synth, Global Issues

Equivalent to: GEO 304

Available via Ecampus

GEOG 360, GISCIENCE I: GEOGRAPHIC INFORMATION SYSTEMS AND THEORY, 4 Credits

Fundamentals of spatial data, geographic information systems (GIS), and introductory spatial analysis, programming, and modeling.

Equivalent to: GEO 365

Available via Ecampus

GEOG 361, GISCIENCE II: ANALYSIS AND APPLICATIONS, 4 Credits

Applications-based course. Development and conduct of geospatial analyses using various spatial data structures, techniques and models. Acquire, clean, integrate, manipulate, visualize and analyze geospatial data through laboratory work.

Prerequisite: GEOG 360 with C- or better and (MTH 112 [C-] or MTH 241 [C-] or MTH 251 [C-]) and ST 351 [C-]

Available via Ecampus

GEOG 362, GIS AND SPATIAL DATA SCIENCE, 4 Credits

Applies spatial thinking and spatial data analysis through the use of GIS and spatial data science. Manipulates, analyses, and visualizes spatial and temporal data to explore spatial patterns and relationships. Student-designed projects apply principles of spatial data science in terms of spatial technologies as well as problem solving.

Prerequisite: GEOG 360 with C or better and MTH 112 [C] and (ST 314 [C] or ST 351 [C])

GEOG 370, CARTOGRAPHY, 4 Credits

Creation, evaluation, and critique of maps using cartographic theories for effective geovisual communication and geospatial thinking.

Prerequisite: GEOG 201 with C- or better

Available via Ecampus

GEOG 371, WEB MAPPING, 4 Credits

Concepts and techniques of web programming, digital storytelling, online project management, and web-based cartographic principles for developing, evaluating, and using web maps.

Prerequisite: GEOG 201 with C- or better

GEOG 399, SPECIAL STUDIES, 1-16 Credits

Equivalent to: GEOG 399H

This course is repeatable for 16 credits.

GEOG 399H, SPECIAL STUDIES, 1-16 Credits

Attributes: HNRS – Honors Course Designator

Equivalent to: GEOG 399

This course is repeatable for 16 credits.

GEOG 400, FIELD TRIPS, 1-16 Credits

Participation in group field trips that are not a part of any other course. Transportation fee is charged. Students may prepare guides for trips. Faculty sponsor must be prearranged.

This course is repeatable for 48 credits.

GEOG 401, RESEARCH, 1-16 Credits

Independent, original research subjects guided by faculty conferences and resulting in a brief written report. Faculty sponsor must be prearranged.

This course is repeatable for 24 credits.

GEOG 403, THESIS, 1-16 Credits

Independent, original study that culminates in a senior thesis. Faculty sponsor must be prearranged.

This course is repeatable for 24 credits.

GEOG 405, READING AND CONFERENCE, 1-16 Credits

Independent reading in specialized topics guided by and discussed in faculty conferences. Faculty sponsor must be prearranged.

This course is repeatable for 16 credits.

GEOG 407, SEMINAR, 1-16 Credits

Graded P/N.

This course is repeatable for 16 credits.

Available via Ecampus

GEOG 408, WORKSHOP, 1-16 Credits

This course is repeatable for 16 credits.

GEOG 410, INTERNSHIP, 1-16 Credits

Pre-career professional experience under joint faculty and employer supervision. Graded P/N.

This course is repeatable for 16 credits.

Recommended: 12 credits of upper-division geography

Available via Ecampus

GEOG 423, SNOW HYDROLOGY, 3 Credits

Fundamentals of snow hydrology. Physical principles of snow formation, snowpack accumulation, energy balance, snowcover-climate interactions, snow metamorphism, snowpack ablation, snowpack/snowmelt chemistry, remote sensing of snow, avalanches, field methods, snowmelt/runoff modeling techniques, and watershed processes.

Equivalent to: GEO 483

GEOG 424, HYDROLOGY FOR WATER RESOURCES MANAGEMENT, 3 Credits

A quantitative introduction to surface and subsurface hydrology with a focus on decision making for the water resource professional

Prerequisite: MTH 251 with C- or better

GEOG 430, RESILIENCE-BASED NATURAL RESOURCE MANAGEMENT, 3 Credits

Causes and consequences of conflict over natural resource management at local to global scales; principles for managing social-ecological systems for resilience. Field trip(s) may be required; transportation fee charged.

Equivalent to: GEO 420

GEOG 431, GLOBAL RESOURCES AND DEVELOPMENT, 3 Credits

Examines resource development issues and strategies in the Global South. Issues and strategies from agriculture, forestry, fisheries, energy, wildlife management, mineral development, land use, and health are examined.

Equivalent to: GEO 426

GEOG 432, *GEOGRAPHY OF FOOD AND AGRICULTURE, 3 Credits

Overview of food and agriculture in relation to production and consumption regions as a basis for distinguishing different types of food and agricultural systems. Local and global examination of the geographic aspects of breeding, location in agricultural systems, and adaptation in agro-ecosystems using field study, explorations of literature, and lecture. Field trip required, transportation fee charged. (Bacc Core Course)

Attributes: CSST – Core, Synthesis, Science/Technology/Society

Equivalent to: GEO 449

GEOG 433, CLIMATE CHANGE IMPACTS, ADAPTATION AND VULNERABILITY, 3 Credits

Climate change poses challenges for human security and well-being, and for social and economic development. Evaluate how climate change impacts vary based on vulnerability, exposure, sensitivity, adaptive capacity, and risk.

Prerequisite: ATS 201 with C- or better or GEOG 240 with C- or better or GEOG 323 with C- or better

GEOG 440, CONFLICT, COOPERATION, AND CONTROL OF WATER IN THE US, 3 Credits

Examine why nations rise and fall based on water availability and investigate why the United States is no exception. Explore how the US develops, protects, governs and manages its water resources and how it will cope with climate change and conflict. Discover resilience and sustainability through case studies.

Available via Ecampus

GEOG 441, THE WORLD'S WATER, 3 Credits

Investigate why water is a critical resource that supports life, livelihoods, and the environment. Understand that where rivers crosses political boundaries, the sharing of water presents challenges and opportunities. Interpret how international basins are governed; Evaluate how dams and water development affect ecology and people; and apply water conflict management frameworks to emerging international water issues.

GEOG 450, LAND USE IN THE AMERICAN WEST, 3 Credits

Development of a conceptual framework for land use study; analysis of land as a resource, land use trends, land use principles, and management issues as related to planning, focusing on the American West, the fastest growing region in the nation.

Equivalent to: GEO 423

GEOG 451, PLANNING PRINCIPLES AND PRACTICES FOR RESILIENT COMMUNITIES, 4 Credits

Applies GIS skills and techniques to determine and analyze future land uses. Determine suitable land uses that incorporate community goals, site constraints and minimize use conflicts. Regulatory and market-based implementation strategies for land uses will also be discussed.

Prerequisite: GEOG 360 with C- or better

Available via Ecampus

GEOG 452, ENVIRONMENTAL ASSESSMENT, 3 Credits

Environmental site assessment is a primary tool for environmental science professionals. Apply environmental science concepts to evaluate features of a specific natural area and conduct a land suitability analysis. Create a conceptual site design and management plan that complies with federal, state, and local regulations and environmental laws. CROSSLISTED as ENSC 452/GEOG 452 and GEOG 552.

Equivalent to: ENSC 452

Available via Ecampus

GEOG 453, EFFECTIVE COMMUNICATION OF ENVIRONMENTAL CHANGE SCIENCE, 3 Credits

Explores the state of science on environmental change in the western United States and globally, including population and climate change, and the extent to which human behavior can affect drivers and outcomes of such changes. Develops skills in oral, visual, and written communication of science via both traditional and social media. Examines the best science available standard and addresses debates about advocacy in science.

GEOG 462, GISCIENCE III: PROGRAMMING FOR GEOSPATIAL ANALYSIS, 4 Credits

Introduction to the extension of geographic information systems (GIS) through programming. No prior programming experience is expected. Teaches a pragmatic approach to design and write programs for geospatial analysis.

Prerequisite: GEOG 361 with C- or better

Available via Ecampus

GEOG 463, GISCIENCE IV: SPATIAL MODELING, 4 Credits

Introduction to spatial simulation models representing attraction, segregation, individual entities, and processes of spread, applied to contemporary problems in human and physical geography.

Prerequisite: GEOG 462 with C- or better or GEOG 562 with C- or better or GEO 578 with C- or better

GEOG 464, GEOSPATIAL PERSPECTIVES ON INTELLIGENCE, SECURITY AND ETHICS, 3 Credits

Applications and implications of geospatial science (GIS, remote sensing, and spatial analysis) in intelligence, human, environmental, and ethical domains. Concepts and practices of ethics in geospatial science, including data access, management, visualization, and decision-making.

Prerequisite: GEOG 360 with C- or better

Recommended: Senior standing

Available via Ecampus

GEOG 472, GEOVISUALIZATION: GEOVISUAL ANALYTICS, 3 Credits

Concepts and techniques underlying the production of maps by computer. Practical experience with a variety of computer mapping packages.

Prerequisite: GEOG 370 with C- or better or GEOG 371 with C- or better or GEO 360 with C- or better

Equivalent to: GEO 445

GEOG 480, REMOTE SENSING I: PRINCIPLES AND APPLICATIONS, 4 Credits

Fundamentals of satellite remote sensing and image analysis. Topics include physical principles of remote sensing from the ultraviolet to the microwave, sensors and sensor technology, and environmental applications of remote sensing through image analysis.

Prerequisite: GEOG 201 with C- or better

Available via Ecampus

GEOG 481, SATELLITE IMAGE ANALYSIS, 4 Credits

Intermediate concepts and techniques for satellite image processing including image enhancement, clustering, classification, machine learning, change detection, and time series analysis. Hands-on experience with open-source, large volume data and geospatial programming within Google Earth engine.

Prerequisite: GEOG 480 with C- or better and (ST 314 [C-] or ST 351 [C-] or ST 351H [C-])

GEOG 495, FIELD GEOGRAPHY SYNTHESIS, 3 Credits

Explore how geographers use field work to investigate landscapes such as mountains, forests, coasts, tundra and desert to understand how they were formed and explain how they have changed over time. Learn techniques for finding out how landscape processes impact humans and, in turn, how humans impact the environment around them. Apply geographic theories and concepts to synthesize, analyze and interpret the relationship between human communities and the environment through the planning and execution of field work.

Prerequisite: GEOG 295 with C- or better

Available via Ecampus

GEOG 499, SPECIAL STUDIES, 0-16 Credits

This course is repeatable for 16 credits.

GEOG 500, FIELD TRIPS, 1-16 Credits

Participation in group field trips that are not a part of any other course. Transportation fee charged. Students may prepare guides for trips.

Faculty sponsor must be prearranged.

This course is repeatable for 48 credits.

GEOG 501, RESEARCH, 1-16 Credits

Independent, original research subjects guided by faculty conferences and resulting in a brief written report. Faculty sponsor must be prearranged.

This course is repeatable for 24 credits.

GEOG 503, THESIS, 1-16 Credits

Independent, original study that culminates in a thesis. Faculty sponsor must be prearranged.

This course is repeatable for 999 credits.

GEOG 505, READING AND CONFERENCE, 1-16 Credits

Independent reading in specialized topics guided by and discussed in faculty conferences. Faculty sponsor must be prearranged.

This course is repeatable for 16 credits.

GEOG 507, SEMINAR, 1-16 Credits

Graded P/N.

This course is repeatable for 16 credits.

GEOG 508, WORKSHOP, 1-16 Credits

This course is repeatable for 16 credits.

GEOG 510, INTERNSHIP, 1-15 Credits

Pre-career professional experience under joint faculty and employer supervision. Graded P/N.

This course is repeatable for 16 credits.

Available via Ecampus

GEOG 511, HISTORY AND PHILOSOPHY OF GEOGRAPHY, 3 Credits

The historical development of research traditions in the discipline of geography. This includes an examination of changes in conceptual structures and current trends.

Equivalent to: GEO 515

GEOG 512, SOCIAL-ECOLOGICAL SYSTEMS, 3 Credits

Exploration of critical debates surrounding theories associated with social-ecological systems, resilience, vulnerability, adaptation, social learning, transformation, adaptive governance.

Equivalent to: GEO 554

Recommended: 9 credits of graduate study.

GEOG 523, SNOW HYDROLOGY, 3 Credits

Fundamentals of snow hydrology. Physical principles of snow formation, snowpack accumulation, energy balance, snowcover-climate interactions, snow metamorphism, snowpack ablation, snowpack/snowmelt chemistry, remote sensing of snow, avalanches, field methods, snowmelt/runoff modeling techniques, and watershed processes.

Equivalent to: GEO 583

GEOG 524, HYDROLOGY FOR WATER RESOURCES MANAGEMENT, 3 Credits

A quantitative introduction to surface and subsurface hydrology with a focus on decision making for the water resource professional.

Recommended: MTH 251

GEOG 530, RESILIENCE-BASED NATURAL RESOURCE MANAGEMENT, 3 Credits

Causes and consequences of conflict over natural resource management at local to global scales; principles for managing social-ecological systems for resilience. Field trip(s) may be required; transportation fee charged.

Equivalent to: GEO 520

GEOG 531, GLOBAL RESOURCES AND DEVELOPMENT, 3 Credits

Examines resource development issues and strategies in the Global South. Issues and strategies from agriculture, forestry, fisheries, energy, wildlife management, mineral development, land use, and health are examined.

Equivalent to: GEO 526

GEOG 532, GEOGRAPHY OF FOOD AND AGRICULTURE, 3 Credits

Overview of food and agriculture in relation to production and consumption regions as a basis for distinguishing different types of food and agricultural systems. Local and global examination of the geographic aspects of breeding, location in agricultural systems, and adaptation in agro-ecosystems using field study, explorations of literature, and lecture. Field trip required, transportation fee charged.

Equivalent to: GEO 549

GEOG 533, CLIMATE CHANGE IMPACTS, ADAPTATION AND VULNERABILITY, 3 Credits

Climate change poses challenges for human security and well-being, and for social and economic development. Evaluate how climate change impacts vary based on vulnerability, exposure, sensitivity, adaptive capacity, and risk.

GEOG 540, CONFLICT, COOPERATION, AND CONTROL OF WATER IN THE US, 3 Credits

Examine why nations rise and fall based on water availability and investigate why the United States is no exception. Explore how the US develops, protects, governs and manages its water resources and how it will cope with climate change and conflict. Discover resilience and sustainability through case studies.

Available via Ecampus

GEOG 541, THE WORLD'S WATER, 3 Credits

Investigate why water is a critical resource that supports life, livelihoods, and the environment. Understand that where rivers crosses political boundaries, the sharing of water presents challenges and opportunities. Interpret how international basins are governed; Evaluate how dams and water development affect ecology and people; and apply water conflict management frameworks to emerging international water issues.

GEOG 546, ADVANCED LANDSCAPE AND SEASCAPE ECOLOGY, 4 Credits

Pattern-process interactions in large scale ecological and physical systems, including terrestrial, aquatic, and marine/ocean ecosystems. Principles of pattern-process interactions from genetic to community levels of ecological organization applied to design of conservation reserves. Hypothesis testing, field techniques, spatial models/statistics, GIS/remote sensing.

Equivalent to: GEO 546

GEOG 550, LAND USE IN THE AMERICAN WEST, 3 Credits

Development of a conceptual framework for land use study; analysis of land as a resource, land use trends, land use principles, and management issues as related to planning, focusing on the American West, the fastest growing region in the nation.

Equivalent to: GEO 523

GEOG 551, PLANNING PRINCIPLES AND PRACTICES FOR RESILIENT COMMUNITIES, 4 Credits

Applies GIS skills and techniques to determine and analyze future land uses. Determine suitable land uses that incorporate community goals, site constraints and minimize use conflicts. Regulatory and market-based implementation strategies for land uses will also be discussed.

Prerequisite: GEOG 560 with C or better

Available via Ecampus

GEOG 552, ENVIRONMENTAL ASSESSMENT, 3 Credits

Environmental site assessment is a primary tool for environmental science professionals. Apply environmental science concepts to evaluate features of a specific natural area and conduct a land suitability analysis. Create a conceptual site design and management plan that complies with federal, state, and local regulations and environmental laws.

CROSSLISTED as ENSC 452/GEOG 452 and GEOG 552.

Available via Ecampus

GEOG 553, EFFECTIVE COMMUNICATION OF ENVIRONMENTAL CHANGE SCIENCE, 3 Credits

Explores the state of science on environmental change in the western United States and globally, including population and climate change, and the extent to which human behavior can affect drivers and outcomes of such changes. Develops skills in oral, visual, and written communication of science via both traditional and social media. Examines the best science available standard and addresses debates about advocacy in science.

GEOG 560, GISCIENCE I: INTRODUCTION TO GEOGRAPHIC INFORMATION SCIENCE, 4 Credits

Introduction to modern spatial data processing, development, and functions of geographic information systems (GIS); theory, concepts and applications of geographic information science (GIScience).

Equivalent to: GEO 565

Available via Ecampus

GEOG 561, GISCIENCE II: ANALYSIS AND APPLICATIONS, 4 Credits

Applications-based course. Development and conduct of geospatial analyses using various spatial data structures, techniques and models. Students acquire, clean, integrate, manipulate, visualize and analyze geospatial data through laboratory work.

Prerequisite: GEOG 560 with C or better

Equivalent to: GEO 580

Available via Ecampus

GEOG 562, GISCIENCE III: PROGRAMMING FOR GEOSPATIAL ANALYSIS, 4 Credits

Introduction to the extension of geographic information systems (GIS) through programming. No prior programming experience is expected. Teaches a pragmatic approach to design and write programs for geospatial analysis.

Prerequisite: GEOG 561 with C or better

Available via Ecampus

GEOG 563, GISCIENCE IV: SPATIAL MODELING, 4 Credits

Introduction to spatial simulation models representing attraction, segregation, individual entities, and processes of spread, applied to contemporary problems in human and physical geography.

Prerequisite: GEOG 462 with C or better or GEOG 562 with C or better

GEOG 564, GEOSPATIAL PERSPECTIVES ON INTELLIGENCE, SECURITY AND ETHICS, 3 Credits

Applications and implications of geospatial science (GIS, remote sensing, and spatial analysis) in intelligence, human, environmental, and ethical domains. Concepts and practices of ethics in geospatial science, including data access, management, visualization, and decision-making.

Prerequisite: GEOG 560 with C or better

Available via Ecampus

GEOG 565, SPATIO-TEMPORAL VARIATION IN ECOLOGY AND EARTH SCIENCE, 4 Credits

Objectives and techniques of spatial and temporal analysis. Point patterns, geostatistics, spectral analysis, wavelet analysis, interpolation, and mapping.

Equivalent to: GEO 541

GEOG 566, ADVANCED SPATIAL STATISTICS AND GISCIENCE, 4 Credits

Provides advanced graduate students from a variety of disciplines in earth science and ecology the opportunity to structure and conduct spatio-temporal analyses using available software tools and their own datasets for their graduate research.

Equivalent to: GEO 584

GEOG 571, ADVANCED WEB MAPPING, 4 Credits

Advanced concepts and techniques of web programming, digital storytelling, online project management, and web-based cartographic principles for developing, evaluating, and using web maps.

GEOG 572, GEOVISUALIZATION: GEOVISUAL ANALYTICS, 3 Credits

Concepts and techniques underlying the production of maps by computer. Practical experience with a variety of computer mapping packages. Lec/lab.

Equivalent to: GEO 545

Recommended: GEOG 370 or GEOG 371

GEOG 580, REMOTE SENSING I: PRINCIPLES AND APPLICATIONS, 4 Credits

Fundamentals of satellite remote sensing and image analysis. Topics include physical principles of remote sensing from the ultraviolet to the microwave, sensors and sensor technology, and environmental applications of remote sensing through image analysis.

Recommended: GEOG 201

Available via Ecampus

GEOG 581, SATELLITE IMAGE ANALYSIS, 4 Credits

Intermediate concepts and techniques for satellite image processing including image enhancement, clustering, classification, machine learning, change detection, and time series analysis. Hands-on experience with open-source, large volume data and geospatial programming within Google Earth engine.

Prerequisite: GEOG 580 with C- or better

GEOG 595, FIELD GEOGRAPHY OF OREGON, 3 Credits

Investigate how geographers use field work to study landscapes such as mountains, forests, coasts, tundra and desert to understand how they were formed and explain how they have changed over time Apply techniques for finding out how landscape processes impact humans and, in turn, how humans impact the environment around them. Apply geographic theories and concepts to synthesize, analyze and interpret the relationship between human communities and the environment through the planning and execution of field work in Oregon.

GEOG 596, FIELD RESEARCH IN GEOMORPHOLOGY AND LANDSCAPE ECOLOGY, 3 Credits

Natural history interpretation of disturbance and recovery processes and management implications in forest-stream landscapes of western Oregon. Course consists of field experience and several seminars.

Transportation and lodging fee charged.

Equivalent to: GEO 548

Recommended: 9 graduate credits in sciences or engineering.

GEOG 599, SPECIAL STUDIES, 0-16 Credits

This course is repeatable for 24 credits.

GEOG 600, FIELD TRIPS, 1-16 Credits

Participation in group field trips that are not a part of any other course. Transportation fee charged. Students may prepare guides for trips.

Faculty sponsor must be prearranged.

This course is repeatable for 48 credits.

GEOG 601, RESEARCH, 1-16 Credits

Independent, original research subjects guided by faculty conferences and resulting in a brief written report. Faculty sponsor must be prearranged.

This course is repeatable for 36 credits.

GEOG 603, THESIS, 1-16 Credits

Independent, original study that culminates in a thesis Faculty sponsor must be prearranged.

This course is repeatable for 999 credits.

GEOG 605, READING AND CONFERENCE, 1-16 Credits

Independent reading in specialized topics guided by and discussed in faculty conferences. Faculty sponsor must be prearranged.

This course is repeatable for 16 credits.

GEOG 607, SEMINAR, 1-16 Credits

Graded P/N.

This course is repeatable for 16 credits.

GEOG 608, WORKSHOP, 1-16 Credits

This course is repeatable for 16 credits.

GEOG 699, SPECIAL STUDIES, 1-16 Credits

This course is repeatable for 24 credits.