PART I – NEW ACADEMIC PROGRAMS AND PROGRAM CHANGES

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

1. Request to change the requirements for the Bachelor of Science degree in Construction Management in the School of Planning, Design and Construction to the following. The University Committee on Undergraduate Education (UCUE) will consider this request.

   a. Under the heading Admission as a Junior make the following changes:

      (1) Replace item 2. with the following:

      Completion of the following courses with a minimum grade of 2.0 in each course:
      MTH 124 Survey of Calculus I 3
      PHY 231 Introductory Physics I 3
      STT 200 Statistical Methods 3
      Or
      STT 201 Statistical Methods 4
      Or
      STT 315 Introduction Probability and Statistics for Business 3
      Or
      STT 421 Statistics I 3
      EC 201 Introduction to Microeconomics 3
      Or
      EC 202 Introduction to Macroeconomics 3
      CMP 101 Principles of Construction Management 2
      CMP 124 Residential Construction Materials and Methods 3
      CMP 210 Commercial Construction Methods 3
      CMP 211 Building Codes 3
      CMP 222 Statics and Strengths of Materials 3
      CMP 230 Utility Systems 4

      (2) Add the following item 3.:

      Have either a cumulative grade-point average of 3.00 in the CMP courses listed in item 2. or a cumulative MSU grade-point average of 3.00.

      (3) Replace paragraph three with the following:

      While meeting all of the criteria above is necessary to be considered for admission to the Bachelor of Science Degree in Construction Management, it does not guarantee admission. Other factors such as work experience, personal experience, and diversity may also be considered.

   b. Under the heading Requirements for the Bachelor of Science Degree in Construction Management make the following changes:

      (1) In item 3. a. add the following note:

      Students must have a minimum grade-point average of 2.00 in each of the following courses: CMP 305, 311, 315, 322, 325, 328, 385, 401, 415, and 423.

Effective Spring 2017.
COLLEGE OF SOCIAL SCIENCE

1. Request to change the administrative responsibility for the Bachelor of Science degree in Economic Geography in the Department of Geography to the Department of Geography, Environment, and Spatial Sciences. This department name change was effective July 1, 2016.
   Effective Fall 2017.

2. Request to change the administrative responsibility for the Bachelor of Science degree in Environmental Geography in the Department of Geography to the Department of Geography, Environment, and Spatial Sciences. This department name change was effective July 1, 2016.
   Effective Fall 2017.

3. Request to change the administrative responsibility for the Bachelor of Science degree in Geographic Information Science in the Department of Geography to the Department of Geography, Environment, and Spatial Sciences. This department name change was effective July 1, 2016.
   Effective Fall 2017.

4. Request to change the administrative responsibility for the Bachelor of Arts degree in Human Geography in the Department of Geography to the Department of Geography, Environment, and Spatial Sciences. This department name change was effective July 1, 2016.
   Effective Fall 2017.

5. Request to change the administrative responsibility for the Minor in Geography in the Department of Geography to the Department of Geography, Environment, and Spatial Sciences. This department name change was effective July 1, 2016.
   Effective Fall 2017.

6. Request to change the administrative responsibility for the Minor degree in Geographic Information Science in the Department of Geography to the Department of Geography, Environment, and Spatial Sciences. This department name change was effective July 1, 2016.
   Effective Fall 2017.

7. Request to change the administrative responsibility for the Disciplinary Teaching Minor in Geography in the Department of Geography to the Department of Geography, Environment, and Spatial Sciences. This department name change was effective July 1, 2016.
   Effective Fall 2017.

8. Request to change the administrative responsibility for the Master of Science degree in Geography in the Department of Geography to the Department of Geography, Environment, and Spatial Sciences. This department name change was effective July 1, 2016.
   Effective Fall 2017.

9. Request to change the administrative responsibility for the Doctor of Philosophy degree in Geography in the Department of Geography to the Department of Geography, Environment, and Spatial Sciences. This department name change was effective July 1, 2016.
   Effective Fall 2017.
PART II - NEW COURSES AND CHANGES

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

CSUS 814  Sustainable Tourism and Protected Area Management: Theories and Applications
Fall of every year. Fall of odd years. 3(3-0)
- Historical antecedents and current concepts of leisure, travel, and tourism. Tourism theory and applications.
- SA: PRR 874, ACR 814 SA: ACR 814, PRR 874
Effective Fall 2016 Effective Fall 2017

COLLEGE OF SOCIAL SCIENCE

ANP 362  Archaeology of Foragers to Farmers
Fall of odd years. 3(3-0) P: ANP 101 or ANP 203 or ANP 264 P: ANP 203 or ANP 264
- Theories, problems, and issues in the study of foraging and farming as adaptive strategies. Archaeological evidence for the appearance and development of food production in prehistory.
Effective Fall 2015 Effective Summer 2016

GEO 113  Introduction to Economic Geography
Fall of every year. Spring of every year. 3(3-0)
- Spatial distribution of resources, population, enterprise, trade, consumption, and production. Interaction of those distributions at local to global scales.
Effective Fall 2014 Effective Fall 2017

GEO 151  Introduction to Human Geography
Fall of every year. Spring of every year. 3(3-0)
- Systematic study of spatial patterns and processes that have shaped human use and alteration of the world.
Effective Fall 2014 Effective Fall 2017

GEO 201  Introduction to Plant Geography
Fall of even years. 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.
Effective Spring 2016 Effective Fall 2017

GEO 203  Introduction to Meteorology
Fall of every year. 3(3-0)
Effective Fall 2014 Effective Fall 2017

GEO 204  World Regional Geography
Fall of every year. 3(3-0)
- Economic, political, cultural, environmental, and technological processes and conditions that explain the diversity of world regions.
Effective Fall 2014 Effective Fall 2017

GEO 206  Physical Geography
Fall of every year. Spring of every year. 3(3-0)
- Geographic and functional interrelationships within the physical environment: Earth-sun relationships, weather, climate, soils, vegetation and landforms (terrain characteristics).
Effective Fall 2014 Effective Fall 2017
GEO 206L  Physical Geography Laboratory
Fall of every year. Spring of every year. 1(0-2) 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.
Effective Fall 2014  Effective Fall 2017

GEO 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.
Effective Fall 2014  Effective Fall 2017

GEO 211  Environmental Policy and Practice
Fall of every year. 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.
Effective Fall 2013  Effective Fall 2017

GEO 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.
Effective Fall 2015  Effective Fall 2017

GEO 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
Effective Fall 2013  Effective Fall 2017

GEO 221  Introduction to Geographic Information
Fall of every year. Spring of every year. 3(3-0)
Principles and methods of spatial data collection, handling, analysis, and display. Introduction to remote sensing, geographic information systems, and cartography.
Effective Fall 2014  Effective Fall 2017

GEO 221L  Introduction to Geographic Information Laboratory
Fall of every year. Spring of every year. 1(0-2) 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.
Effective Fall 2014  Effective Fall 2017

GEO 235  Geography of Environment and Health
Spring of every year. 3(3-0)
Geographic patterns of global health and environmental inequalities; the built, physical and social environment; urban design; infectious and chronic diseases.
Effective Spring 2016  Effective Fall 2017

GEO 259  Geography of Recreation and Tourism
Fall of every year. 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.
Effective Fall 2014  Effective Fall 2017
GEO 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.  
**Effective Fall 2016 Effective Fall 2017**

GEO 306  Environmental Geomorphology  
Fall of even years. 3(3-0) Interdepartmental with Geological Sciences. 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.  
**Effective Fall 2014 Effective Fall 2017**

GEO 324  Remote Sensing of the Environment  
Fall of every year. 4(2-4) P: GEO 221  
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.  
SA: GEO 224  
**Effective Fall 2014 Effective Fall 2017**

GEO 325  Geographic Information Systems  
Fall of every year. 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.  
**Effective Fall 2014 Effective Fall 2017**

GEO 326  Cartographic Design and Production  
Fall of every year. 4(2-4) P: GEO 221 and GEO 221L  
Map design, layout, and usability. Typography and color theory. Techniques of map production, print and digital display.  
SA: GEO 423  
**Effective Spring 2016 Effective Fall 2017**

GEO 330  Geography of the United States and Canada  
Spring of every year. Summer of every year. 3(3-0)  
Regional analysis. Evolution and status of environmental, demographic, economic, and sociocultural patterns and processes.  
SA: GEO 230  
**Effective Fall 2014 Effective Fall 2017**

GEO 333  Geography of Michigan and the Great Lakes Region  
Spring of every year. 3(3-0)  
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.  
SA: GEO 233  
**Effective Fall 2014 Effective Fall 2017**

GEO 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.  
**Effective Fall 2014 Effective Fall 2017**
GEO 336  Geography of Europe  
Fall of every year. 3(3-0)  
Major regions and nations, including their physical resources, peoples, political structures, and economies.  
Effective Fall 2014 Effective Fall 2017

GEO 337  Geography of Asia-Pacific  
Spring of odd years. 3(3-0)  
Spatial patterns and processes of economic, urban, human and physical geography in eastern Asia, including China, Korea, Japan, Australia, New Zealand, the Indian subcontinent and other Asian countries. Contemporary regional development.  
Effective Fall 2014 Effective Fall 2017

GEO 338  Geography of Africa  
Fall of every year. 3(3-0)  
Physical and human geography of Africa. Current development issues, especially people-environment interaction in urban and rural areas. Topics include drought, agricultural patterns, hunger, rural development, migration, and urbanization.  
Effective Fall 2014 Effective Fall 2017

GEO 339  Geography of the Middle East and North Africa  
Spring of odd years. 3(3-0)  
Effective Fall 2015 Effective Fall 2017

GEO 340  Geography of Eurasia  
Spring of even years. 3(3-0)  
Physical, ecological, and human geographies of the lands and peoples of the former Russian and Soviet empires and of neighboring regions.  
Effective Fall 2016 Effective Fall 2017

GEO 363  Introduction to Quantitative Methods for Geographers  
Fall of every year. 3(3-0) RB: Completion of University mathematics requirement.  
Quantitative techniques in the analysis and classification of spatial data.  
SA: GEO 463  
Effective Fall 2014 Effective Fall 2017

GEO 402  Agricultural Climatology  
Fall of every year. 3(3-0) Interdepartmental with Biosystems Engineering. P: MTH 110 or MTH 116  
R: Not open to freshmen or sophomores.  
Relationships between climate and agriculture in resource assessment, water budget analysis, meteorological hazards, pests, crop-yield modeling, and impacts of global climate change.  
Effective Fall 2014 Effective Fall 2017

GEO 403  Dynamic Meteorology (W)  
Spring of every year. 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.  
Effective Fall 2014 Effective Fall 2017

GEO 405  Weather Analysis and Forecasting  
Spring of every year. 4(3-2) P: GEO 203 and (MTH 110 or MTH 116)  
Dynamic and thermodynamic principles of atmospheric science applied to the development and evolution of extratropical cyclones. Laboratory sessions include analysis of current observations and satellite imagery.  
Effective Fall 2014 Effective Fall 2017
GEO 407  Regional Geomorphology of the United States  
Spring of odd years. 3(3-0) RB: GEO 306 or GLG 201 or GLG 412 or ISP 203A or ISP 203B  
Geomorphic characteristics of physiographic regions of the United States.  
**Effective Fall 2014 Effective Fall 2017**

GEO 408  Soil Geomorphology Field Study  
Fall of odd years. 4(2-4) P: CSS 210 or GEO 306 or GLG 201 or GLG 412 or GEO 206  
R: Not open to freshmen or sophomores.  
**Effective Fall 2014 Effective Fall 2017**

GEO 409  Global Climate Change and Variability  
Fall of odd years. 3(3-0) P: GEO 203 or GEO 206  
Analysis of climate change and variability at various time and space scales. Climate systems, paleoclimatology, global warming, climate models, and climate impact assessment.  
**Effective Fall 2014 Effective Fall 2017**

GEO 410  Geography of Food and Agriculture  
Fall of even years. 3(3-0) RB: GEO 113 or GEO 151 or GEO 204 or GEO 206  
R: Not open to freshmen or sophomores.  
Spatial patterns of contemporary global agriculture and food systems. Human-environment geography of select agricultural practices and food systems. Effects of agricultural practices on natural and human resources.  
**Effective Fall 2014 Effective Fall 2017**

GEO 411  Stream Systems and Landforms  
Spring of even years. 3(3-0) RB: GEO 206 or GEO 306 or GLG 201 or GLG 431  
R: Not open to freshmen or sophomores.  
**Effective Fall 2014 Effective Fall 2017**

GEO 413  Urban Geography  
Spring of every year. 3(3-0) Interdepartmental with Urban Planning. R: Not open to freshmen or sophomores.  
Theories and models of urban spatial form. Underlying structures and processes. Socio-spatial dimensions of modern urbanism. Differentiation and locational conflict in residential, commercial, and industrial space.  
**Effective Fall 2014 Effective Fall 2017**

GEO 414  Geography of Transportation  
Fall of odd years. 3(3-0) Interdepartmental with Urban Planning. P: GEO 113  
R: Not open to freshmen.  
Spatial principles of transportation. Theories of interaction, network structures, and location-allocation models. Role of transport and transport planning.  
**Effective Fall 2014 Effective Fall 2017**

GEO 415  Location Theory and Land Use Analysis  
Fall of even years. 3(3-0) Interdepartmental with Urban Planning. P: GEO 113 or UP 201 RB: EC 201 or EC 202  
R: Not open to freshmen or sophomores.  
Classical and neoclassical, static and dynamic models of industrial location and spatial organization. Land rent theory. Central place theory. Multi-locational organization. Growth transmission.  
**Effective Fall 2016 Effective Fall 2017**
GEO 418  The Ghetto
Fall of odd years. 3(3-0) Interdepartmental with Urban Planning. R: Not open to freshmen or sophomores.
Analysis of the ghetto including its spatial organization and structure. Distribution of racial and ethnic populations. Emphasis on U.S. cities.
Effective Fall 2014 Effective Fall 2017

GEO 424  Advanced Remote Sensing
Spring of every year. 4(3-2) P: GEO 324
Interaction of solar radiation with the atmosphere, lithosphere, hydrosphere, and biosphere. Introductory digital image processing. Earth-resources satellite sensors, data products, and applications. Radar and thermal remote sensing.
Effective Fall 2014 Effective Fall 2017

GEO 425  Problems in Geographic Information Science (W)
Spring of every year. 3(2-2) Interdepartmental with Urban Planning. P: (GEO 325 or GEO 802) and completion of Tier I writing requirement
Advanced theoretical and technical issues in geographic information science utilizing a problems oriented approach. Development and implementation of geographic information science solutions and formal documentation of work.
Effective Fall 2014 Effective Fall 2017

GEO 426  Thematic Cartography
Spring of every year. 4(3-2) P: GEO 221 and GEO 221L and GEO 326 or approval of department
Principles, theories, decision making, and techniques in thematic map production. Graphic and Geographic Information Systems applications. Print and digital display.
Effective Spring 2016 Effective Fall 2017

GEO 428  Digital Terrain Analysis
Fall of even years. 4(3-2) P: GEO 325
Theoretical and technical issues of collection, management, analysis, and display of terrain data. Application of photogrammetry, geographic information systems, and cartography.
Effective Fall 2014 Effective Fall 2017

GEO 429  Geoprocessing
Spring of every year. 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.
Effective Spring 2015 Effective Fall 2017

GEO 432  Environmental Ethics (W)
Fall of every year. 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.
Effective Fall 2014 Effective Fall 2017

GEO 435  Geography of Health and Disease
Fall of every year. 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.
Effective Fall 2014 Effective Fall 2017

GEO 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.
Effective Fall 2014 Effective Fall 2017
GEO 440  Critical Geopolitics  
Spring of even years. 3(3-0) R: Not open to freshmen.  
Political geographies of origins and conduct of nation-states. Identity-place dynamics.  
Effective Fall 2014  Effective Fall 2017

GEO 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.  
Effective Fall 2014  Effective Fall 2017

GEO 453  Metropolitan Environments: Urban Forms and Land Uses  
Spring of every year. 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.  
Effective Fall 2014  Effective Fall 2017

GEO 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.  
Effective Fall 2014  Effective Fall 2017

GEO 480  Senior Seminar (W)  
Fall of every year. 3(3-0) P: Completion of Tier I Writing Requirement R: Open to seniors in the Geography Major or in the Geography Minor.  
History, philosophy, and methodology of the geographic discipline as it has evolved within academic and social contexts.  
Effective Fall 2014  Effective Fall 2017

GEO 490  Independent Study  
Fall of every year. Spring of every year. Summer of every year. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Approval of department.  
Supervised individual study in an area supplementary to regular courses.  
Effective Fall 2014  Effective Fall 2017

GEO 492  Geographic Research Problems  
Fall of every year. Spring of every year. Summer of every year. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Not open to freshmen or sophomores. Approval of department.  
Supervised original research on selected aspects of geography.  
Effective Fall 2014  Effective Fall 2017

GEO 495  Field Study  
Fall of every year. Spring of every year. Summer of every year. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.  
Supervised field study in geography.  
Effective Fall 2014  Effective Fall 2017

GEO 498  Internship in Geography  
Fall of every year. Spring of every year. Summer of every year. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.  
Individual experience in geography in an approved organization. Request the use of the Pass-No Grade (P-N) system.  
Effective Fall 2014  Effective Fall 2017
GEO 802  Geospatial Technology  
Fall of every year. 3(3-0) RB: Familiarity with coordinate systems.  
Comprehensive introduction to geotechnologies. Concepts and theories of remote sensing to include image interpretation and processing, Global Positioning Systems, spatial data structures, and geographic information systems.  
Effective Fall 2007 Effective Fall 2017  

GEO 813  Seminar in Urban and Economic Geography  
Spring of every year. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. RB: Two of GEO 413, GEO 414, GEO 415, GEO 416, GEO 417, GEO 418.  
Review of research on selected topics in urban and economic geography.  
Effective Summer 1995 Effective Fall 2017  

GEO 816  The World System of Cities  
Fall of every year. 3(3-0) Interdepartmental with Global Urban Studies Program. R: Open to graduate students.  
Modern global economic restructuring. Social, economic, and political impacts on world system of cities.  
Effective Fall 2016 Effective Fall 2017  

GEO 817  China and Globalization  
Fall of even years. 3(3-0) Interdepartmental with Global Urban Studies Program. RB: GEO 113 or GEO 204 or GEO 337 or GEO 413 R: Open to graduate students.  
Theoretical debates and empirical discussions on current social, economic, environmental, and spatial challenges facing contemporary urban China in an era of globalization. Comparative and thematic approach.  
Effective Fall 2010 Effective Fall 2017  

GEO 820  GIS and Management  
Fall of odd years. 3(3-0) P: GEO 425 or approval of department RB: Students should be familiar with GIS Technology  
Exploration of the professional field of geographic information science (GIS) career management opportunities, organizational structures, and applications within the public, commercial and academic sectors.  
Effective Fall 2014 Effective Fall 2017  

GEO 821  GIS Practicum  
Spring of even years. 3(3-0) P: (GEO 425 or approval of department) and (GEO 820 or approval of department) RB: Students should be knowledgeable in the application of GIS technology  
Instructor-guided geographic information science (GIS) practicum connecting University faculty and students with local communities. Students are assigned a community GIS project and work collaboratively to develop a proposal, manage the project, and present the output.  
Effective Fall 2014 Effective Fall 2017  

GEO 826  Geocomputation  
Fall of every year. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.  
Research on topics in cartography, geographic information systems, and remote sensing.  
Effective Spring 2013 Effective Fall 2017  

GEO 827  Digital Image Processing and Analysis  
Fall of every year. 4(2-4) P: GEO 424  
Use of computer to classify and enhance satellite images and to extract information from them. Combining images from different sources. Accuracy assessment of resulting information.  
Effective Spring 2003 Effective Fall 2017
GEO 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.  
**Effective Fall 2016 Effective Fall 2017**

GEO 865  Advanced Quantitative Methods in Geography  
Spring of every year. 4(4-0) RB: GEO 363  
**Effective Spring 2009 Effective Fall 2017**

GEO 866  Spatial Data Analysis  
Fall of every year. 4(3-2) Interdepartmental with Statistics and Probability. RB: (GEO 363 or STT 421 or STT 430) or equivalent quantitative methods courses.  
Theory and techniques for statistical analysis of point patterns, spatially continuous data, and data in spatial zones.  
SA: GEO 466  
**Effective Spring 2009 Effective Fall 2017**

GEO 868  Spatial Regression and Modeling  
Fall of every year. 3(3-0) P: GEO 865 or approval of department RB: Linear regression and data analysis at graduate level  
SA: GEO 867  
**Effective Fall 2007 Effective Fall 2017**

GEO 869  Geosimulation  
Spring of every year. 3(3-0) Interdepartmental with Environmental Science and Policy. 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.  
**Effective Spring 2011 Effective Fall 2017**

GEO 871  Seminar in Physical Geography  
Fall of every year. 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.  
**Effective Summer 2012 Effective Fall 2017**

GEO 872  Seminar in Human Geography  
Fall of every year. 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.  
**Effective Summer 2012 Effective Fall 2017**

GEO 873  Seminar in Human-Environment Geography  
Spring of every year. 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.  
**Effective Summer 2012 Effective Fall 2017**
GEO 874  Seminar in Geographic Information Science
Spring of every year. 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.
  Effective Summer 2012 Effective Fall 2017

GEO 886  Research Design in Geography
Spring of every year. 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.
  Effective Spring 2011 Effective Fall 2017

GEO 890  Advanced Readings in Geography
Fall of every year. Spring of every year. Summer of every year. 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.
  Effective Fall 1993 Effective Fall 2017

GEO 892  Advanced Research in Geography
Fall of every year. Spring of every year. Summer of every year. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
  Advanced independent research.
  Effective Fall 1993 Effective Fall 2017

GEO 899  Master's Thesis Research
Fall of every year. Spring of every year. Summer of every year. 1 to 12 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to graduate students in the Geography major. R: Open to graduate students.
  Master's thesis research.
  Request the use of the Pass-No Grade (P-N) system.
  Request the use of ET-Extension to postpone grading.
  The work for the course must be completed and the final grade reported within 6 semesters after the end of the semester of enrollment.
  Effective Spring 2003 Effective Fall 2017

GEO 986  Theories and Philosophies in Geography
Spring of odd years. 3(3-0) R: Open to doctoral students in the Geography major.
  Historical development of the discipline within social and intellectual contexts.
  Philosophical approaches behind geographic research and theory.
  Effective Fall 2011 Effective Fall 2017

GEO 999  Doctoral Dissertation Research
Fall of every year. Spring of every year. Summer of every year. 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 Department of Geography.
  Doctoral dissertation research.
  Request the use of the Pass-No Grade (P-N) system.
  Effective Fall 2014 Effective Fall 2017

HST 220  History of Food and Alcohol
Spring of every year. 3(3-0) Interdepartmental with Human Nutrition and Foods.
  NEW How food and alcohol have shaped world history. Relationship to politics, nationalism, religion, economics and culture. Consumption, trade, migration, slavery, globalization, environmental impacts.
  Effective Spring 2017
HST 495  History Harvest
Fall of every year. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. RB: HST 251 or AL 285 R: Not open to freshmen.
NEW Location of important aspects of history throughout the local community and digitization to preserve them for posterity. Family heirlooms, lived experiences of everyday people, stories passed down through generations.
Effective Spring 2017

HDFS 270  Introduction to Human Development and Family Studies
Fall of every year. Spring of every year. Summer of every year. 4(3-2) R: Open to students in the Department of Human Development and Family Studies.
Introduction of ecological perspective for Human Service delivery. Professional orientation, ethics and factors influencing the field. Participation in service learning required.
SA: FCE 270
Effective Summer 2014 Effective Summer 2017

HDFS 322  Infant Development and Program Planning
Fall of every year. Spring of every year. 3(3-0) P: HDFS 211 RB: HDFS 320
Markers of typical and atypical development in infancy. Indicators of quality childcare. Early intervention and support programs. Issues in curriculum and environments of childcare.
SA: FCE 322
Effective Summer 2014 Effective Summer 2017

HDFS 405  Work and Family
Spring of every year. 3(3-0) R: Open to juniors or seniors or graduate students.
Historical perspectives on work and family. Effects of work on family members across the life cycle, and employer and public policy response.
SA: FCE 405
DELETE COURSE
Effective Summer 2017

HDFS 413  Adult Development and the Family
Fall of even years. 4(3-3) R: Open to juniors or seniors or graduate students.
Social, psychological, and biological development within the family in middle and later years. Field study required.
SA: FCE 413
DELETE COURSE
Effective Summer 2017

HDFS 454  Family Resource Management
Fall of every year. Spring of every year. 3(3-0) RB: HDFS 238 R: Open to juniors or seniors or graduate students in the Department of Human Development and Family Studies.
Resource management strategies of families during the life cycle, including time, money, material assets, energy, social connections, and space.
SA: FCE 454
Effective Summer 2015 Effective Summer 2017

HRLR 212  Career Management
Fall of every year. Spring of every year. Summer of every year. 3(3-0) R: Open to undergraduate students in the College of Social Science or approval of school.
Career development. Career self-assessment, occupational opportunities, changing global world of work, social networking, written communication, job interviews, the first job, career planning and decision making.
Effective Summer 2015 Effective Summer 2017
SW 310  Human Behavior and Social Environment
Fall of every year. 3(3-0) P: (SOC 100 and PSY 101 and SW 200) and (HNF 150 or ZOL 141 or
PSY 200 or PSL 250) and (PSY 200 or PSY 235 or PSY 236 or PSY 244 or PSY 270 or PSY 280
or PSY 371) P: (SOC 100 and PSY 101 and SW 200) and (HNF 150 or PSY 209 or PSL 250) and
(PSY 200 or PSY 235 or PSY 236 or PSY 244 or PSY 270 or PSY 280 or PSY 371) R: Open to
juniors or seniors in the School of Social Work or approval of school.
General systems and ecological theories within the context of lifespan development as
applied to social work.
Effective Fall 2012  Effective Fall 2016