

REQUEST:

The Department of Geology and Geography proposes to the Council on Academic Affairs that the course prefixes of ESC, GEG and GEL be replaced by a single department prefix of GEO to be used for all courses in the Department of Geology and Geography. **The effective date for this change is requested as Fall Semester, 2016.**

RATIONALE:

A single prefix will alleviate several issues related to the current use of the ESC, GEG and GEL prefixes. First, it will eliminate confusion in relation to cross-listed courses and enhance the student registration process. For example, despite an explanation in the catalog and course listing, many students are unaware that ESC & GEL 1300G (Introduction to Earth Sciences) are sections of the exact same class meeting in the same classroom. Students often do not realize that departmental courses are listed under Earth Science, Geography and Geology in the online class schedule. The proposed GEO prefix will also make data collection more straightforward, add clarity to advising, and save administrative time. A single prefix highlights that the Department of Geology and Geography, while interdisciplinary, is an integrated department.

One of our peer institutions, Illinois State University, uses a single prefix for their joint Geography & Geology department and recently turned down a proposal to adopt an additional departmental prefix citing the benefits of using a single prefix.

Executive Action Request to CAA and CGS

Requested change:

Rationale for change:

Effective Date:

Current	Proposed Catalog Language Use the strikethrough feature in Word to identify information to be deleted from the descriptions and use a colored font to show items to be added.
ESC 4900 - Earth Science Field Experience for Teachers. (2-6-5) Su. Introduction to and field investigations of earth materials and resources, geological and geomorphical processes, and their historical relationships. Prerequisites & Notes: Teaching license or permission of the instructor. Credits: 5	ESC GEO 4900 - Earth Science Field Experience for Teachers. (2-6-5) Su. Introduction to and field investigations of earth materials and resources, geological and geomorphical processes, and their historical relationships. Prerequisites & Notes: Teaching license or permission of the instructor. Credits: 5
ESC 4950 - Earth Science Field Experience Research for Teachers. (Arr.-Arr.-1-3) Su or F. Research on specific topic or topics developed while enrolled in ESC 4900. Prerequisites & Notes: Prerequisite or corequisite: ESC 4900. Credits: 1 to 3	ESC GEO 4950 - Earth Science Field Experience Research for Teachers. (Arr.-Arr.-1-3) Su or F. Research on specific topic or topics developed while enrolled in ESC GEO 4900 . Prerequisites & Notes: Prerequisite or corequisite: ESC GEO 4900 . Credits: 1 to 3
GEG 4910 - GIS Programming. (3-2-4) On Demand. An introduction to programming techniques used in spatial data management and analysis. This course is intended for students with some experience in geographic information systems (GIS) who want to learn how to extend GIS to perform custom analyses, to automate common GIS tasks, or just to learn how spatial data is structured and managed "under the hood". Topics will include visual models and diagrams of GIS workflows, automation, web mapping, spatial data structures and spatial algorithms. No prior programming experience is required. Prerequisites & Notes: "C" or better in GEG 3810/5810 or equivalent, or permission of instructor. Credits: 4	GEG GEO 4910 - GIS Programming. (3-2-4) On Demand. An introduction to programming techniques used in spatial data management and analysis. This course is intended for students with some experience in geographic information systems (GIS) who want to learn how to extend GIS to perform custom analyses, to automate common GIS tasks, or just to learn how spatial data is structured and managed "under the hood". Topics will include visual models and diagrams of GIS workflows, automation, web mapping, spatial data structures and spatial algorithms. No prior programming experience is required. Prerequisites & Notes: "C" or better in GEG GEO 3810/5810 or equivalent, or permission of instructor. Credits: 4
GEL 4800 - Summer Field Geology in the Black Hills, S.D. (Arr.-Arr.-6) Su. Individual and group problem-solving by application of field methods	GEL GEO 4800 - Summer Field Geology in the Black Hills, S.D. (Arr.-Arr.-6) Su. Individual and group problem-solving by application of field methods and

<p>and techniques, including plane table and total station mapping and air photo interpretation. Six weeks of field study required. Contact Director of Summer Field Geology concerning fees and registration. This course is complementary to nearly all of the department's geology courses. This requirement must be met in the EIU Geology Field Station in the Black Hills of South Dakota. In cases of students' health limitations, with the approval of the department chair, an alternative program will be provided. Prerequisites & Notes: GEL 1430, 3405, and 3430. GEL 3510, 3560 and 4490 recommended. In special cases, permission of chairperson and field camp director is required. Graduate students will complete an additional field research project that has been approved by the field camp director. This project must be successfully completed by the end of the course. Credits: 6</p>	<p>techniques, including plane table and total station mapping and air photo interpretation. Six weeks of field study required. Contact Director of Summer Field Geology concerning fees and registration. This course is complementary to nearly all of the department's geology courses. This requirement must be met in the EIU Geology Field Station in the Black Hills of South Dakota. In cases of students' health limitations, with the approval of the department chair, an alternative program will be provided. Prerequisites & Notes: GEL GEO 1430, 3405, and 3430. GEL GEO 3510, 3560 and 4490 recommended. In special cases, permission of chairperson and field camp director is required. Graduate students will complete an additional field research project that has been approved by the field camp director. This project must be successfully completed by the end of the course. Credits: 6</p>
<p>GEL 4850 - Environmental Geology. (3-0-3) Study of natural and engineered interactions of contaminants and the geologic environment. Topics include types and analysis of common contaminants, surface and groundwater quality, risk analysis, U.S. environmental law, industrial and municipal waste disposal, and remediation techniques. Prerequisites & Notes: ESC/GEL 1300G or ESC/GEL 1320G or ESC/GEL 1390G; CHM 1410; MAT 1330 (or MAT 1400), or permission of the instructor. Credits: 3</p>	<p>GEL GEO 4850 - Environmental Geology. (3-0-3) Study of natural and engineered interactions of contaminants and the geologic environment. Topics include types and analysis of common contaminants, surface and groundwater quality, risk analysis, U.S. environmental law, industrial and municipal waste disposal, and remediation techniques. Prerequisites & Notes: ESC/GEL GEO 1300G or ESC/GEL GEO 1320G or ESC/GEL GEO 1390G; CHM 1410; MAT 1330 (or MAT 1400), or permission of the instructor. Credits: 3</p>
<p>GEL 4892 - Introduction to Paleobotany. (3-2-4) On Demand. Introduction to the origin and theories of evolution, diversification, radiation, and paleogeography of plants through time, with special reference to vascular plants. Field work. Prerequisites & Notes: BIO 1200G or permission of instructor. Credit not granted for both GEL 4892 and BIO 4892. Credits: 4</p>	<p>GEL GEO 4892 - Introduction to Paleobotany. (3-2-4) On Demand. Introduction to the origin and theories of evolution, diversification, radiation, and paleogeography of plants through time, with special reference to vascular plants. Field work. Prerequisites & Notes: BIO 1200G or permission of instructor. Credit not granted for both GEL GEO 4892 and BIO 4892. Credits: 4</p>

Executive Action Request to CGS

Requested change:

Rationale for change:

Effective Date:

Current	Proposed Catalog Language Use the strikethrough feature in Word to identify information to be deleted from the descriptions and use a colored font to show items to be added.
ESC 5031 - The Earth for Natural Science Teachers. (2-1-3) Examination of earth materials, nature and characteristics of minerals and rocks, soils, and agents that shape the face of the earth--rivers, glaciers, wind, waves and currents, subsurface waters; earth's internal structure and composition, earthquakes and volcanic activity and continental drift and plate tectonics. Field and laboratory work included. Prerequisites & Notes: Enrollment in the M.S. in Natural Sciences degree program or consent of instructor. Credits: 3	ESC GEO 5031 - The Earth for Natural Science Teachers. (2-1-3) Examination of earth materials, nature and characteristics of minerals and rocks, soils, and agents that shape the face of the earth--rivers, glaciers, wind, waves and currents, subsurface waters; earth's internal structure and composition, earthquakes and volcanic activity and continental drift and plate tectonics. Field and laboratory work included. Prerequisites & Notes: Enrollment in the M.S. in Natural Sciences degree program or consent of instructor. Credits: 3
ESC 5032 - Evolution of the Earth for Natural Science Teachers. (2-1-3) A geologic study of life forms and land forms. Prerequisites & Notes: Enrollment in the M.S. in Natural Sciences degree program or consent of instructor. Credits: 3	ESC GEO 5032 - Evolution of the Earth for Natural Science Teachers. (2-1-3) A geologic study of life forms and land forms. Prerequisites & Notes: Enrollment in the M.S. in Natural Sciences degree program or consent of instructor. Credits: 3
ESC 5033 - The Hydrosphere for Natural Science Teachers. (2-1-3) A study of aspects of the water cycle on planet Earth. Special emphasis will be given to the importance of water to the distribution of plant and animal life, its effect on landforms and its importance as a resource for human populations. Prerequisites & Notes: Enrollment in the M.S. in Natural Sciences degree program or consent of instructor. Credits: 3	ESC GEO 5033 - The Hydrosphere for Natural Science Teachers. (2-1-3) A study of aspects of the water cycle on planet Earth. Special emphasis will be given to the importance of water to the distribution of plant and animal life, its effect on landforms and its importance as a resource for human populations. Prerequisites & Notes: Enrollment in the M.S. in Natural Sciences degree program or consent of instructor. Credits: 3
ESC 5034 - Atmosphere for Natural Science Teachers. (2-1-3) A systematic survey of the dynamic nature of earth's atmosphere.	ESC GEO 5034 - Atmosphere for Natural Science Teachers. (2-1-3) A systematic survey of the dynamic nature of earth's atmosphere. Provides a background

Provides a background of global weather and climatic patterns. Topics include earth-sun relations, temperature, precipitation, air pressure, air masses, jet streams, severe weather such as thunderstorms, tornadoes, and hurricanes, climatic classification, and climate change. Contemporary issues of atmospheric forecasting methodology are addressed. Prerequisites & Notes: Enrollment in the M.S. in Natural Sciences degree program or consent of	of global weather and climatic patterns. Topics include earth-sun relations, temperature, precipitation, air pressure, air masses, jet streams, severe weather such as thunderstorms, tornadoes, and hurricanes, climatic classification, and climate change. Contemporary issues of atmospheric forecasting methodology are addressed. Prerequisites & Notes: Enrollment in the M.S. in Natural Sciences degree program or consent of
instructor. Credits: 3	instructor. Credits: 3
ESC 5035 - Field Methods in Earth Sciences for Natural Science Teachers. (Arr.-Arr.-3) Field investigation of selected physiographic provinces, earth materials, earth resources, geological and geomorphological processes, their origins, environmental significance and importance to human systems. Credit not granted for SCI/ESC 5035 and ESC 4900 or ESC 4950. Prerequisites & Notes: Enrollment in the M.S. in Natural Sciences degree program or consent of instructor. Credits: 3	ESC GEO 5035 - Field Methods in Earth Sciences for Natural Science Teachers. (Arr.-Arr.-3) Field investigation of selected physiographic provinces, earth materials, earth resources, geological and geomorphological processes, their origins, environmental significance and importance to human systems. Credit not granted for SCI/ESC GEO 5035 and ESC GEO 4900 or ESC GEO 4950 . Prerequisites & Notes: Enrollment in the M.S. in Natural Sciences degree program or consent of instructor. Credits: 3
ESC 5036 - Laboratory Methods in Earth Sciences for Natural Science Teachers. (1-4-3) Use of laboratory instrumentation to measure and analyze earth materials. Special emphasis will be placed on the value of laboratory methods in identifying earth materials and solving problems in the earth sciences. Prerequisites & Notes: SCI/ESC 5032 or SCI/ESC 5035, enrollment in the M.S. in Natural Sciences degree program or consent of instructor. Credits: 3	ESC GEO 5036 - Laboratory Methods in Earth Sciences for Natural Science Teachers. (1-4-3) Use of laboratory instrumentation to measure and analyze earth materials. Special emphasis will be placed on the value of laboratory methods in identifying earth materials and solving problems in the earth sciences. Prerequisites & Notes: SCI/ESC GEO 5032 or SCI/ESC GEO 5035 , enrollment in the M.S. in Natural Sciences degree program or consent of instructor. Credits: 3
ESC 5037 - Special Topics in Earth Sciences for Natural Science Teachers. (Arr.-Arr.-1 to 3) Intensive investigation of relevant topics of student/faculty interest. Prerequisites & Notes: Enrollment in the M.S. in Natural Sciences degree program and consent of instructor. Credits: 1 to 3	ESC GEO 5037 - Special Topics in Earth Sciences for Natural Science Teachers. (Arr.-Arr.-1 to 3) Intensive investigation of relevant topics of student/faculty interest. Prerequisites & Notes: Enrollment in the M.S. in Natural Sciences degree program and consent of instructor. Credits: 1 to 3
ESC 5500 - Advanced Earth Science Field Experience for Teachers. (Arr.-Arr.-1 to 6) Field	ESC GEO 5500 - Advanced Earth Science Field Experience for Teachers. (Arr.-Arr.-1 to 6) Field

excursion to selected physiographic regions in the U.S. Regional field studies in geomorphology, historical geology, structure, hydrology, and climatology. Land use and modification by humans will also be	excursion to selected physiographic regions in the U.S. Regional field studies in geomorphology, historical geology, structure, hydrology, and climatology. Land use and modification by humans will also be
addressed. Prerequisites & Notes: Successful completion of ESC 4900 or equivalent experience. Credits: 1 to 6	addressed. Prerequisites & Notes: Successful completion of ESC GEO 4900 or equivalent experience. Credits: 1 to 6
ESC 5830 - GIS: Building Geodatabases. (2-2-3) This course covers the fundamental concepts of building geographic databases and focuses on the storage, management, and quality control of GIS data. Students will learn how to create Esri Geodatabases, how to migrate existing data to a geodatabase, and how to edit data stored in a geodatabase.	ESC GEO 5830 - GIS: Building Geodatabases. (2-2-3) This course covers the fundamental concepts of building geographic databases and focuses on the storage, management, and quality control of GIS data. Students will learn how to create Esri Geodatabases, how to migrate existing data to a geodatabase, and how to edit data stored in a geodatabase.
ESC 5850 - Mapping the Modern Way. (2-2-3) Introduction to the Global Positioning System, with an emphasis on GPS theory, GPS field applications, GPS data manipulation, and GPS data presentation using computer. Prerequisites & Notes: None. Credits: 3	ESC GEO 5850 - Mapping the Modern Way. (2-2-3) Introduction to the Global Positioning System, with an emphasis on GPS theory, GPS field applications, GPS data manipulation, and GPS data presentation using computer. Prerequisites & Notes: None. Credits: 3
ESC 55901 - Special Topics I. (Arr.-Arr.- 1 to 6) Readings, discussion, reports, on-campus and/or off-campus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with GEG/GEL 5590. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6	ESC GEO 55901 - Special Topics in Earth Science I. (Arr.-Arr.- 1 to 6) Readings, discussion, reports, on-campus and/or off-campus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with GEG/GEL 5590. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6
ESC 55902 - Special Topics II. (Arr.-Arr.- 1 to 6) Readings, discussion, reports, on-campus and/or off-campus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with GEG/GEL 5590. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6	ESC GEO 55902 - Special Topics in Earth Science II. (Arr.-Arr.- 1 to 6) Readings, discussion, reports, on-campus and/or off-campus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with GEG/GEL 5590 Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6
ESC 55903 - Special Topics III. (Arr.-Arr.- 1 to 6) Readings, discussion, reports, on-campus	ESC GEO 55903 - Special Topics in Earth Science III. (Arr.-Arr.- 1 to 6) Readings, discussion, reports, on-

and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with GEG/GEL 5590. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6	campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with GEG/GEL 5590. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6
ESC 59901 - Independent Study I. (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in consultation with the faculty. Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with GEG/GEL 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6	ESC GEO 59901 - Independent Study in Earth Science I. (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in consultation with the faculty. Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with GEG/GEL 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6
ESC 59902 - Independent Study II. (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in consultation with the faculty. Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with GEG/GEL 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6	ESC GEO 59902 - Independent Study in Earth Science II. (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in consultation with the faculty. Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with GEG/GEL 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6
ESC 59903 - Independent Study III. (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in consultation with the faculty. Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with GEG/GEL 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6	ESC GEO 59903 - Independent Study in Earth Science III. (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in consultation with the faculty. Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with GEG/GEL 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6
GEG 59901 - Independent Study I. (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in	GEG GEO 59911 - Independent Study in Geography I. (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in

consultation with the faculty. Readings, discussion, reports, on-campus and/or off campus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEL 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6	consultation with the faculty. Readings, discussion, reports, on-campus and/or off campus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEL 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6
GEG 59902 - Independent Study II. (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in consultation with the faculty. Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEL 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6	GEG GEO 59912 - Independent Study in Geography II. (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in consultation with the faculty. Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEL 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6
GEG 59903 - Independent Study III. (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in consultation with the faculty. Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEL 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6	GEG GEO 59913 - Independent Study in Geography III. (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in consultation with the faculty. Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEL 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6
GEG 5810 - Geographic Information Systems I. (2-2-3) An advanced introduction to Geographic Information Systems (GIS) using ESRI ArcGIS to attain a level of proficiency to merge into the mainstream GIS community. Students will learn how to create, manage, edit, query, analyze and georeference spatial and attribute data and produce informative, functional cartographic output in a variety of formats. Supplemental to this course, students may optionally work towards and obtain the ESRI Introduction to ArcGIS I Certificate. Prerequisites & Notes: None. Credits: 3	GEG GEO 5810 - Geographic Information Systems I. (2-2-3) An advanced introduction to Geographic Information Systems (GIS) using ESRI ArcGIS to attain a level of proficiency to merge into the mainstream GIS community. Students will learn how to create, manage, edit, query, analyze and georeference spatial and attribute data and produce informative, functional cartographic output in a variety of formats. Supplemental to this course, students may optionally work towards and obtain the ESRI Introduction to ArcGIS I Certificate. Prerequisites & Notes: None. Credits: 3

<p>GEG 5820 - Remote Sensing I (2-2-3) An in-depth study of the physical principles and common applications of remote sensing. All steps in the process, including image acquisition, correction, enhancement, classification, and analysis, will be examined. A focus will be placed on directing these skills to research applications in the student's home discipline. Additional readings and discussion from the literature will be expected of graduate students. Laboratory exercises will feature a variety of applied examples drawn from biology, geography, geology, atmospheric sciences, and human impacts/planning. Prerequisites & Notes: None. Credits: 3</p>	<p>GEG GEO 5820 - Remote Sensing I (2-2-3) An in-depth study of the physical principles and common applications of remote sensing. All steps in the process, including image acquisition, correction, enhancement, classification, and analysis, will be examined. A focus will be placed on directing these skills to research applications in the student's home discipline. Additional readings and discussion from the literature will be expected of graduate students. Laboratory exercises will feature a variety of applied examples drawn from biology, geography, geology, atmospheric sciences, and human impacts/planning. Prerequisites & Notes: None. Credits: 3</p>
<p>GEG 5830 - GIS: Building Geodatabases. (2-2-3) This course covers the fundamental concepts of building geographic databases and focuses on the storage, management, and quality control of GIS data. Students will learn how to create Esri Geodatabases, how to migrate existing data to a geodatabase, and how to edit data stored in a geodatabase. Prerequisites & Notes: GEG 5810 or permission from the Instructor. Credits: 3</p>	<p>GEG GEO 5830 - GIS: Building Geodatabases. (2-2-3) This course covers the fundamental concepts of building geographic databases and focuses on the storage, management, and quality control of GIS data. Students will learn how to create Esri Geodatabases, how to migrate existing data to a geodatabase, and how to edit data stored in a geodatabase. Prerequisites & Notes: GEG GEO 5810 or permission from the Instructor. Credits: 3</p>
<p>GEG 5850 - Mapping the Modern Way. (2-2-3) Introduction to the Global Positioning System, with an emphasis on GPS theory, GPS field applications, GPS data manipulation, and GPS data presentation using computer. Prerequisites & Notes: None. Credits: 3</p>	<p>GEG GEO 5850 - Mapping the Modern Way. (2-2-3) Introduction to the Global Positioning System, with an emphasis on GPS theory, GPS field applications, GPS data manipulation, and GPS data presentation using computer. Prerequisites & Notes: None. Credits: 3</p>
<p>GEG 5860 - Geographic Information Systems II (2-2-3) The principle focus is learning to use advance features of the ESRI ArcGIS software to perform advance thematic mapping and spatial analysis, automation of spatial and attribute data, advanced editing, and advanced options for cartographic display. Supplemental to this course, students may work towards and obtain the ESRI Introduction to ArcGIS II Certificate. Prerequisites & Notes: None. Credits: 3</p>	<p>GEG GEO 5860 - Geographic Information Systems II (2-2-3) The principle focus is learning to use advance features of the ESRI ArcGIS software to perform advance thematic mapping and spatial analysis, automation of spatial and attribute data, advanced editing, and advanced options for cartographic display. Supplemental to this course, students may work towards and obtain the ESRI Introduction to ArcGIS II Certificate. Prerequisites & Notes: None. Credits: 3</p>
<p>GEG 5870 - Remote Sensing II. (2-2-3) An advanced curriculum in remote sensing theory</p>	<p>GEG GEO 5870 - Remote Sensing II. (2-2-3) An advanced curriculum in remote sensing theory and</p>

<p>and practice. Material will focus on the processes underlying cutting-edge image enhancement and classification techniques, with special consideration to selecting the appropriate options for a given application. Laboratory work will highlight applications of current techniques to geographical, geological and biological topics, with graduate students supplementing in-class exercises with parallel readings from the literature. Class project should illustrate original research in the student's area of interest. Prerequisites & Notes: GEG 5820. Credits: 3</p>	<p>practice. Material will focus on the processes underlying cutting-edge image enhancement and classification techniques, with special consideration to selecting the appropriate options for a given application. Laboratory work will highlight applications of current techniques to geographical, geological and biological topics, with graduate students supplementing in-class exercises with parallel readings from the literature. Class project should illustrate original research in the student's area of interest. Prerequisites & Notes: GEG GEO 5820. Credits: 3</p>
<p>GEG 5880 - GIS Modeling. (2-2-3) An introduction to spatial models used in geographical analysis. Covers models of geographic information including topological models, networks and cost distance functions, as well as an introduction to dynamic process models including cellular automata and agent based modeling. Applications to physical, social, political and environmental contexts are discussed. Prerequisites & Notes: (1) GEG 3885 or equivalent introductory statistics course at the undergraduate or graduate level (2) GEG 3810/5810 (GIS I) or equivalent. Credits: 3</p>	<p>GEG GEO 5880 - GIS Modeling. (2-2-3) An introduction to spatial models used in geographical analysis. Covers models of geographic information including topological models, networks and cost distance functions, as well as an introduction to dynamic process models including cellular automata and agent based modeling. Applications to physical, social, political and environmental contexts are discussed. Prerequisites & Notes: (1) GEG GEO 3885 or equivalent introductory statistics course at the undergraduate or graduate level (2) GEG GEO 3810/5810 (GIS I) or equivalent. Credits: 3</p>
<p>GEG 5980 - Geography Internship. (Arr.-Arr.-1-6) An individually planned work experience in a business or agency appropriate to the student's area of specialization. Internship must be approved by the department chair. Course may be repeated to a maximum of 6 semester hours. Prerequisites & Notes: Graduate level students. Credits: 6</p>	<p>GEG GEO 5980 - Geography Internship. (Arr.-Arr.-1-6) An individually planned work experience in a business or agency appropriate to the student's area of specialization. Internship must be approved by the department chair. Course may be repeated to a maximum of 6 semester hours. Prerequisites & Notes: Graduate level students. Credits: 6</p>
<p>GEG 55901 - Special Topics I. (Arr.-Arr.- 1 to 6) Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEL 5590. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6</p>	<p>GEG GEO 55911 - Special Topics in Geography I. (Arr.-Arr.- 1 to 6) Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEL 5590. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6</p>

<p>GEG 55902 - Special Topics II. (Arr.-Arr.- 1 to 6) Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEL 5590. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6</p>	<p>GEG GEO 55912 - Special Topics in Geography II. (Arr.-Arr.- 1 to 6) Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEL 5590. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6</p>
<p>GEG 55903 - Special Topics III. (Arr.-Arr.- 1 to 6) Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEL 5590. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6</p>	<p>GEG GEO 55913 - Special Topics in Geography III. (Arr.-Arr.- 1 to 6) Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEL 5590. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6</p>
<p>GEL 55901 - Special Topics I. (Arr.-Arr.- 1 to 6) Readings, discussion, reports, on-campus and/or off-campus fieldwork about specific areas or topics on earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEG 5590. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6</p>	<p>GEL GEO 55921 - Special Topics in Geology I. (Arr.-Arr.- 1 to 6) Readings, discussion, reports, on-campus and/or off-campus fieldwork about specific areas or topics on earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEG 5590. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6</p>
<p>GEL 55902 - Special Topics II (Arr.-Arr.- 1 to 6) Readings, discussion, reports, on-campus and/or off-campus fieldwork about specific areas or topics on earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEG 5590. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6</p>	<p>GEL GEO 55922 - Special Topics in Geology II (Arr.-Arr.- 1 to 6) Readings, discussion, reports, on-campus and/or off-campus fieldwork about specific areas or topics on earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEG 5590. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6</p>
<p>GEL 55903 - Special Topics III campus and/or offcampus fieldwork about specific areas or topics on earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEG 5590. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field.</p>	<p>GEL GEO 55923 - Special Topics in Geology III campus and/or offcampus fieldwork about specific areas or topics on earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEG 5590 Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6</p>

Credits: 1 to 6	
GEL 59901 - Independent Study I (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in consultation with the faculty. Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEG 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6	GEL GEO 59921 - Independent Study in Geology I (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in consultation with the faculty. Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEG 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6
GEL 59902 - Independent Study II (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in consultation with the faculty. Readings, discussion, reports, on-campus and/or off campus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEG 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6	GEL GEO 59922 - Independent Study in Geology II (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in consultation with the faculty. Readings, discussion, reports, on-campus and/or off campus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEG 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6
GEL 59903 - Independent Study III (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in consultation with the faculty. Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEG 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6	GEL GEO 59923 - Independent Study in Geology III (Arr.-Arr.- 1 to 6) Individual study under faculty supervision on a topic selected by the student, in consultation with the faculty. Readings, discussion, reports, on-campus and/or offcampus fieldwork on specific areas or topics in earth science, geography or geology. May be repeated once if a different topic is pursued. Cross-listed with ESC/GEG 5990. Prerequisites & Notes: Teaching certificate or bachelor's degree in an appropriate field. Credits: 1 to 6
GIS 5970 - Special Topics in Geographic Information Sciences. (3-0-3) Specific areas within the cohort disciplines will be given intensive study through lectures, readings, reports, papers, and discussion. Prerequisites & Notes: Admission into the master of science (PSM) in GIS program. Credits: 3	GIS 5970 - Special Topics in Geographic Information Sciences. (3-0-3) Specific areas within the cohort disciplines will be given intensive study through lectures, readings, reports, papers, and discussion. Prerequisites & Notes: Admission into the master of science (PSM) in GIS program. Credits: 3

May need Executive Action – Contact the colleges/departments

Requested change:

Rationale for change:

Effective Date:

Current	Proposed Catalog Language Use the strikethrough feature in Word to identify information to be deleted from the descriptions and use a colored font to show items to be added.
AET 2300G - Science and Technology: A Promise or a Threat? (3-0-3) The course will discuss the methods and development of scientific discoveries, their technological applications, and the impact of these activities on cultural, social, political, economic, and religious values. The influence of society on scientific research and technological development will be studied as well. Cross-listed with GEL 2300G. WI Credits: 3	AET 2300G - Science and Technology: A Promise or a Threat? (3-0-3) The course will discuss the methods and development of scientific discoveries, their technological applications, and the impact of these activities on cultural, social, political, economic, and religious values. The influence of society on scientific research and technological development will be studied as well. Cross-listed with GEL GEO 2300G. WI Credits: 3
BIO 4892 - Introduction to Paleobotany. (3-2-4) Introduction to the origin and theories of evolution, diversification, radiation, and paleogeography of plants through time, with special reference to vascular plants. Field work. Prerequisites & Notes: BIO 1200G or permission of instructor. Credit not granted for both GEL 4892 and BIO 4892.	BIO 4892 - Introduction to Paleobotany. (3-2-4) Introduction to the origin and theories of evolution, diversification, radiation, and paleogeography of plants through time, with special reference to vascular plants. Field work. Prerequisites & Notes: BIO 1200G or permission of instructor. Credit not granted for both GEL GEO 4892 and BIO 4892.
Credits: 4	Credits: 4
CSC 3100 - Global Threats and Problems. (3-0-3) S. An interdisciplinary study of current global problems. Four different social scientific approaches will be used to analyze complex questions regarding the survival of humanity given current threats to our environments, cultures, geopolitical affiliations, and socioeconomic structures. Topics may include famine, terrorism, information control, and disease, among others. Course may not be repeated. Cross-listed with ECN/GEG/PLS/SOC 3100. Credits: 3	CSC 3100 - Global Threats and Problems. (3-0-3) S. An interdisciplinary study of current global problems. Four different social scientific approaches will be used to analyze complex questions regarding the survival of humanity given current threats to our environments, cultures, geopolitical affiliations, and socioeconomic structures. Topics may include famine, terrorism, information control, and disease, among others. Course may not be repeated. Cross-listed with ECN/ GEL GEO/PLS/SOC 3100. Credits: 3
ECN 3100 - Global Threats and Problems. (3-0-3) S. An interdisciplinary study of current global	ECN 3100 - Global Threats and Problems. (3-0-3) S. An interdisciplinary study of current global problems.

problems. Four different social scientific approaches will be used to analyze complex questions regarding the survival of humanity given current threats to our environments, cultures, geopolitical affiliations, and socioeconomic structures. Topics may include famine, terrorism, information control, and disease, among others. Course may not be repeated. Cross-listed with CSC/GEG/PLS/SOC 3100. Credits: 3	Four different social scientific approaches will be used to analyze complex questions regarding the survival of humanity given current threats to our environments, cultures, geopolitical affiliations, and socioeconomic structures. Topics may include famine, terrorism, information control, and disease, among others. Course may not be repeated. Cross-listed with ECN/ GEG GEO /PLS/SOC 3100. Credits: 3
HIS 3500 - Climate, Environment and History Since the last Ice Age. (3-0-3) On Demand. Since the 1960s historians and geographers have become more concerned with the impact of climate on history and the global environment, with increasing emphasis on the interdisciplinary nature of this study. Students will engage in exploring the last 18,000 years with an integrated historic and geographic methodology, to gain a better understanding of how human societies have adapted to climate-driven changes. Cross-listed with GEG 3500. WI Credits: 3	HIS 3500 - Climate, Environment and History Since the last Ice Age. (3-0-3) On Demand. Since the 1960s historians and geographers have become more concerned with the impact of climate on history and the global environment, with increasing emphasis on the interdisciplinary nature of this study. Students will engage in exploring the last 18,000 years with an integrated historic and geographic methodology, to gain a better understanding of how human societies have adapted to climate-driven changes. Cross-listed with GEG GEO 3500. WI Credits: 3
HIS 3530 - Medieval Archaeology and Cultural Heritage in Europe. (4-0-4) S. An introduction to archaeology as a crossroads discipline, integrating a humanistic inquiry into history with the scientific methodologies which help evaluate the vestiges of past material culture. It is taught only abroad, and emphasizes the cultural heritage of the host country. May not be repeated. Cross-listed with ESC 3530. Credits: 4	HIS 3530 - Medieval Archaeology and Cultural Heritage in Europe. (4-0-4) S. An introduction to archaeology as a crossroads discipline, integrating a humanistic inquiry into history with the scientific methodologies which help evaluate the vestiges of past material culture. It is taught only abroad, and emphasizes the cultural heritage of the host country. May not be repeated. Cross-listed with ESC GEO 3530. Credits: 4
HIS 3990 - Medieval Archaeology, Honors. (Arr.-Arr.-1-4). An introduction to archaeology as a crossroads discipline, integrating a humanistic inquiry into history with the scientific methodologies which help evaluate the vestiges of past material culture. It will be taught only within the Semester Abroad program and emphasize the cultural heritage in the countries concerns. May be repeated. Cross-listed with ESC 3990. WI Credits: 1 to 4	HIS 3990 - Medieval Archaeology, Honors. (Arr.-Arr.-1-4). An introduction to archaeology as a crossroads discipline, integrating a humanistic inquiry into history with the scientific methodologies which help evaluate the vestiges of past material culture. It will be taught only within the Semester Abroad program and emphasize the cultural heritage in the countries concerns. May be repeated. Cross-listed with ESC GEO 3990. WI Credits: 1 to 4

<p>PLS 3100 - Global Threats and Problems. (3-0-3) S. An interdisciplinary study of current global problems. Four different social scientific approaches will be used to analyze complex questions regarding the survival of humanity given current threats to our environments, cultures, geopolitical affiliations, and socioeconomic structures. Topics may include famine, terrorism, information control, and disease, among others. Course may not be repeated. Cross-listed with CSC/ECN/GEG/SOC 3100. Credits: 3</p>	<p>PLS 3100 - Global Threats and Problems. (3-0-3) S. An interdisciplinary study of current global problems. Four different social scientific approaches will be used to analyze complex questions regarding the survival of humanity given current threats to our environments, cultures, geopolitical affiliations, and socioeconomic structures. Topics may include famine, terrorism, information control, and disease, among others. Course may not be repeated. Cross-listed with ECN/GEG GEO/PLS/SOC 3100. Credits: 3</p>
<p>SOC 3100 - Global Threats and Problems. (3-0-3) S. An interdisciplinary study of current global problems. Four different social scientific approaches will be used to analyze complex questions regarding the survival of humanity given current threats to our environments, cultures, geopolitical affiliations, and socioeconomic structures. Topics may include famine, terrorism, information control, and disease, among others. Course may not be repeated. Cross-listed with CSC/ECN/GEG/PLS 3100. Credits: 3</p>	<p>SOC 3100 - Global Threats and Problems. (3-0-3) S. An interdisciplinary study of current global problems. Four different social scientific approaches will be used to analyze complex questions regarding the survival of humanity given current threats to our environments, cultures, geopolitical affiliations, and socioeconomic structures. Topics may include famine, terrorism, information control, and disease, among others. Course may not be repeated. Cross-listed with ECN/GEG GEO/PLS/SOC 3100. Credits: 3</p>

Approved by Department: 10/2/15

Approved by College Curriculum Committee: 12/11/15