



GEOGRAPHY

Professor Stephen Matchak, Chairperson
Professors: Laurence E. Goss, Jr., William Hamilton
Associate Professors: John T. Hayes, Stephen S. Young
Assistant Professors: John Althausen, Lorri Krebs, Keith Ratner, Steven Silvern

Faculty Emeriti

Professors: Richard T. Anderson, Robert H. Arnold, Theodore S. Pikora

PROGRAMS OFFERED

Bachelor of Science – Cartography and Geographic Information Systems

Bachelor of Arts in Geography

Concentrations

Regional Studies Concentration

Bachelor of Science in Geography

Concentrations

Environment
Natural Resource Management
Regional Development and Planning
Travel and Tourism

Minors

Cartography
Geography
Natural Resource Management

Programs in Geography

The Department of Geography offerings combine a strong background in the academic tradition of Geography with applied fields such as, travel and tourism, regional development and planning, environmental assessment, tourism development, travel marketing, cartography, computer mapping, imagery interpretation, spatial database development and management, and geographic information systems.

A senior year placement seminar and an internship program provide an opportunity for career counseling and professional experience for academic credits. Department internship contacts with many businesses and agencies are valuable resources for student employment upon graduation. In addition, a number of students continue their education in graduate schools in a number of universities across the nation.

The department is located adjacent to the College Library, with its extensive collection of geographic materials and the College Computer Center, which houses a number of microcomputers. Department facilities include a library, a physical geography laboratory, and a Digital Geography Laboratory with an NT Server with over \$10 million dollars of hardware and software and 25 workstations, high speed printers, digitizing and scanner equipment, and a variety of output devices, including ink jets and laser printers and dye-sublimation plotters.

MINORS

Minor in Geography.

Intro to Geography-GGR 105; either GGR 100P or GGR 101P; and three to four geography electives.

Minor in Cartography.

Cartography - GGR 241; one course in Geography to be selected after consultation with advisor; Maps & GIS - GGR 150 or Computer Mapping; and a minimum of three elective courses in Cartography as approved by the Chairperson.

Minor in Natural Resource Management

The courses are:

GGR 150 Intro. To Maps & GIS
GGR 262P Environmental Geography
GGR 250P Intro. To Natural Resource Management
GGR 352P Environmental Assessment
OR
GGR 370 Land Use Planning & Analysis
GGR 275 Geographic Perspectives on Sustainable Development

The Total is 15 credits hours.





Geography
Salem State College
Advisor: _____

Name: _____
Date admitted into Major: _____
Transfer credits: _____

**BACHELOR OF SCIENCE
GEOGRAPHY**

CORE REQUIREMENTS

Competency-Based Skills

- @ Basic College Math
- @ Reading Comprehension
- @ Computer Literacy

@	ENG	101	Composition I	3	_____
@	ENG	102	Composition II	3	_____
@	SPC	101	(Speech)	3	_____
@	SFL	194	Health and Wellness	3	_____
			Physical Education Activities (1 cr. total)		
@	SFL	_____	_____	_____	_____
@	SFL	_____	_____	_____	_____

Distribution Sequences (18-20 credits)

_____	_____	(Literature I)	3	_____	
_____	_____	(Literature II)	3	_____	
*	_____	(Lab Science I)	3-4	_____	
*	_____	(Lab Science II)	3-4	_____	
@	HIS	101	History of World Civilization I	3	_____
@	HIS	_____	(History II)	3	_____

Distribution Electives (18 credits)

Among the distribution electives, the student must earn at least 3 but no more than 9 additional semester hours in each of the three divisions.

Humanities (Division I)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Science/Mathematics (Division II)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Social Sciences (Division III)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

(Note: Courses allowable as distribution electives are marked 'D' in the College Catalog or indicated by appropriate footnotes.)

COURSES IN MAJOR (33-37 CREDIT HOURS)

Geographic Core (12 credit hours)

GGR	105	Introduction to Geography	3	_____
GGR	110	World Regions	3	_____
GGR	205	Geographic Research	3	_____
GGR	150	Intro to Maps & GIS	3	_____

Concentration Required Courses (6-10 credit hours)

+	GGR	_____	Human Geography Elective	3	_____
**	GGR	_____	Physical Geography Elective	3	_____
***	GGR	100P	Weather & Climate		
			OR		
***	GGR	102P	Physical Geography II	4	_____

Geography Electives (15 credit hours)

GGR	_____	Geography Elective	3	_____
GGR	_____	Geography Elective	3	_____
GGR	_____	Geography Elective	3	_____
GGR	_____	Geography Elective	3	_____
GGR	_____	Geography Elective	3	_____

MINOR/ FREE ELECTIVES (minimum 38 credits)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

@ Requirements so marked should be completed within the first 53 credits of study (i.e.) before Junior status). Exceptions will be made for transfer students.
 * GGR 100P and GLS 100 are recommended for the fulfillment of the distribution requirement for a full-year laboratory science sequence.
 + Human Geography Electives: GGR204, 270, 271, 280, 313 or 315.
 ** Physical Geography Electives: GGR102P, 210, 250P, 350P or 351P.
 *** Requirement can be satisfied in lab science sequence.



Geography
Salem State College
Advisor: _____

Name: _____
Date admitted into Major: _____
Transfer credits: _____

BACHELOR OF SCIENCE
CARTOGRAPHY AND GIS

CORE REQUIREMENTS

Competency-Based Skills

- @ Basic College Math
@ Reading Comprehension
@ Computer Literacy

Table with 4 columns: Prefix, Course Number, Course Name, Credits. Includes ENG 101, ENG 102, SPC 101, SFL 194, and SFL Physical Education Activities.

Distribution Sequences (18-20 credits)

Table with 4 columns: Prefix, Course Number, Course Name, Credits. Includes Literature I/II, Lab Science I/II, HIS 101, and HIS History II.

Distribution Electives (18 credits)

Among the distribution electives, the student must earn at least 3 but no more than 9 additional semester hours in each of the three divisions.

Humanities (Division I)

Table with 4 columns: Prefix, Course Number, Course Name, Credits. Blank rows for student input.

Science/Mathematics (Division II)

Table with 4 columns: Prefix, Course Number, Course Name, Credits. Blank rows for student input.

Social Sciences (Division III)

Table with 4 columns: Prefix, Course Number, Course Name, Credits. Blank rows for student input.

(Note: Courses allowable as distribution electives are marked 'D' in the College Catalog or indicated by appropriate footnotes.)

COURSES IN MAJOR (42 credit hours)

Geographic Core (12 credit hours)

Table with 4 columns: Prefix, Course Number, Course Name, Credits. Includes GGR 105, 110, 205, 150.

Concentration Required Courses (18 credit hours)

Table with 4 columns: Prefix, Course Number, Course Name, Credits. Includes GGR 241, 242, 320, 342, 343, 420.

Geography Electives (12 credit hours)

Table with 4 columns: Prefix, Course Number, Course Name, Credits. Includes GGR Cartography Elective.

**MINOR/FREE ELECTIVES (minimum: 33 credits)

Table with 4 columns: Prefix, Course Number, Course Name, Credits. Blank rows for student input.

@ Requirements so marked should be completed within the first 53 credits of study (i.e., before Junior status). Exceptions will be made for transfer students.
* Cartography electives include: GGR 343, 400, 410, 444, 445, and 500. Directed Study and field experience credits may be used subject to approval.
** Electives in Computer Science and Mathematics are strongly recommended.

Note: If a course is used to satisfy two or more requirements (for example, a support course and a distribution elective), the credits are counted in only one place. Using a course to satisfy more than one requirement does not reduce the credit total required for graduation.



Geography
 Salem State College
 Advisor: _____

Name: _____
 Date admitted into Major: _____
 Transfer credits: _____

**BACHELOR OF SCIENCE
 GEOGRAPHY
 ENVIRONMENT CONCENTRATION**

CORE REQUIREMENTS

Competency-Based Skills

- @ Basic College Math
- @ Reading Comprehension
- @ Computer Literacy

@	ENG	101	Composition I	3	_____
@	ENG	102	Composition II	3	_____
@	SPC	101	(Speech)	3	_____
@	SFL	194	Health and Wellness	3	_____

Physical Education Activities (1 cr. total)

@	SFL	_____	_____	_____	_____
@	SFL	_____	_____	_____	_____

Distribution Sequences (18-20 credits)

_____	_____	(Literature I)	3	_____	
_____	_____	(Literature II)	3	_____	
_____	_____	(Lab Science I)	4	_____	
_____	_____	(Lab Science II)	4	_____	
@	HIS	101	History of World Civilization I	3	_____
@	HIS	_____	(History II)	3	_____

Distribution Electives (18 credits)

Among the distribution electives, the student must earn at least 3 but no more than 9 additional semester hours in each of the three divisions.

Humanities (Division I)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

SCIENCE/MATHEMATICS (DIVISION II)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Social Sciences (Division III)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

(Note: Courses allowable as distribution electives are marked 'D' in the College Catalog or indicated by appropriate footnotes.)

COURSES IN MAJOR (45 credits)

Geographic Core (23 credit hours)

GGR	105	Introduction to Geography	3	_____
GGR	110	World Regions	3	_____
GGR	150	Intro to Maps & GIS	3	_____
GGR	205	Geographic Research	3	_____
GGR	100P	Weather & Climate		
		OR		
GGR	101P	Physical Geography I	4	_____
GGR	102P	Physical Geography II	4	_____
GGR	___	Human Geography	3	_____

(Choose one of the following)
 {GGR 204, GGR 270, GGR 271, GGR 275, GGR 280, GGR 313, GGR 315}

Concentration Required Courses (22 credit hours)

GGR	262P	Environmental Geography	4	_____
GGR	332	Biogeography	3	_____
GGR	350P	Meteorology	3	_____
GGR	354P	Soils I	4	_____
GGR	320	GIS	3	_____
GGR	343	Remote Sensing	3	_____
GGR	420	Quantitative Geography	3	_____

Electives (12 credit hours)

(Choose 4 of the following)

GGR 334P, GGR 315P, GGR 355P, BIO 300, BIO 320, GLS 210, GLS 214, GLS 215, GLS 356, GLS 357, GLS 360, GLS 372, ECO 319.

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

*** Minor/Free Electives (minimum: 18 credits)**

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

@ Requirements so marked should be completed within the first 53 credits of study (i.e., before Junior status). Exceptions will be made for transfer students.

* While the Department does not require a minor, it encourages minors in areas related to the concentration.



Geography
Salem State College
Advisor: _____

Name: _____
Date admitted into Major: _____
Transfer credits: _____

BACHELOR OF SCIENCE
GEOGRAPHY
TRAVEL & TOURISM CONCENTRATION

CORE REQUIREMENTS

Competency-Based Skills

- @ Basic College Math
@ Reading Comprehension
@ Computer Literacy

Table with 5 columns: Prefix, Course Code, Title, Credits, and a blank line for marks. Includes ENG 101, ENG 102, SPC 101, SFL 194.

Physical Education Activities (1 cr. total)

Table with 5 columns: Prefix, Course Code, Title, Credits, and a blank line for marks. Includes SFL courses.

Distribution Sequences (18-20 credits)

Table with 5 columns: Prefix, Course Code, Title, Credits, and a blank line for marks. Includes Literature, Lab Science, and History courses.

Distribution Electives (18 credits)

Among the distribution electives, the student must earn at least 3 but no more than 9 additional semester hours in each of the three divisions.

Humanities (Division I)

Table with 5 columns: Prefix, Course Code, Title, Credits, and a blank line for marks.

Science/Mathematics (Division II)

Table with 5 columns: Prefix, Course Code, Title, Credits, and a blank line for marks.

Social Sciences (Division III)

Table with 5 columns: Prefix, Course Code, Title, Credits, and a blank line for marks.

(Note: Courses allowable as distribution electives are marked 'D' in the College Catalog or indicated by appropriate footnotes.)

COURSES IN MAJOR (42 CREDIT HOURS)

Geographic Core (12 credit hours)

Table with 5 columns: Course Code, Title, Credits, and a blank line for marks. Includes GGR 105, 110, 150, 205.

Concentration Required Courses (15 credit hours)

Table with 5 columns: Course Code, Title, Credits, and a blank line for marks. Includes GGR 222, 261, 270, 363, 365.

Geography Electives (15 credit hours)

Table with 5 columns: Course Code, Title, Credits, and a blank line for marks. Includes GGR and GR Elective courses.

MINOR/FREE ELECTIVES (minimum: 33 credits)

Table with 5 columns: Prefix, Course Code, Title, Credits, and a blank line for marks.

@ Requirements so marked should be completed within the first 53 credits of study...
* GGR 100P or GGR 101P is recommended in partial fulfillment...
Note: If a course is used to satisfy two or more requirements...



Geography
Salem State College
Advisor: _____

Name: _____
Date admitted into Major: _____
Transfer credits: _____

BACHELOR OF SCIENCE
GEOGRAPHY
REGIONAL DEVELOPMENT & PLANNING CONCENTRATION

CORE REQUIREMENTS

Competency-Based Skills

- @ Basic College Math
@ Reading Comprehension
@ Computer Literacy

Table listing core requirements: ENG 101, ENG 102, SPC 101, SFL 194 with credit values.

Physical Education Activities (1 cr. total)

Table for Physical Education Activities with SFL codes and credit values.

Distribution Sequences (18-20 credits)

Table for Distribution Sequences including Literature, Lab Science, and History courses.

**Distribution Electives (18 credits)

Among the distribution electives, the student must earn at least 3 but no more than 9 additional semester hours in each of the three divisions.

Humanities (Division I)

Blank table for Humanities (Division I) electives.

Science/Mathematics (Division II)

Blank table for Science/Mathematics (Division II) electives.

Social Sciences (Division III)

Blank table for Social Sciences (Division III) electives.

(Note: Courses allowable as distribution electives are marked 'D' in the College Catalog or indicated by appropriate footnotes.)

Courses in Major (42 credit hours)

Table listing major courses: GGR 105, GGR 110, GGR 150, GGR 205 with credit values.

Concentration Required (18 credit hours)

Table listing concentration required courses: GGR 265, GGR 270, GGR 271, GGR 315, GGR 320, GGR 370 with credit values.

***Geography Electives (12 credit hours)

Table listing geography elective options with credit values.

MINOR/FREE ELECTIVES (minimum: 33 credits)

Blank table for minor or free electives.

@ Requirements so marked should be completed within the first 53 credits of study...
* GGR 101P, Physical Geography is recommended...
** Recommended as electives or distribution: BIO 103, 208; COM 202, 330; ECO 303; GLS 100, 214, 355; HIS 220, 367; PHL 204; POL 312, 315, 319; PSY 255; SOC 341, 348; SPC 101 B.
*** Concentration electives shall be selected with the advisor...
**** While the Department does not require a minor...
Note: If a course is used to satisfy two or more requirements...



Geography
Salem State College
Advisor: _____

Name: _____
Date admitted into Major: _____
Transfer credits: _____

BACHELOR OF ARTS
GEOGRAPHY
REGIONAL STUDIES CONCENTRATION

CORE REQUIREMENTS

Competency-Based Skills

- @ Basic College Math
@ Reading Comprehension
@ Computer Literacy

Table with 4 columns: Prefix, Course Number, Course Name, Credits. Includes ENG 101, ENG 102, SPC 101, SFL 194, and Physical Education Activities.

Distribution Sequences (18-20 credits)

Table with 4 columns: Prefix, Course Number, Course Name, Credits. Includes Literature I/II, Lab Science I/II, and History I/II.

Distribution Electives (18 credits)

Among the distribution electives, the student must earn at least 3 but no more than 9 additional semester hours in each of the three divisions.

Humanities (Division I)

Table with 4 columns: Prefix, Course Number, Course Name, Credits. Blank rows for student input.

Science/Mathematics (Division II)

Table with 4 columns: Prefix, Course Number, Course Name, Credits. Blank rows for student input.

Social Sciences (Division III)

Table with 4 columns: Prefix, Course Number, Course Name, Credits. Blank rows for student input.

(Note: Courses allowable as distribution electives are marked 'D' in the College Catalog or indicated by appropriate footnotes.)

COURSES IN MAJOR (36-40 credit hours)

Geography Core (12 credit hours)

Table with 4 columns: Course Number, Course Name, Credits. Includes GGR 105, 110, 205, 150.

Concentration Required Courses (6-10 credit hours)

Table with 4 columns: Prefix, Course Number, Course Name, Credits. Includes GGR Human Geography Elective, 222, 100P, and 102P.

Geography Electives (18 credit hours)

Table with 4 columns: Course Number, Course Name, Credits. Multiple Geography Elective options.

FOREIGN LANGUAGE (12 credits)

Table with 4 columns: Prefix, Course Number, Course Name, Credits. Blank rows for student input.

MINOR/ FREE ELECTIVES (minimum 23 credits)

Table with 4 columns: Prefix, Course Number, Course Name, Credits. Multiple blank rows for student input.

@ Requirements so marked should be completed within the first 53 credits of study (i.e.) before Junior status.
* GGR 100P and GLS 100 are recommended for the fulfillment of the distribution requirement for a full-year laboratory science sequence.
+ Human Geography Electives: GGR204, 270, 271, 280, 313 or 315.
** Courses may be taken as part of the science sequence.

Total credits for graduation: 126

Effective: 9/04



Geography
Salem State College
Advisor: _____

Name: _____
Date admitted into Major: _____
Transfer credits: _____

**BACHELOR OF SCIENCE
GEOGRAPHY
NATURAL RESOURCE MANAGEMENT**

CORE REQUIREMENTS

Competency-Based Skills

- @ Basic College Math
- @ Reading Comprehension
- @ Computer Literacy

@	ENG	101	Composition I	3	_____
@	ENG	102	Composition II	3	_____
@	SPC	101	(Speech)	3	_____
@	SFL	194	Health and Wellness	3	_____

Physical Education Activities (1 cr. total)

@	SFL	_____	_____	_____	_____
@	SFL	_____	_____	_____	_____

Distribution Sequences (18-20 credits)

_____	_____	(Literature I)	3	_____	
_____	_____	(Literature II)	3	_____	
_____	_____	(Lab Science I)	3-4	_____	
_____	_____	(Lab Science II)	3-4	_____	
@	HIS	101	History of World Civilization I	3	_____
@	HIS	_____	(History II)	3	_____

Distribution Electives (18 credits)

Among the distribution electives, the student must earn at least 3 but no more than 9 additional semester hours in each of the three divisions.

Humanities (Division I)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Science/Mathematics (Division II)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Social Sciences (Division III)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

(Note: Courses allowable as distribution electives are marked 'D' in the College Catalog or indicated by appropriate footnotes.)

COURSES IN MAJOR (39-43 credit hours)

Geographic Core (12 credit hours)

GGR	105	Introduction to Geography	3	_____
GGR	110	World Regions	3	_____
GGR	150	Intro to Maps & GIS	3	_____
GGR	205	Geographic Research	3	_____

Concentration Required Courses (27-31 credit hours)

GGR	100P	Weather & Climate		
		OR		
GGR	101P	Physical Geography I	4	_____
GGR	102P	Physical Geography II	3	_____
GGR	262P	Environmental Geography	3	_____
GGR	250P	Intro. to Natural Res. Mngt.	3	_____
GGR	320	GIS	3	_____
GGR	343	Remote Sensing	3	_____
GGR	352P	Environmental Assessment	3	_____
GGR	370	Land Use Planning		
		OR		
GGR	365	Introduction to Planning	3	_____
GGR	358	Water Resource Management	3	_____
GGR	275	Geo. Persp. Sus. Dev.	3	_____

Support Courses (6 credit hours)

ECO	319	Environmental Resources	3	_____
PHL	224	Environmental Ethics	3	_____

****MINOR/FREE ELECTIVES (MINIMUM: 26 CREDITS)**

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Geography

@ Requirements so marked should be completed within the first 53 credits of study (i.e., before Junior status). Exceptions will be made for transfer students.
Note: If a course is used to satisfy two or more requirements (for example, a support course and a distribution elective), the credits are counted in only one place. Using a course to satisfy more than one requirement does **not** reduce the credit total required for graduation.



COURSE DESCRIPTIONS

GEOGRAPHY

GGR 100P Weather and Climate 4 credits DII

Analysis of the elements and controls of weather on the earth's surface including the extent and composition of the atmosphere, atmospheric heating and cooling, pressure and winds, moisture and precipitation. An introduction to weather forecasting techniques and a descriptive analysis of world climate regions. Introduction to maps and basic topics in physical geography. Three lecture hours and one two-hour laboratory per week. Satisfies laboratory science sequence requirement with GLS 100. Required of B.S. Geological Sciences, Earth Science Concentration. Not open to students who have received credits for GGR 101P.

GGR 101P Physical Geography I 4 credits DII

Survey of weather elements as the basis for the regionalization of world climate. Analysis of meteorological processes and the association of major elements to define climates. Laboratory study of weather elements with emphasis on the collection and presentation of data. Three lecture hours and one two-hour laboratory per week. Satisfies laboratory science sequence requirement with GGR 102P. Not open to students who have received credits for GGR 100P.

GGR 102P Physical Geography II 4 credits DII

Study of the concept of location on the surface of the earth with emphasis on the nature of maps and map projections. Description and analysis of landform types and physical landscape patterns. Laboratory practice in the methods of landform analysis. Three lecture hours and one two-hour laboratory per week. Satisfies laboratory science sequence requirement with GGR 101P. Does not satisfy laboratory science sequence with GGR 100P. Prerequisite: GGR 100P or GGR 101P.

GGR 105 Introduction to Geography 3 credits DIII

This course is designed to develop an understanding of the perspectives of geography, its evolution as a problem solving science, and its application to contemporary issues. Topics emphasizing spatial relations such as population dynamics, the impact of economic development, and political organization are utilized. Case studies from around the world are used to increase the student's awareness of Geography. Required of all majors. Three lecture hours per week.

GGR 110 World Regions 3 credits DIII

An examination of the interrelationships of the physical and cultural patterns of the world regions. Special attention will be given to locations. Required of all majors. Three lecture hours per week.

GGR 150 Introduction to Maps and Geographical Information Systems 3 credits DII

This introductory course is designed to provide a working knowledge of maps as a medium of communication and a general overview of Geographic Information Systems (GIS). The cartographic component includes material on map components, history, and use. The GIS component includes historical background, field developments, current trends and future prospects in this rapidly expanding field. Basic methodologies and analytical functions of GIS will be introduced along with additional spatial and geographic concepts including the nature of spatial data, data capture and acquisition, data sources, spatial queries and spatial analysis. Required of all majors. Three lecture hours per week.

GGR 158 Geography of New England 3 credits DIII

New England, a relatively distinct cultural, economic and historical region, presented in terms of its physical features and the urban and rural economic structure with a view towards evaluating the future potential of the region. Three lecture hours per week. Field trips may be included.

GGR 159 Geography of Canada 3 credits DIII

This course is designed as an introductory survey course on the geography of Canada. It will be structured around the five fundamental themes of geography (i.e. location, place, human-environment interaction, movement and regions). The course will analyze the physiographic, climatic, cultural, economic and political regions and patterns of Canada. Three lecture hours per week.

GGR 160 World Cities 3 credits DIII

An examination of the geography of tourism in selected cities of the world with an emphasis on form and function. Topics to be included are an analysis of resources for tourism, the organization of related land use patterns, and development processes. Three lecture hours per week.

GGR 204 Cultural Geography 3 credits DIII

This course examines the human imprint on the environment. Demographic, religious and language distributions are analyzed. Special topics such as local settlement landscapes may be included. Three lecture hours per week.

GGR 205 Geographic Research 3 credits

Geographic research prepares students for advanced research and departmental course work by examining the breadth of geography as an academic discipline, by understanding fundamental research techniques, by mastering basic computer skills and by developing and completing an original research project. Required of all Geography majors. Three lecture hours per week.

GGR 211 Recreation Geography 3 credits DIII

An analysis of recreation user patterns and the form, function, distribution and impact of recreation facilities. Topics include outdoor recreation, leisure communities, and spectator sports. Three lecture hours per week.

GGR 222 Geography of the United States 3 credits DIII

A detailed regional analysis emphasizing the interrelationship of the physical, historical, economic and social geography of the United States. Three lecture hours per week.

GGR 229 Geography of the Caribbean and Middle America 3 credits DIII

An examination of that portion of Latin America between South America and the United States. Emphasis upon the interrelationships of the physical and cultural environment. Three lecture hours per week.

GGR 230 New England Folklore & Regionality 3 credits DIII

The folklore of New England is a mirror of the region's places, people, and culture. A rich legacy exists in the material culture, stories, songs, and customs that continue to shape regional society, landscape, and identity. This course explores folkloric aspects of selected communities to better understand their cultural diversity and, at the same time, to appreciate their underlying human similarities. Three lecture hours per week.

GGR 234 Geography of Europe 3 credits DIII

This course presents a detailed geography of Europe. Emphasis will be placed upon the geographic aspects of physiographic, social, economic, political, and cultural patterns. Three lecture hours per week.

GGR 235 Geography of Africa 3 credits DIII

Deals with the complexities of the human and physical environments of Africa. The role of European colonialism in the economic development of the continent. Emergent nationalism in newly independent states and racial policies in several of the major political units. Three lecture hours per week.

GGR 236 Geography of Asia 3 credits DIII

An analysis of the cultural and physical patterns of South, Southeast and East Asia. Special topics for consideration include population dynamics, economic development, climatic and physiographic variety, and cultural-regionalism. Three lecture hours per week.

GGR 237 Geography of the Middle East 3 credits DIII

Course concentrates on the southwest portion of the Middle East. The northern tier of states in Africa is also considered. The approach is largely cultural-historical, set within the political and physical framework. Three lecture hours per week.

GGR 238 Geography of the Southwest Pacific 3 credits DIII

Analyzes the cultural and physical features of Australia, New Zealand and the islands of the Pacific with emphasis on the geographic factors influencing the present landscape. Three lecture hours per week.

**GGR 239 Geography of the Mediterranean 3 credits**

This course focuses on the regions of southern Europe, northern Africa, and southwest Asia, which are located on the coasts and immediately adjacent areas of the Mediterranean. Specialized landscapes reflect the long period of settlement and development within a unique physical and cultural geographic environment. Three lecture hours per week.

GGR 240 Map Reading and Interpretation 3 credits

Basic concepts of map scale, relief, direction, symbolization and map analysis are presented. Exercises familiarize students with a variety of map types and techniques of data collection and measurement from maps, and the interpretation of physical and cultural features. Three lecture hours per week.

GGR 241 Cartography 3 credits

An introduction to the science of analytic map development employing computer cartographic technologies. Concepts stress data acquisition, spatial analysis, and data display coupled with theory of cartographic compilation and generalization to produce analytically useful maps. Required for B.S. Cartography majors and Cartography minors.

GGR 242 Computer Cartography 3 credits

The course details the use of computer-assisted cartography in analytic choropleth map development including spatial data selection and analysis, coordinate transformation, areal and Boolean map analysis, and digital choropleth map comparison. Three lecture hours per week. Required of B.S. Cartography; Elective for others. Prerequisite: GGR 240 or GGR 241 or permission of Department Chairperson.

GGR 243 Historical Cartography 3 credits DIII

Maps are a geographer's primary tool, and their creation is the function of cartography. The course acquaints students with cartographic traditions of selected cultures and times, focuses on American maps from the 19th and 20th centuries as archival resources, and examines the elements of cartographic style. Three lecture hours per week.

GGR 244 Russia and its Neighbors 3 credits DIII

An analysis of the human and physical geographies of Eastern Europe, Russia, the Southern Caucasus and Central Asia. Special attention will be paid to the contemporary problems of the region and the geographic influences of these problems, for example; the rise of nationalism in the region, the new role of local governance, the collapse of central planning and its impact on regional development, major environmental crises that were inherited from the Soviet era and the establishment of new ties with its neighbors including: China, Afghanistan, and the European Union. Three lecture hours per week.

GGR 250P Conservation of Natural Resources 3 credits DII

This course emphasizes the complexities of managing renewable and non-renewable resources at various geographic scales, local to global. Scientific and social concepts pertaining to resource assessment and use are presented, as are conservation policies, programs, and practices. Problems associated with resource-user conflicts are also discussed. Three lecture hours per week.

GGR 252P Oceanography 3 credits DII

Describes and analyzes the morphology of ocean basins and their geological origins. The physical and chemical characteristics of seawater, the dynamics of oceanic circulation, and the role of the marine environment as a human resource are discussed. Three lecture hours per week.

GGR 256 Identification & Preservation of Wetlands 3 credits

This course deals with practical training in identification and mapping of wetland areas and it requires the use of field investigation and air photo interpretation. In addition, the laws of Massachusetts governing the control of the wetlands are studied along with the administration of these laws at the local level. Students are expected to evaluate the performance of the regulating and enforcing authorities. No prerequisites. Three lecture hours plus local field trips and visits to Conservation Commission meetings are required.

Not open to students who have received credits for GGR 455.

GGR 261 Survey of Travel and Tourism (Fall) 3 credits DIII

An overview of the field of travel and tourism with an examination of the geographic, economic and cultural importance of travel and tourism. Topics will include why travel takes place, destination selections, travel modes, tourism development, and the role of the geographer. Three lecture hours per week.

GGR 262P Environmental Geography 3 credits DII

An introduction to the physical and human dimensions of global environmental change. The course will examine global elemental cycles and their interactions within the physical environment. In addition, human-driving forces will be analyzed such as land-use change and industrialization. Course will review use of remote sensing and GIS technologies for analysis of global and regional change. Three lecture hours per week.

Prerequisites: Completion of lab science sequence or permission of Department Chairperson.

GGR 265 Introduction to Planning 3 credits DIII

Introduction to Planning serves two basic purposes: to provide students with a background in the planning process and profession as well as to link planning to geography. The course covers the development of the planning profession, its context in the public sector, and geographic perspective with special regard to urban and environmental applications.

GGR 270 Economic Geography 3 credits DIII

An examination of economic activities on the earth's surface. Basic location theory precedes a discussion of selected activities in the primary, secondary, and tertiary sectors of the economy. Three lecture hours per week.

GGR 271 Urban Geography 3 credits DIII

The study of cities from the geographic point of view: urban patterns, functions, and problems. The origin, growth, and social and economic structure of selected cities. Three lecture hours per week.

GGR 275 Geographic Perspectives on Sustainable Development 3 credits DIII

This course applies geography's human-environment tradition to examine the regional and spatial dimensions of sustainability around the world. In pursuing sustainable development, humans seek to maximize the benefits of social and economic development while maintaining the services from and quality of the Earth's natural resources. Students will explore case studies addressing some of the conflicts between human desires for material well being and our ability to protect the natural environment and maintain cultural and social traditions. Three lecture hours per week.

GGR 280 Reading the Cultural Landscape 3 credits DIII

The cultural landscape reveals the intricate tapestry of human habitation and forms a primary document for geographic research. Using several techniques students examine the cultural organization of the landscape. By understanding the landscape, students will have greater insights into economic activity, technological levels, the built environment, and cultural values. Students will undertake a series of projects to explore the world around them. Three lecture hours per week.

GGR 313 Political Geography 3 credits DIII

Study of the structure and organization of political areas at different levels and the impact of selected geographic phenomena on their development and interaction. Three lecture hours per week. Concentration elective, B.S. Geography, Travel and Tourism. Elective for others.

GGR 315 Population Geography 3 credits DIII

Study of the regional and national variations in population size, structure, and growth and the consequences for social and economic development. Case studies in the dynamics of migration and government population policies. Three lecture hours per week.

GGR 320 Geographic Information Systems 3 credits DIII

Geographic Information Systems (GIS) are powerful forms of spatial information processing. Incorporating analytic geographic techniques to capture, maintain, analyze, and display data, GIS generate unique spatial information widely used by both the public and



private sectors. Specifically, this course details the analytical and technical development and the applied uses of GIS for business, environmental, and social applications. Three lecture hours per week. Required of B.S. Cartography, B.S. Geography, Regional Development and Planning, Environment, and Natural Resource Management concentrations. Elective for others.

GGR 325 Computer Applications in Geography 3 credits
An introduction to various computer applications in geography using one or more selected computer languages, including FORTRAN, the computer language of scientists and engineers. Problems are selected from both the social science and natural science domains of the discipline of geography. Students will learn how to link computer model-generated output to computer graphics routines. Three lecture hours per week.
Prerequisites: Completion of Basic College Math Competency, one 200 level Geography course, GGR 240 or GGR 241, or permission of the Department Chairperson.

GGR 332P Biogeography 3 credits DII
This course serves as an introduction to the basic facts and concepts of biogeography. It will review the biogeographical and other environmental controls which help to explain distribution of plants and animals. It will bring together specialized subdisciplines and information of both plants and animals in order to explain patterns of geographic distributions of organisms in terms of the historical and contemporary environmental processes that have caused them. Finally, the course will review in detail the distributions of contemporary plant and animal groups with a special focus on North America. Computer analysis will be used to explore these concepts. Three lecture hours per week.
Prerequisites: One introductory natural science course or permission of the Department Chairperson.

GGR 334P Physical Climatology 3 credits DII
An introduction to the study of atmospheric processes near the ground. Emphasis on flows of energy and matter between the earth's soil, water, vegetative, and human-built surfaces and the atmosphere. The course illustrates the role of the atmosphere in the environmental sciences and its applications in geography, agriculture, forestry, ecology, engineering, and planning. Three lecture hours per week.
Prerequisites: (GGR 100P or GGR 101P) and (GGR 102P or GLS 100) and Basic College Math Competency or permission of the Department Chairperson.

GGR 335 Urban and Environmental Planning I 3 credits
Designed to prepare planners to work effectively in an urban/suburban setting. Planners work as a part of a team to create an acceptable work/home environment, and as such, the emphasis shall include a review of the role of the policy maker, the use of growth control techniques; the preparation of comprehensive plans with citizen participation, and the careful examination of various land uses and potential impacts of decisions made on future land uses on such areas as the availability of housing, traffic, the economy, the environment, the quality of life and the ability of the community to provide services. Three lecture hours per week.

GGR 336 Urban and Environmental Planning II 3 credits
The focus of the course is the collection, analysis, and application of data related to environmental planning in urban-suburban areas. The activities of regulating agencies are examined. Surface water runoff, groundwater supply and quality, the upland/wetland boundary, and pollution detection are major areas of concern. Three lecture hours per week, plus local field trips.

GGR 337 Planning Pre-Practicum 3 credits
Offered to third year students in the Urban and Environmental Planning Concentration in preparation for the fourth year Internship in a public or private planning agency. Basic instruction in the writing of a resume and a cover letter will be followed by a discussion on the effective use of interviews to secure employment. Graduate School as an option discussed. Each student will, using suggested references, conduct a thorough "job search" within the greater Boston area. Two lecture hours per week; each student will be placed in one or two planning agencies in the last half of the semester for six hours per week in order to become acquainted with struc-

ture and operation of a planning agency.
Prerequisites: GGR 205, GGR 265 and GGR 335 or GGR 336.

GGR 340 Preservation Planning 3 credits
Preservation planning, historic landscapes and cultural conservation have become important subfields in planning. These areas consider the value of America's heritage and methods to maintain their integrity, significance, and continued viability in a rapidly changing world. The course covers the development of preservation planning, examines current examples, and presents a theoretical overview of the field. Three lecture hours per week.

GGR 342 Air Photo Interpretation 3 credits
Course details the analytic use of various forms of aerial photography including manual interpretation, elementary photogrammetric techniques, mission design and planning, as well as integration and preparation of derived aerial photographic data for geographic systems analysis. Three lecture hours per week.

GGR 343 Remote Sensing 3 credits
This course explores the use of remotely sensed imagery excluding aerial photography. Various sensor families (LANDSAT, Spot, RADAR, NESDIS) and platforms (manned, unmanned, satellite, and aircraft) are investigated. Emphasis is placed upon applied geographic analysis employing remotely sensed images. Three lecture hours per week.

GGR 345 Digital Image Processing of Remotely Sensed Data 3 credits
Investigation of the fundamentals of digital image processing as applied to remotely sensed data. Study of the physics of light and the hardware systems used to record specific wavelengths of the electromagnetic spectrum. Laboratory and fieldwork related to the digital analysis of LANDSAT and other imagery in a sequence of analytic processes common to problem solving. Three lecture hours per week. Cartography elective, B.S. Cartography.

GGR 350P Meteorology 3 credits DII
Analysis of the atmosphere, weather elements, air masses, fronts, and storms. Introduction to the principles of weather forecasting and special problems of micrometeorology. Laboratory practice in the instrumentation and data analysis procedures of meteorological observation including the use of synoptic maps and upper air charts. Three lecture hours per week.

GGR 351P Regional Climatology (Spring) 3 credits DII
The nature and distribution of world climatic regions. Local and regional variations in general patterns analyzed by means of selected data. Three lecture hours per week.
Prerequisites: GGR 100P or GGR 101P or permission of Department Chairperson.

GGR 352 Environmental Assessment 3 credits DII
Designed to develop an awareness of the academic and applied contributions of geographers and planners in dealing with environmental issues. Discussion topics include the impact of human activity on the environment, environmental perception and environmental hazards. Three lecture hours per week.

GGR 353 Salem's Trading Partners 3 credits
Students enrolled in Salem's Trading Partners will explore the world through the eyes of Salem's merchants as they sought exotic goods in the richest ports of the Orient. Primary source materials including ship's logs, account books, letters, diaries, and maps from a corpus of material that each student will use to design an individualized research project. The course will include research of local institutions as well as trips to major museums. In all, students will have the chance to see Salem and, by extension, America in relation to the world at the time current American views began to take shape. Offered as a Summer Institute only. No prerequisites.

GGR 354P Soils I 4 credits DII
This course serves as an introduction to soil science. It will review the biological, physical, and chemical properties of soils with special emphasis on how these properties relate to soil productivity and the relationship between soils and plants. Another important emphasis of the course will be its treatment of the geographical considerations of soils with regards to soil formation, soil-forming processes, soils distribution, and soil management. Occasional



local field trips on weekends required. Three lecture hours and one two-hour laboratory per week.

Prerequisite: (GGR 100P or 101P), GLS 100, or permission of Department Chairperson.

GGR 355P Soils II 4 credits DIII

This course serves as an advanced treatment of soils and soil science applications. It will examine in further detail the biological, physical, and chemical properties of soils with special emphasis on how these properties relate to soil productivity, the relationship between soils and plants, and soil resource management. An important focus of the course will be the study of and use of computer-based soils information systems for land evaluation, land capability classification, soil erosion susceptibility studies, and environmental planning. The student will gain exposure to the above techniques via field exercises and/or computer lab exercises. Occasional local field trips on weekends required. Three lecture hours and one two-hour lab per week.

Prerequisite: GGR 354P or course equivalent.

GGR 356 Seminar in Geographic Concepts of the Earth's Environment 3 credits

An interactive course designed for Junior-Senior level Education Majors. Students and instructor carry out research and exchange ideas regarding the communication of scientific concepts of geography. Past and current presentations of such ideas in all forms of media are examined. The focus of study is the body of concepts dealing with Earth's environment.

Prerequisite: completion of a distribution lab science sequence. Free elective. 3 hours per class.

GGR 358 Water Resources Management 3 credits DIII

The course presents a geographic approach to water resource management at various spatial scales. Concepts pertaining to watershed functions as well as water pollution, cost-benefit analysis techniques and both environmental and urban planning considerations will be covered. The course will also use an integrated geographic information system approach to water management. Three lecture hours per week. Concentration elective, B.S. Geography, Environment Concentration.

Prerequisite: GGR 250P or permission of department chair.

GGR 361 Retail Travel 3 credits

A course designed to acquaint students with the technical aspects of travel. Proper use of manuals used in the retail travel industry and development of required skills for manual documentation of foreign and domestic travel are introduced. Emphasis on air, land and sea transportation. Three lecture hours per week.

GGR 362 Comprehensive Travel Planning 3 credits

Expansion of the concepts and skills acquired in GGR 361 to include proper procedures for packaging worldwide independent and group travel. International travel regulations and prepackaged tours are examined. Emphasis is on long arrangements. Three lecture hours per week. Restricted to B.S. Geography students.

GGR 363 The Global Travel Industry 3 credits DIII

The course examines the dynamics and structure of the global travel industry. Students will explore the forces shaping the present and future demand for travel, assess the strategies of travel suppliers and explore the changing role of travel agents, corporate travel firms, and travel industry entrepreneurs. Beyond an examination of the business of travel, students will also examine technological trends in transport and travel planning and will discuss the social and ecological impacts of the industry worldwide. Three lecture hours per week. Required for Travel and Tourism Concentration.

Prerequisite: GGR 270.

GGR 364 Tourism Development 3 credits

This course is intended to provide a framework for planning tourism development. Tourism resources and attractions are analyzed and economic and developmental impacts, both actual and potential, are ascertained. All aspects of tourism are examined with the development of a Master Plan. Three lecture hours per week.

GGR 365 Economic Dimensions of Tourism 3 credits

This course examines the dimensions of tourism from a spatial and regional perspective. Students will explore the economic opportuni-

ties created in tourist destinations and regions, will examine the means through which firms and entrepreneurs exploit such opportunities or location-driven competitive advantages, and will investigate some of the external economic forces that influence the viability of tourism destinations. Three lecture hours per week. Required for Travel and Tourism Concentration.

Prerequisite: GGR 270.

GGR 366 Introduction to Travel Industry Computer Systems 3 credits

An introduction to the principles and capabilities of computers with a study of their application to information management and task functions in the travel industry. Computer laboratory exercises will be assigned.

Prerequisite: GGR 361.

GGR 367 Seminar in Ecotourism 3 credits

This course examines the growing importance of the ecotourism segment of the tourist industry and explores the ways in which scenic, pristine, and ecologically sensitive destinations are used (and misused) to generate income for firms, governments, and local communities. Case studies will be used throughout the course from a variety of regions and contexts and students will be expected to participate in in-depth discussions and analyses of these. Three lecture hours per week.

GGR 370 Land Use Planning and Analysis 3 credits

Deals with the social and economic benefits of selected land use patterns. Specific zoning, code and location problems are emphasized with a variety of data collection and analytical techniques. Field projects are a part of the course. Three lecture hours per week. Group field trips may be substituted for some lectures.

GGR 371 Land Use Techniques and Applications 3 credits

A field application of land use planning which involves discussion of specific techniques used in preparing land use plans to be followed by the application of these techniques to field problems. One lecture hour per week and extensive fieldwork.

Prerequisite: GGR 370.

GGR 372 Growth Control Techniques 3 credits

This course deals with three specific growth management techniques used in urban areas: zoning, subdivision control, and preservation (environmental and historic). Three lecture hours per week.

GGR 374 Transportation Geography 3 credits DIII

This introductory course is designed to provide a general overview of the field of transportation geography. Transportation is a very geographic phenomenon and also a crucial component for all aspects of society today and in the past. In this course, transportation geography from a historical, urban, facility, international, intermodal, and sustainable perspective will all be examined.

GGR 375 Urban Transportation 3 credits DIII

An examination of transportation systems in urbanized areas. Emphasis upon the development of urbanization as a result of transportation improvements and current crises in transportation in urbanized America. Regional emphasis upon the Boston area. Three lecture hours per week. Concentration elective for B.S. Geography Urban and Environmental Planning. Elective for others.

GGR 377 Marketing Geography 3 credits DIII

Site selection analysis, retailing, wholesaling and manufacturing geography. Emphasis on trade-area regions and patterns. Three lecture hours per week. Fieldwork projects required. Concentration elective. B.S. Geography, Urban and Environmental Planning concentration. Elective for others.

GGR 378 Retail Location Research 3 credits

The application of geographic tools and techniques to problems in locating several types of retail functions. Special topics for consideration include the development of a comprehensive metropolitan location strategy and the selection and analysis of specific store sites. Field methods are emphasized. One three-hour session per week.



GGR 380 Geotechniques in Information Technology

3 credits

This course examines the uses of automated techniques in geography and Information Technology to disseminate, present and communicate geographic research and information. It will introduce students to the digital data and technological tools that geographers frequently use. These include: Geographic Information Systems, remote sensing, global positioning systems, data mining and automated output devices, including the World Wide Web, listsrvs and computer assisted presentation and storage software.

GGR 399 Cooperative Education

3 credits

GGR 400 Directed Study in Geography

3 credits

Independent study of a selected topic in systematic or regional geography with emphasis on intensive research and analysis. Subject to the approval of the study advisor and the Department Chairperson. Concentration elective, B.S. Geography and B.S. Cartography. Not open to others.

GGR 402 Study - Travel Seminar

3-6 credits

A one-semester orientation course concerning selected geographic problems of a specific region followed by intensive field study in the area concerned. Focus on regions in the United States and selected foreign areas. Three to six credits hours.

GGR 404 Seminar in Geographic Thought

3 credits

Consideration of the contributions of geographers and geography from the time of Ancient Greece to the present. Special attention to current professional research and publications as they relate to the development and change in the field of geography. One three-hour seminar per week.

GGR 405 Seminar in Geographic Research

3 credits

An introduction to the techniques and source materials of geographic research, including quantitative methods, and library resources. Research papers are required. Three lecture hours per week.

GGR 409 Geography Placement Seminar

1 credit

This course has two basic purposes: to provide an awareness of occupational and graduate opportunities available in geography; and, to develop skills related to occupation and graduate research, resume preparation and interview techniques. One lecture hour per week. Required of and limited to B.S. Geography and B.S. Cartography majors planning to enroll in GGR 410.

GGR 410 Internship in Geography

3-12 credits

A work-study program under the auspices of various public and private organizations involved in areas directly related to the student's academic interest in Geography or Cartography. Number of credits hours will vary with commitment. Must meet departmental requirements and have Department Chairperson's approval on credits hours before registration. Limited to Geography and Cartography majors.

Prerequisite: GGR 409.

GGR 420 Quantitative Geography

3 credits

Introduction to geographic applications of selected descriptive and inferential statistical measures. Special attention to problems of sampling, organization and analysis of areal data, as well as map data storage and retrieval. Three lecture hours per week.

GGR 421 Advanced Geographic Information Systems

3 credits

This course prepares the student to administer and direct GIS technical and human resources. Students are exposed to GIS analysis and design by employing a structured method approach. Further, the student is shown how to identify, track and correct systems errors throughout the GIS implementation process. Students gain experience by developing and administering a prototype GIS. Three lecture hours per week with three additional hours per week in the Digital Geography Lab.

Prerequisite: GGR 320.

GGR 427 Visual Digital Interpretation of Aerial Photography

3 credits

Investigation, analysis, and development of reflection signatures of Earth surface features. Visual and digital techniques are employed

to identify patterns of characteristics that will enhance identification of specific surface phenomena. Black and white, color, and color infrared aerial images will be utilized. Three lecture hours per week plus local field trips. Cartography elective, B.S. Cartography. Prerequisite: GGR 342 or permission of Department Chairperson.

GGR 430 Planning Studio – North Shore Laboratory

3 credits

An advanced course in planning research and application. Student teams will select some aspect of small urban infrastructure to investigate, using Boston's "North Shore" as a laboratory. Written reports and oral presentations will present an analysis of the selected topic. One three-hour class each week with additional, informal meetings between individual students and the instructor.

Prerequisites: GGR 335 and GGR 336.

GGR 444 Advanced Computer Cartography

3 credits

This course explores the use of computer-assisted cartography in the development of contour (isarithmic) maps. Topics include continuous field data sampling, interpolation analysis, trend and residual surface development, kriging, calculated surfaces, and cartographic modeling. Three lecture hours per week. Cartography elective B.S. Cartography. Elective for others.

Prerequisite: GGR 240 or GGR 241 or permission of Department Chairperson.

GGR 450 Seminar in Applied Geography

3 credits

A geographic approach to the identification, definition and solution of problems affecting environmental quality. Application of geographic concepts, techniques and tools. Course topics will vary from semester to semester and may include topics such as the identification and preservation of wetlands, solid and hazardous waste management, and water resource management. Three lecture hours per week. Fieldwork will be included. Restricted to Juniors and Seniors.

GGR 456 Field Methodology in Wetlands Investigation

3 credits

The focus of the course is "hands on" training in techniques employed to identify and map the wetland areas of Massachusetts. Macro and micro approaches to wetland investigation include the study of topography, vegetation, hydrology, and soils using satellite images, airphotos, maps, and on-site study. Three lecture hours per week plus local field trips. Free elective.

Prerequisite: GGR 256.

GGR 460 Travel Management and Planning

3 credits

Through this course, students develop a professional perspective for corporate travel expense management and large convention planning. Marketing, negotiating, site selection, and costing techniques are examined. Three lecture hours per week. Restricted to B.S. Geography.

Prerequisites: GGR 361.

GGR 470 Geographic Aspects of Urban Planning

3 credits

Discussion of the role of geographic investigation in city, regional and resource planning. Designed to acquaint the student with the potential role of the geographer in the planning profession. Three lecture hours per week. Requires extensive field research that may substitute for some lectures.

Prerequisite: GGR 271.

GGR 500 Research Topics in Geography

3 credits

Individual research problems in Geography conducted under the supervision of Department faculty. Concentration elective, B.S. Geography and B.S. Cartography. Not open to others.