### GENERAL BUSINESS AND BUSINESS LAW

**Department of General Business and Business Law**

**The Eli Broad College of Business**  
and **The Eli Broad Graduate School of Management**

#### 385. Law, Public Policy, and Business
Fall, Spring, Summer. 3(3-0)

- **R: Open only to Honors College students.** Not open to students who have taken GBL 392 or GBL 393.
- **Structure of the legal system, basic concepts of constitutional law, torts, contracts, and property law.** Administrative law and government regulation of business.

#### 386. Law, Public Policy, and Business Honors
Fall. 4(2-14)

- **R: Open only to Honors College students.**
- **Administrative law and government regulation of business.**

#### 390. Role of Law and Lawyers in Society
Fall, Spring. 3(3-0)

- **P: GBL 385. R: Open only to seniors and graduate students in the College of Business.**
- **Law and its relationship to economics, business, and social justice.** Comparative law, Legislative and judicial processes. The role of lawyers. Overview of legal education.

#### 447. Hospitality Law
Fall, Spring. 3(3-0)

- **P: GBL 395. R: Open only to seniors and graduate students in the College of Business, School of Management.** Legal aspects of hospitality industry, including contracts and sales, torts, commercial paper, and organization. Dynamics of the changing work force and employment discrimination, franchising.

#### 451. Law of Commercial Transactions
Spring. 3(3-0)

- **P: GBL 395. R: Open only to seniors and graduate students in the College of Business.** Law of contracts and sales, commercial paper, secured transactions, consumer credit, and debtor-creditor relationships.

#### 460. International Law and Business
Spring. 3(3-0)

- **P: GBL 395. R: Open only to seniors and graduate students in the College of Business.** The impact of international law on business practices. Government regulation of international business.

#### 490. Independent Study
Fall, Spring, Summer. 1 to 3 credits.

- **R: Approval of department.**
- **Special topics: direct reading and research arranged by an individual student.** Faculty member in area supplementing regular course offerings.

#### 999. Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 24 credits.

- **R: Approval of department.**
- **A student may earn a maximum of 24 credits in all enrollments for this course.**

### GEORGRAPHY

#### GEOGRAPHY—Descriptions of Courses

**GENETICS

#### College of Natural Science

**500. Genetics Seminar**
Fall, Spring, Summer. 1(1-0)

- **A student may earn a maximum of 12 credits in all enrollments for this course.**

**880. Laboratory Rotation**
Fall, Spring, Summer. 1 to 4 credits.

- **R: Open only to Ph.D. majors in Genetics.** Participation in research with faculty members.

**899. Doctoral Dissertation Research**
Fall, Spring, Summer. 1 to 12 credits.

- **A student may earn a maximum of 99 credits in all enrollments for this course.**

### GEOGRAPHY

#### Department of Geography

**College of Social Science**

#### 113. Introduction to Economic Geography
Fall, Spring. 3(3-0)

- **Spatial distribution of resources, population, enterprise, trade, consumption, and production. Interaction of these distributions at local to global scales.**

#### 151. Cultural Geography
Fall, Spring of odd-numbered years. 3(3-0)

- **Synthetic approach to the spatial distribution of cultural forms, processes, and relationships.**

#### 202. Introduction to Meteorology
Fall. 3(3-0)

- **Fundamentals of meteorology. Energy balance, adiabatic processes, horizontal motion, cyclogenesis, and severe weather.**

#### 206. Physical Geography
Fall, Spring. 3(3-0)

- **Geographic and functional interrelationships within the physical environment: Earth-sun relationships, weather, climate, soil, vegetation and landforms (terrain characteristics).**

#### 206L. Physical Geography Laboratory
Fall, Spring. 10(0-2)

- **P: GEO 206 or concurrently.**
- **Geographic aspects of weather, climate, soil, vegetation, and terrain. Interpretation and application of maps and remotely sensed imagery.**

#### 223. Introduction to Cartography
Fall. 6(2-14)

- **Cartographic principles and techniques of making maps. Cartographic decision-making and methods for both conventional and computer mapping.**

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**A-69**
### Courses

#### 259. Geography of North America

**Fall, Spring, Summer. 3(3-0)** Regional analysis. Evolution and status of environmental, demographic, economic, and sociocultural patterns and processes.

**QA:** GEO 300

### 233. Geography of Michigan

**Fall of odd-numbered years. 3(3-0)** Physical and cultural geography of Michigan.

**QA:** GEO 407

### Geography of Recreation and Tourism

**Fall of even-numbered years. 3(3-0)**

- Cultural, physical, and biotic factors affecting the distribution of recreation and tourism resources and participation. U.S. and international examples and case studies.

**QA:** GEO 269

### 335. Geography of Latin America

**Fall. 3(3-0)**

- R: Not open to freshmen.
- Physical and human geography of Latin America. Current development issues, especially population-environment interactions and urban and rural areas. Topics include migration, urbanization, and industrialization.

**QA:** GEO 315, GEO 316

### Geography of Europe

**Fall of odd-numbered years. 3(3-0)**

- R: Not open to freshmen.
- Major regions and nations, including their physical resources, peoples, political structures, and economies.

**QA:** GEO 340, GEO 342

### Geography of East Asia

**Spring. 3(3-0)**

- R: Not open to freshmen.
- Spatial patterns and processes of physical and human geography in China, Japan, Korea, and Vietnam. Emphasis on development problems, especially since 1950.

**QA:** GEO 364, GEO 365

### Geography of Africa

**Fall. 3(3-0)**

- R: Not open to freshmen.
- Physical and human geography of Africa. Current development issues, especially people-environment interaction in urban and rural areas. Topics include drought, agricultural patterns, hunger, rural development, migration, and urbanization.

**QA:** GEO 321, GEO 322

### Geography of Plants of North America

**Fall of odd-numbered years. 3(3-0)**

- R: Not open to freshmen and sophomores.
- Geography of Plants in North America with emphasis on the East. Related ecological principles, soils, and post-Pleistocene geologic history. Some field instruction.

**QA:** GEO 432

### Agricultural Climatology

**Fall of even-numbered years. 3(3-0)** Interdepartmental with Agricultural Engineering.

- R: Not open to freshmen and sophomores.
- Relationships between climate and agriculture in resource assessment, water budget analysis, micrometeorological hazards, pest, crop- yield modeling, and impacts of global climate change.

**QP:** MTH 109 or MTH 111

### 404. Synoptic Climatology

**Fall. 4(4-0)**

- P: GEO 203.
- Global climate patterns and their controls. Relationships between upper-air flow and weather in the northern hemisphere westerlies.

**QP:** GEO 206, GEO 351 QA: GEO 451

### 405. Applied Synoptic Climatology:

**Spring of even-numbered years. 3(3-12)**

- P: GEO 404 or approval of department; MTH 116.
- Dynamic and thermal processes of atmospheric science applied to the development and evolution of extratropical cyclones. Laboratory sessions include analysis of current observations and satellite imagery.

**QP:** GEO 351, MTH 108 or MTH 111 QA: GEO 452

### 406. Environmental Geomorphology

**Fall of even-numbered years. Spring. 3(3-0)**

- Interdepartmental with Geoscientific Sciences.
- P: GEO 106 or ISP 200 or GLC 201 or GLC 301.
- R: Not open to freshmen and sophomores.

**QP:** GEO 206 or GLC 201 or GLC 200 QA: GEO 451

### 407. Regional Geomorphology of the United States

**Fall of odd-numbered years. 3(3-0)**

- P: GEO 106 or GLC 201 or GLC 301 or ISP 203.
- Geomorphic characteristics of physiographic regions of the United States. Map techniques.

**QP:** GEO 206, GLC 301 QA: GEO 429

### 408. Soil Geomorphology Field Study

**Fall. 4(2-0)**

- P: GEO 106 or GLC 201 or CSS 210.
- R: Not open to freshmen and sophomores.

**QP:** GEO 206 or GLC 200 or CSS 210 QA: GEO 420

### 413. Urban Geography

**Fall. 3(3-0)**

- P: GEO 119.
- R: Not open to freshmen and sophomores.
- Theories and models of urban spatial form. Underlying structures and processes. Socio-spatial dimensions of modern urbanism. Differentiation and locational conflict in residential, commercial, and industrial spaces.

**QP:** GEO 213 QA: GEO 403

### 414. Geography of Transportation

**Fall of odd-numbered years. 3(3-0)**

- P: GEO 119.
- R: Not open to freshmen.
- Spatial principles of transportation. Theories of interaction, network structures, and location-allocation models. Role of transport and transport planning.

**QP:** GEO 213 QA: GEO 409

### 415. Location Theory and Land Use Analysis

**Fall. 3(3-0)**

- P: GEO 115.
- R: Not open to freshmen.
- Classical and neoclassical, static and dynamic models of industrial location and spatial organization. Land rent theory. Central place theory. Multi-localional organization. Growth transmission.

**QP:** GEO 213 QA: GEO 435

### 419. The Ghetto

**Fall of odd-numbered years. 3(3-0)**

- P: GEO 415 or SOC 375 or UP 201 or ISS 320 or MC 330 or GLG 201.
- Fall of even-numbered years. R: Not open to freshmen and sophomores.
- Analysis of the ghetto including its spatial organization and structure. Distribution of racial and ethnic populations. Emphasis on U.S. cities.

**QP:** GEO 401

### 422. Map Production and Design

**Spring. 4(4-4)**

- P: GEO 223.
- Manual and automated techniques. Design solutions, map planning, data entry construction, user issues, typography, color theory, and color selection.

**QP:** GEO 223 QA: GEO 446, GEO 456

### 423. Advanced Remote Sensing

**Fall. 4(3-2)**

- P: GEO 224. R: Not open to freshmen and sophomores.
- Introduction of solar radiation with the atmosphere, lithosphere, hydrosphere, and biosphere. Introductory digital image processing. Earth-resources satellite sensors, data products, and applications. Radar and thermal remote sensing.

**QP:** GEO 224 QA: GEO 424

### 425. Advanced Geographic Information Systems

**Spring. 4(3-2)**

- P: GEO 225.
- Technical and theoretical issues in the design, evaluation, and implementation of geographic information systems for research and application.

**QP:** GEO 225 QA: GEO 447

### Geography of Health and Disease

**Fall of odd-numbered years. 3(3-0)**

- R: Not open to freshmen, sophomores, juniors.
- Socio-environmental concepts and techniques applied to health problems. Disease transmission cycles, community nutrition, and health-care planning.

**QA:** GEO 470

### Population and Development

**Spring of even-numbered years. 3(3-0)**

- P: GEO 113 or GEO 151 or GEO 230 or GEO 223 or GEO 235 or GEO 336 or GEO 337.
- Demographic issues related to economic development and environmental sustainability in selected world regions.

**QP:** GEO 201, GEO 213, GEO 300, GEO 315, GEO 316, GEO 321, GEO 322, GEO 340, GEO 442, GEO 339, GEO 344, GEO 395 or GEO 407 QA: GEO 320

### Spatial Aspects of Regional Development

**Spring of even-numbered years. 3(3-0)**

- P: GEO 113, or GEO 151, or GEO 230, or GEO 223, or GEO 335, or GEO 336, or GEO 337.
- Spatial patterns and processes associated with regional development in selected world areas.

**QP:** GEO 201, GEO 315, GEO 316, GEO 320, GEO 321, GEO 322, GEO 340, GEO 442, GEO 339, GEO 344, GEO 395 or GEO 407 QA: GEO 320

### Tourism and Regional Development

**Spring of odd-numbered years. 3(3-0)**

- P: GEO 285 or PPR 213.
- The role of tourism in regional development. Examples from Michigan, and the United States and other nations. Environmental considerations.

**QP:** GEO 285

### Introduction to Quantitative Methods for Geographers and Planners

**Fall. 3(3-0)** Interdepartmental with Urban Planning.

- P: Completion of University mathematics requirement.
- R: Open only to majors in Geography, Urban Planning, and Landscape Architecture.
- Quantitative techniques in the analysis and classification of spatial data.

**QP:** GEO 427

### Senior Seminar

**Fall. 3(3-0)**

- R: Open only to seniors in Geography.
- History, philosophy, and methodology of the geographic discipline as it has evolved within academic and social contexts.

**QA:** GEO 426

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**A70**
490. Independent Study
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
R: Approval of department.
Supervised individual study in an area supplementary to regular courses.

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

495. Field Study
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Not open to freshmen and sophomores. Approval of department.
Supervised field study in geography.

500. Internship in Geography
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Open only to juniors and seniors. Approval of department.
Individual experience in geography in an approved organization.

505. Topics in Physical Geography
Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. Review of research on topics in physical geography such as climatology, geomorphology, soils, or plant geography.
Q: GEO 834

515. Topics in Urban and Economic Geography
Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. Review of research on selected topics in urban and economic geography.
Q: GEO 401, GEO 403, GEO 435QA: GEO 895

515. Topics in Location Theory and Transportation Geography
Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. Review of research on selected topics in location theory and transportation geography.
Q: GEO 401, GEO 403, GEO 435QA: GEO 895

523. Map Automation
Fall of even-numbered years, 3(2-2)
Q: GEO 223QA: GEO 449

525. Geoprocessing
Fall of odd-numbered years, 4(4-0)
Integration of digital geospatial data, geographic information systems, spatial analysis, and expert systems in solving research problems. Class research project.
Q: GEO 424

526. Topics in Cartography and Geoprocessing
Spring, 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. Review of research in cartography, geographic information systems, and remote sensing.
Q: GEO 846

550. Topics in Regional Geography
Fall of even-numbered years, Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. Review of research on contemporary geographic issues in different world regions.
Q: GEO 840

865. Advanced Quantitative Methods in Geography
Spring, 4(4-0)
P: GEO 463
Statistical and mathematical approaches. Multiple regression, principal components analysis, discriminant analysis. Related taxonomic methods.
Q: GEO 467 QA: GEO 811

886. Research Design in Geography
Spring, 3(3-0)
Research and writing in geography. Identification of geographic problems and their relative importance. Structuring and stating hypotheses. Data acquisition and tests for validity.
Q: GEO 826

890. Advanced Readings in Geography
Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
R: Approval of department. Advanced independent readings.
Q: GEO 839

892. Advanced Research in Geography
Fall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
R: Open only to graduate students in Geography. Advanced independent research.

899. Master's Thesis Research
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 30 credits in all enrollments for this course.
R: Open only to graduate students in Geography.
Q: GEO 899

896. Theory and Methods in Geography
Spring, 3(3-0)
R: Open only to Ph.D. students in Geography. Historical development of the discipline within social and intellectual contexts. Current methodological and philosophical approaches to geographic research.
Q: GEO 826, GEO 825

999. Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 36 credits in all enrollments for this course.
Q: GEO 999

GEOLOGY

Department of Geological Sciences
College of Natural Science

201. Earth Processes and History
Fall, Spring, 4(3-3)
Not open to students with credit in GLG 301. Physical, chemical and biological processes related to the evolution of the Earth. The roles of solar energy, Earth's internal heat and the process of natural selection in controlling these processes.
Q: GLG 201, GLG 202, GLG 306

301. Engineering Geology
Fall, 3(3-2)
R: Not open to freshmen. Open only to College of Engineering students. Not open to students with credit in GLG 201.
Principles of geology as applied to civil engineering practice. Mineral resources, surficial and internal processes, geologic hazards, and geologic hazards in civil engineering projects. Air photos, topographic-geologic maps, cross sections.
Q: GLG 200, GLG 201, GLG 306

302. Geology of Michigan
Spring, 3(3-0)
P: GLG 201 or GLG 301 or ISP 203
Physical, historical, and economic geology of Michigan and its environs.
Q: GLG 200 or GLG 201 or GLG 306

303. Oceanography
Fall, 4(4-0)
P: CEM 142 or CEM 152 or PHY 184 or PHY 232 or CEM 141, PHY 183 or CEM 141, PHY 231 or CEM 151, PHY 231. Physical, chemical, biological, and geological aspects of oceanography: ocean circulation, waves, tides, shelf processes, chemical properties of ocean water, ocean productivity, shoreline processes, and sedimentation.
Q: CEM 142 or CEM 151 or PHY 289 or PHY 239 or CEM 141, PHY 238 or CEM 151

321. Mineralogy and Geochemistry
Fall, 4(3-2)
P: CEM 142 or CEM 152.
Q: CEM 141 or CEM 151 or LBS 181 QA: GLG 321, GLG 325, GLG 327

331. Vertebrate Life of the Past
Spring, 3(3-0) Interdepartmental with Zoology.
P: BS 110 or BS 111 or juniors and above. Not open to students with credit in GLG 453.
Evolution and diversity of fossil vertebrates from fish to humans with emphasis on dinosaurs and Pleistocene events.
Q: GLG 302

351. Structural Geology
Fall, 4(3-2)
P: GLG 201 or GLG 301, GLG 321, MTH 116.
Structural Geology. Mechanical behavior and Kinematic history of the lithosphere. Stress and strain. Deformation features such as folds, faults and microstructures. Methods of analysis and interpretation. One weekend field trip required.
Q: GLG 202, MTH 111 QA: GLG 351

361. Introduction to Geodynamics and Geophysics
Spring, 3(3-2)
P: MTH 116, PHY 183 or PHY 183B or PHY 231 or PHY 231B.
Geophysical methods of studying the structure and dynamics of the earth and planets. Plate tectonics and global geodynamic processes, plate margin processes and evolution, marine geology.
Q: GLG 201, MTH 112 QA: GLG 375, GLG 479

411. Hydrogeology
Fall, 4(3-2)
P: MTH 116 R: Not open to freshmen and sophomores.
Principles of the source, occurrence and movement of groundwater emphasizing geologic factors and controls.
Q: MTH 109 or MTH 111 QA: GLG 411

412. Glacial and Quaternary Geology
Spring of odd-numbered years, 3(2-2)
Interdepartmental with Geography.
P: GLG 201 or GLG 301 or GEO 406 R: Not open to freshmen and sophomores.
Glacial and Quaternary geology with emphasis on the midwestern United States. Laboratory focuses on glacial processes. One weekend field trip required.
Q: GLG 201 QA: GLG 415

413. Environmental Geochemistry
Spring, 3(3-0)
P: GLG 201 or GLG 301; CEM 141 or CEM 151.
Natural and anthropogenic processes affecting environmental chemistry with emphasis on the water cycle, Chemical equilibria, kinetics, geochemical cycling, acid rain, carbon dioxide and the greenhouse effect. Historical perspectives and future concerns.
Q: GLG 200 or GLG 201, CEM 151 QA: GLG 412

422. Organic Geochemistry
Fall, 3(3-0)
P: CEM 141, CEM 152 or CEM 183H; GLG 201 or GLG 301; PHY 183 or PHY 183B or PHY 231 or PHY 231B.
Organic geochemistry applied to global cycling of organic matter and greenhouse gases. Evaluation of the fate of bulk organic matter and individual compounds in the environment.
Q: CEM 152, GLG 201 or GLG 301, PHY 237 or PHY 287