

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
Meeting #9 - October 31, 2018  
Approved Minutes

Present: Dave Ballantine (Chair/CLAS), Amanda Durik (PSYC), Trude Jacobsen (HIST/SEAS),  
Kristen Myers (WGST), Deepak Naidu (MATH), Alicia Schatteman (PSPA), Carol  
Thompson (PHYS)

Suzanne Hogan (CLAS)

Absent: Steve Estes (Ex-Officio)

**Meeting called to order at 1:35 PM**

**A. Action on Minutes**

Minutes from the #8 meeting on October 24, 2018, have been approved electronically and forwarded to the catalog editor.

**B. Miscellaneous**

A consent agenda was assembled for the following items: Gen Ed Pathway App: GEOL 101, new courses: GEOL 304, GEOL 375, GEOL 408, and GEOL 508; program revision for the certificate of undergraduate study in actuarial science, MATH degree with honors, MATH department info, MATH emphasis 1, MATH emphasis 2, MATH emphasis 3, MATH emphasis 4, MATH emphasis 5 (change to emphasis 4), MATH emphasis 6, minor in actuarial science, minor in applied probability and statistics, minor in elementary math education, removal of STAT courses; course deletions for STAT 472, STAT 473A, STAT 474, and STAT 481; course revisions for STAT 208 (change to STAT 100), STAT 301 (change to STAT 200), STAT 324X, STAT 350 (change to STAT 300), STAT 382 (change to ACSC 350), STAT 470 (change to STAT 400), STAT 473 (change to STAT 435), STAT 479 (change to STAT 425), STAT 483 (change to STAT 401), STAT 484 (change to ACSC 460), STAT 485 (change to ACSC 450), STAT 486 (change to ACSC 451), STAT 491 (change to STAT 415), STAT 493 (change to STAT 490), STAT 495 (change to ACSC 491), new courses STAT 410, STAT 41, STAT 437. **Motion of approval** moved by Amanda Durik, seconded by Trude Jacobsen, and approved by all members.

**C. Curriculum - Old Business**

None

**D. Curriculum - New Business**

**Department of Geology and Environmental Geosciences**

The following new courses were approved: GEOL 101, GEOL 303, GEOL 304, GEOL 375, GEOL 408, and GEOL 508. A general education pathway application for GEOL 101 was approved. General education non-pathway applications for GEOL 303 and GEOL 304 were approved.

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
Meeting #9 - October 31, 2018  
Approved Minutes

**Department of Mathematical Sciences**

Course revision for MATH 360 was approved. Revisions to the following programs were approved: Certificate of Undergraduate Study in Actuarial Science, Degree with Honors, Department Info, Emphasis 1, Emphasis 2, Emphasis 3, Emphasis 4, Emphasis 5 (change to Emphasis 4), Emphasis 6, Minor in Actuarial Science, Minor in Applied Probability and Statistics, Minor in Elementary Math Education, Minor in Mathematical Sciences, and removal of STAT courses.

**Division of Statistics**

The following course deletions were approved: STAT 472, STAT 473A, STAT 474, STAT 481, STAT 208 (change to STAT 100), STAT 301 (change to STAT 200), STAT 324X, STAT 350 (change to STAT 300), STAT 382 (change to ACSC 350), STAT 470 (change to STAT 400), STAT 473 (change to STAT 435), STAT 478 (change to STAT 438), STAT 479 (change to STAT 425), STAT 483 (change to STAT 401), STAT 484 (change to ACSC 460), STAT 485 (change to ACSC 450), STAT 486 (change to ACSC 451), STAT 491 (change to STAT 415), STAT 493 (change to STAT 490), STAT 495 (change to ACSC 491). The following new courses were approved: ACSC 400X, ACSC 405, ACSC 417X, ACSC 437X, ACSC 438X, ACSC 455, ACSC 456, STAT 410, STAT 411, STAT 417, STAT 419, STAT 421, STAT 435, STAT 436, and STAT 437. The program proposal for the STAT/ACSC undergraduate program was approved. New courses proposals for ACSC 496 and STAT 495 were TABLED for clarification on language used in course descriptions.

**Center for the Study of Women, Gender, and Sexuality**

The program proposal for the B.A. or B.S. in Women, Gender, and Sexuality Studies was approved.

**Meeting adjourned at 2:40 PM**

**TABLED:**

STAT      New Course Proposal: ACSC 496  
            New Course Proposal: STAT 495

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

**Department of Geology and Environmental Geosciences**

New Course

Page 299, 2018-19 Undergraduate Catalog

CIP: 40.0601

101. GEOLOGY OF THE NATIONAL PARKS (3). Exploration of the most distinctive and intriguing features of America's National Parks in a geologic context. Focus on the origin and evolution of landforms in various national parks and the geologic processes that created and sculpted them. National Parks serve discussions on society's impact on the lithosphere, hydrosphere, atmosphere, and biosphere.

Rationale: The wonders observed in the National Parks of the U.S.A. are breathtaking. This course is designed to allow students to recognize and understand the geologic features preserved within the National Park System. Through lectures and activities, the students will be able to use these features as a means to gain an understanding of, and an appreciation for, the dynamic forces that constantly shape and change our evolving planet. The course will focus on the origin and evolution of landforms in various national parks and the geologic processes that created and sculpted them. Park features serve as a point of departure for interdisciplinary discussions on society's impact on the lithosphere, hydrosphere, atmosphere, and biosphere.

Non-Duplication: There are no courses offered in the NIU Undergraduate Catalog that cover the proposed curriculum, so no departments have been contacted.

New Course

Page 300, 2018-19 Undergraduate Catalog

CIP: 40.0606

303. DIAMONDS, GEMS, AND OTHER PREVIOUS STONES (3). Origin, occurrence, and physical properties of diamonds and other common gem minerals. Physical properties of the gems will be related to their chemistries, crystal structures, and optical characteristics. Methods and instruments used in the determination of a gem will also be presented. Includes discussion of social impacts of gemstone mining, as well as recent advances in the production of synthetic gems, and how to distinguish them from natural samples.

Rationale: Diamonds, gems, and other precious stones have held significance in society and engendered awe throughout history. This course will introduce students to a wide range of gem minerals while discussing their origins, occurrence, and physical properties. The appearance and physical properties are controlled by the mineral's chemistry and crystal structure, thus each gem will be discussed with these characteristics emphasized. Students will observe each gem's properties and appearance, develop a hypothesis to explain its properties, and test that hypothesis by looking at available data on the gem. New techniques used to identify and synthesize gems will also be discussed. The class will feature lectures, in-class activities, and hands-on analyses of select gem minerals.

Non-Duplication: There are no courses offered in the NIU Undergraduate Catalog that cover the proposed curriculum, so no departments have been contacted.

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

New Course

Page 300, 2018-19 Undergraduate Catalog

CIP: 40.0606

304. DIAMONDS, GEMS, AND OTHER PREVIOUS STONES LABORATORY (1).  
Hands-on analyses of select gem minerals and the techniques used to characterize gems.  
Designed to accompany GEOL 303. One 2-hour period per week. CRQ: GEOL 303.

Rationale: A new course, Diamonds, Gems, and other Precious Stones, is being proposed and this laboratory course will provide hands-on analyses of select gem minerals to accompany GEOL 303. New techniques used to identify and synthesize gems will be discussed and demonstrated. Students in GEOL 303 do not need to take GEOL 304, but those seeking more hands-on experience or needing an upper-level laboratory class are encouraged to take this laboratory.

Non-Duplication: There are no courses offered in the NIU Undergraduate Catalog that cover the proposed curriculum, so no departments have been contacted.

New Course

Page 300, 2018-19 Undergraduate Catalog

CIP: 40.0606

375. TECHNOLOGY APPLICATIONS IN GEOSCIENCE (2). Applied training in software and hardware used in the collection, organization, evaluation, manipulation and presentation of common field geoscientific data. Students will spend time in the field collecting original data using mobile devices, handheld GPS and when possible, unmanned aerial vehicles. Includes required one- to three-day field trips or extended one- to two-week field excursions. PRQ: GEOL 120 and GEOL 121 or consent of department.

Rationale: Modern geoscientific field work uses mobile devices, the global positioning system (GPS), and a variety of software to collect, organize, evaluate, manipulate and display data. These data types are too numerous to list, but include measurements of Earth's gravity or magnetic field, measurements of the orientation of rock strata, concentrations of elements, ions and contaminants in water, flow velocities of glaciers, precipitation amounts, soil erosion, water table levels, concentrations of aerosols in the atmosphere, land use practices, velocities of tectonic plates, and temperature of the ocean at various depths. The size of these data sets can be massive, and their analysis increasingly includes consideration of data spatial relationships and variability. This course will educate students about the structure, sources and format of common geoscientific data types, and will train them in the modern techniques of data collection, organization, manipulation and communication. Previously this information was inconsistently and ineffectively delivered across a number of courses in the department. This course aims to train students mid-way through their undergraduate career so that they have a consistent foundation of skills and knowledge that can be effectively utilized in subsequent, upper-level courses in the B.S. program in Geology and Environmental Geosciences.

Non-Duplication: There are no other courses like this on campus. Geographic and Atmospheric Sciences teaches a number of GIS courses, and there is some overlap with those courses, but that overlap is

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

insignificant. The training here is discipline specific (i.e., tailored to GEOL majors), and GIS is only a small fraction of the total course content.

New Course

Page 300, 2018-19 Undergraduate Catalog

CIP: 40.0699

408. HAZWOPER CERTIFICATION (1). Hazardous waste operations and emergency response (HAZWOPER) certification is specifically designed for workers who are involved in clean-up operations, voluntary clean-up operations, emergency response operations, and storage, disposal, or treatment of hazardous substances or uncontrolled hazardous waste sites. This course covers topics included in 29 CFR 1910.120. Junior or Senior standing required. S/U grading.

Rationale: Students pursuing careers in environmental consulting are frequently required to hold OSHA 40-hour HAZWOPER certification to participate in field work. Having this training at NIU will allow students to find internships and employment since they can start doing field work the first day on the job. This course will guide them through the 40-hours of material and will include hands-on training with certified personnel. This course has been taught as part of GEOL 477 Field Methods in Environmental Geosciences. In summer 2018, the training was offered independently of GEOL 477, but not for credit. The goal is to adapt the HAZWOPER training to be offered as a one credit course. Students state this is one of the most useful components for future job training.

Non-Duplication: This program is exclusive to the Department of Geology and Environmental Geosciences.

New Course

Page 300, 2018-19 Undergraduate Catalog

CIP: 40.0699

508. HAZWOPER CERTIFICATION (1). Hazardous waste operations and emergency response (HAZWOPER) certification is specifically designed for workers who are involved in clean-up operations, voluntary clean-up operations, emergency response operations, and storage, disposal, or treatment of hazardous substances or uncontrolled hazardous waste sites. This course covers topics included in 29 CFR 1910.120. S/U grading.

Rationale: Students pursuing careers in environmental consulting are frequently required to hold OSHA 40-hour HAZWOPER certification to participate in field work. Having this training at NIU will allow students to find internships and employment since they can start doing field work the first day on the job. This course will guide them through the 40-hours of material and will include hands-on training with certified personnel. This course has been taught as part of GEOL 577 Field Methods in Environmental Geosciences. In summer 2018, the training was offered independently of GEOL 577, but not for credit. The goal is to adapt the HAZWOPER training to be offered as a one credit course. Students state this is one of the most useful components for future job training.

Non-Duplication: This program is exclusive to the Department of Geology and Environmental Geosciences.

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Course Revision

Page 301, 2018-19 Undergraduate Catalog

477. FIELD METHODS IN ENVIRONMENTAL GEOSCIENCES (5 4). ~~Field camp designed to train students~~ Immersive training in field methods and integrative problem solving related to environmental geosciences covering topics such as field methods in hydrogeology, surface-water and vadose-zone hydrology, water quality analysis, ~~ecosystem health~~, environmental surface geophysics, site evaluation and techniques, and regional landscape history and environmental change. ~~Includes 40-hour OSHA HAZWOPER certification. Offered during summer session only.~~ Multiple field trips and frequent, outdoor physical activity are required. PRQ: Senior standing GEOL 375, GEOL 390, or GEOL 490; and or consent of department.

Rationale: The current description of this course is incomplete and out of date. The new description reflects the department's intent to modernize and "modularize" our existing requirements for student training in the geoscientific field techniques that are essential to many employment and graduate school career pathways. We are also making these changes to accommodate a growing population of non-traditional students who cannot afford the time or cost associated with our previous version of this course. Many of these students have important responsibilities associated with families and jobs, and these changes reflect our desire to fairly adapt to these changing demographics while still providing the field training that all students need. By coupling this change with changes to our other field courses (e.g., GEOL 478 and GEOL 479), we will now be able to offer students a wider array of less expensive field courses that we can offer over a wider range of times. Students will meet programmatic requirements for field study by taking the right set of courses that meet their professional goals while enabling them to meet their family and employment obligations. This flexibility will help us better meet the needs of today's student body, and will help to attract more students to our program.

Course Revision

Page 301, 2018-19 Undergraduate Catalog

478. ~~GEOLOGIC FIELD WORK~~ GEOSCIENTIFIC FIELD TECHNIQUES I (3 2). ~~Field camp. Offered during summer session only.~~ Immersive field experience that provides basic training in the integrative skills of systematic observation, data collection, description and interpretation of geological maps of lightly to moderately deformed regions dominated by sedimentary rocks. May involve up to two and a half weeks of travel to remote areas and physically demanding outdoor activities. PRQ: GEOL 330, GEOL 335, GEOL 375, and GEOL 405; or consent of department. CRQ: GEOL 479.

Rationale: The current description of this course is incomplete and out of date. The new description reflects the department's intent to modernize and "modularize" our existing requirements for student training in the geoscientific field techniques that are essential to many employment and graduate school career pathways. We are also making these changes to accommodate a growing population of non-traditional students who cannot afford the time or cost associated with our previous six-week course requirement. Many of these students have important responsibilities associated with families and jobs, and these changes reflect our desire to fairly adapt to these changing demographics while still providing the field training that all students need. By coupling this change with changes to our other field courses (e.g., GEOL 477 and GEOL 479), we will now be able to offer students a wider array of less expensive field courses that we can offer over a wider range of times. Students will meet programmatic

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

requirements for field study by taking the right set of courses that meet their professional goals while enabling them to meet their family and employment obligations. This flexibility will help us better meet the needs of today's student body, and will help to attract more students to our program.

Other Catalog Change Page 54, 2018-19 Undergraduate Catalog

**University Graduation Requirements**

↓

**Knowledge Domain Course Descriptions**

↓

**Nature and Technology**

ANTH 103. THE GREAT APES (3). Introduction to the ... ..

↓

GEOG 253. ENVIRONMENT AND SOCIETY (3). Introduction to the ... ..

**GEOL 101. GEOLOGY OF THE NATIONAL PARKS (3).** Exploration of the most distinctive and intriguing features of America's National Parks in a geologic context. Focus on the origin and evolution of landforms in various national parks and the geologic processes that created and sculpted them. National Parks serve discussions on society's impact on the lithosphere, hydrosphere, atmosphere, and biosphere.

GEOL 103. PLANETARY AND SPACE SCIENCE (3). Exploration of the ... ..

↓

GEOL 121. INTRODUCTORY GEOLOGY LABORATORY (1). Laboratory ... ..

**GEOL 303. DIAMONDS, GEMS, AND OTHER PREVIOUS STONES (3).** Origin, occurrence, and physical properties of diamonds and other common gem minerals. Physical properties of the gems will be related to their chemistries, crystal structures, and optical characteristics. Methods and instruments used in the determination of a gem will also be presented. Includes discussion of social impacts of gemstone mining, as well as recent advances in the production of synthetic gems, and how to distinguish them from natural samples.

**GEOL 304. DIAMONDS, GEMS, AND OTHER PREVIOUS STONES LABORATORY (1).** Hands-on analyses of select gem minerals and the techniques used to characterize gems. Designed to accompany GEOL 303. One 2-hour period per week. CRQ: GEOL 303.

HIST 323. HISTORY OF SCIENCE TO NEWTON (3). Science in the ... ..

↓

TECH 294. TECHNOLOGY AND CULTURAL RELEVANCE (3). Development ... ..

**Society and Culture**

↓

Rationale: Addition of GEOL 101, GEOL 303, and GEOL 304 to the Nature and Technology domain.

Other Catalog Change Page 297-298, 2018-19 Undergraduate Catalog

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

**Major in Geology and Environmental Geosciences (B.S.)**

↓

**Emphasis 1. Geology**

**Requirements in Department (44-45 42)**

~~\*GEOL 120 - Introductory Geology~~ **Planet Earth** (3), and ~~\*GEOL 121 - Introductory Geology~~  
**Planet Earth** Laboratory (1)

GEOL 200 - Geoscience Career Preparation (1)

~~GEOL 322 - Paleogeography, Paleoclimatology, Paleoecology~~ (4)

GEOL 325 - Solid Earth Composition (4)

~~GEOL 330 - Global Cycles~~ (4)

GEOL 335 - Dynamics and Structure of the Earth (4)

**GEOL 375 - Technology Applications in Geoscience** (2)

GEOL 405 - **Sedimentology and Stratigraphy** (3 4)

GEOL 478<sup>1</sup> - ~~Geologic Field Work~~ **Geoscientific Field Techniques I** (3 2) (~~or an approved substitute taken at another university~~)

**AND** GEOL 479<sup>1</sup> - ~~Geologic Field Work~~ **Geoscientific Field Techniques II** (3 2) (~~or an approved substitute taken at another university~~)

**OR** GEOL 477<sup>1</sup> - **Field Methods in Environmental Geosciences** (4)

Upper-division GEOL course work, which may include senior thesis, selected in consultation with undergraduate adviser (15)

**Requirements outside Department (24)**

Please note corequisite information in course descriptions.

\*CHEM 210 - General Chemistry I (3),

AND \*CHEM 212 - General Chemistry Laboratory I (1)

↓

\*MATH 229 - Calculus I (4),

AND MATH 230 - Calculus II (4)

**OR** \*MATH 211 - Calculus for Business and Social Science (4),

**AND** STAT 301 - Elementary Statistics (4)

~~\*PHYS 210 - General Physics I~~ (4),

AND ~~\*PHYS 211 - General Physics II~~ (4)

~~OR~~ \*PHYS 253 - Fundamentals of Physics I (4),

AND \*PHYS 273 - Fundamentals of Physics II (4)

**\*PHYS 210 - General Physics I** (4)

**OR** \*PHYS 253 - Fundamentals of Physics I: Mechanics (4)

**AND** \*PHYS 211 - General Physics II (4)

**OR** \*PHYS 273 - Fundamentals of Physics II: Electromagnetism (4)

**OR**

**BIOS 103 - General Biology** (3)

**AND** BIOS 105 - General Biology Laboratory (1)

**AND** BIOS 209 - Fundamentals of Organismal Biology (3)

**AND** BIOS 211 - Fundamentals of Organismal Biology Laboratory (1)



NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

**Total Hours for Emphasis 1, Geology: 69 66**

**Emphasis 2. Environmental Geosciences**

**Requirements in Department (35-38 36-39)**

\*GEOL 120 - ~~Introductory Geology~~ Planet Earth (3),  
AND \*GEOL 121 - ~~Introductory Geology~~ Planet Earth Laboratory (1)  
GEOL 200 - Geoscience Career Preparation (1)  
~~GEOL 322 - Paleogeography, Paleoclimatology, Paleocology (4)~~  
GEOL 325 - Solid Earth Composition (4)  
^GEOL 330 - Global Cycles (4)  
GEOL 335 - Dynamics and Structure of the Earth (4)  
GEOL 375 - Technology Applications in Geoscience (2)  
GEOL 405 - Sedimentology and Stratigraphy (4)  
^GEOL 477<sup>1</sup> - Field Methods in Environmental Geosciences (4),  
OR an approved substitute taken at another university (4) GEOL 478<sup>1</sup> - Geoscientific  
Field Techniques I (2)  
AND GEOL 479<sup>1</sup> - Geoscientific Field Techniques II (2)

↓

**Requirements outside Department (33-36)**

\*CHEM 210 - General Chemistry I (3),  
AND \*CHEM 212 - General Chemistry Laboratory I (1)

↓

\*MATH 229 - Calculus I (4),  
AND MATH 230 - Calculus II (4),  
OR \*MATH 211 - Calculus for Business and Social Science (4),  
AND STAT 301 - Elementary Statistics (4)

\*PHYS 210 - General Physics I (4)  
OR \*PHYS 253 - Fundamentals of Physics I: Mechanics (4)  
AND \*PHYS 211 - General Physics II (4)  
OR \*PHYS 273 - Fundamentals of Physics II: Electromagnetism (4)  
OR

BIOS 103 - General Biology (3)  
AND BIOS 105 - General Biology Laboratory (1)  
AND BIOS 209 - Fundamentals of Organismal Biology (3)  
AND BIOS 211 - Fundamentals of Organismal Biology Laboratory (1)

Upper-division course work selected from the following list of courses (9-12):

ANTH 425 - Environment and Anthropology (3)  
ANTH 432 - Nature and Environment Across Cultures (3)  
ANTH 445 - Primate Evolution (3)  
BIOS 415 - Water Microbiology (3)  
BIOS 442 - Evolution and the Creationist Challenge (3)  
ECON 301 - Labor Problems (3)  
ECON 386 - Environmental Economics (3)

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

ENVS 301 - Environmental Sciences I: Physical Systems (3)  
ENVS 302 - Environmental Science II: Biological Systems (3)  
ENVS 304 - Environmental Law, Policy, and Economics (3)  
GEOG 302 - Soil Science (4)  
GEOG 303 - Water Resources and the Environment (3)  
GEOG 306 - Severe and Hazardous Weather (3)  
GEOG 359 - Introduction to Geographic Information Systems (3)  
GEOG 368 - Climate Change: Science, Impacts, And Mitigation (3)  
GEOG 403 - Soils and Environmental Land Use Planning (3)  
GEOG 404 - Soil Description and Interpretation (2)  
GEOG 406 - Natural Hazards and Environmental Risk (3)  
GEOG 453 - Environmental Management (3)  
GEOG 455 - Land-Use Planning (3)  
^GEOG 464 - Location Analysis (3)  
GEOG 498 - Seminar in Current Problems (3)  
PHHE 351 - Elements of Environmental Health (3)  
^POLS 324 - Politics of Environmental Health, and Safety Regulation (3)

~~Upper division course work<sup>3</sup> selected with approval of undergraduate adviser, from the Departments of Biological Sciences, Chemistry and Biochemistry, Economics, Environmental Studies, Geographic and Atmospheric Sciences, Mathematical Sciences, Physics, and/or Political Science. (9-12)~~

↓

**Total Hours for Emphasis 2, Environmental Geosciences: (~~67-73~~ 69-75)**

**Emphasis 3: Earth and Space Science Education<sup>1,2</sup>**

**Requirements in Department (37)**

\*GEOL 103 - Planetary and Space Science (3),  
OR \*PHYS 162 - Elementary Astronomy (3)

↓

\*GEOL 120 - ~~Introductory Geology~~ Planet Earth (3),  
AND \*GEOL 121 - ~~Introductory Geology~~ Planet Earth Laboratory (1)  
GEOL 200 - Geoscience Career Preparation (1)  
~~GEOL 322 - Paleogeography, Paleoclimatology, Paleoecology (4)~~  
GEOL 325 - Solid Earth Composition (4)  
^GEOL 330 - Global Cycles (4)  
GEOL 335 - Dynamics and Structure of the Earth (4)  
GEOL 401 - Third Clinical High School/Middle School Experience ... Space Science (2)  
GEOL 405 - Sedimentology and Stratigraphy (4)  
GEOL 429 - Inquiry-Based Field Experiences for Earth Science Teachers (3)

↓

**Total Hours for Emphasis 3, Earth and Space Science Education: 90-96**

Footnotes

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

\*Available for general education credit.

^This is a Writing Infused Course

<sup>1</sup>With prior approval from a departmental undergraduate advisor, students may substitute field courses taken at other universities as long as those courses carry a combined credit hour total of at least 4 credit hours.

<sup>2</sup>With written approval of the departmental undergraduate advisor, students with a special interest in ecology and/or paleontology may substitute BIOS 103 and BIOS 105 and BIOS 209 and BIOS 211 for PHYS 210 and PHYS 211 (or PHYS 253 and PHYS 273). Additional courses may be substituted with written approval of the departmental undergraduate advisor.

<sup>3</sup>A cross-departmental pre-law sequence is also available. Students desiring to pursue other disciplines may petition the department's Undergraduate Committee.

Rationale: Update curriculum with new names for current courses, add new courses, create consistency between requirements for Emphases 1 and 2, and make field camp requirements more flexible for Emphases 1 and 2.

Impact Statement: All the outside departments have been consulted regarding the addition of their courses to the list of outside requirements in Emphasis 1 and 2. None of the departments identified any negative impact on course availability or enrollment with these changes.

Other Catalog Change

Page 299, 2018-19 Undergraduate Catalog

**Minor in Geology and Environmental Geosciences (24)**

\*CHEM 210 - General Chemistry I (3)

\*CHEM 212 - General Chemistry Laboratory I (1)

\*GEOL 120 - ~~Introductory Geology~~ Planet Earth (3),

AND \*GEOL 121 - ~~Introductory Geology~~ Planet Earth Laboratory (1)

~~GEOL 322 - Paleogeography, Paleoclimatology, Paleoecology (4)~~

GEOL 325 - Solid Earth Composition (4)

<sup>^</sup>GEOL 330 - Global Cycles (4)

GEOL 335 - Dynamics and Structure of the Earth (4)

GEOL 405 - Sedimentology and Stratigraphy (4)

Six or more semester hours in the minor must be taken at NIU.

Rationale: Update curriculum with new names for current courses, add new courses to create consistency.

**Department of Mathematical Sciences**

Course Revision

Page 317, 2018-19 Undergraduate Catalog

MATH 360. MODEL BUILDING IN APPLIED MATHEMATICS (3). An introduction to the formulation, analysis and interpretation of mathematical models in the study of selected problems in the natural sciences, the social sciences, and management science. ~~Not open for credit to students having credit in MATH or STAT courses numbered 420 or above, except by consent of department.~~ PRQ: MATH 230.

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Rationale: With the separation of the Department of Mathematical Sciences and Statistics, MATH has reevaluated their policies and procedures.

Other Catalog Change                      Page 39, 2018-19 Undergraduate Catalog

**Univeristy Graduation Requirements**

↓

**Writing-Infused Course List**

↓

LTRE 311. CONTEND AREA LITERACY INSTRUCTION (3). Developing students' ... ..

MATH 360. MODEL BUILDING IN APPLIED MATHEMATICS (3). An introduction to the formulation, analysis and interpretation of mathematical models in the study of selected problems in the natural sciences, the social sciences, and management science. ~~Not open for credit to students having credit in MATH or STAT courses numbered 420 or above, except by consent of department.~~ PRQ: MATH 230.

MEE 481. ENGINEERING DESIGN SEMINAR (1). Complete preparation ... ..

↓

Rationale: Revision of MATH 360.

Other Catalog Change                      Page 311, 2018-19 Undergraduate Catalog

**Department of Mathematical Sciences (MATH, ~~STAT~~)**

The Department of Mathematical Sciences offers the B.S. degree with a major in mathematical sciences with emphases in general mathematical sciences, applied mathematics, computational mathematics, ~~probability and statistics, and~~ **and** mathematics education, ~~and actuarial science.~~ Students who successfully complete the program ... ..

The department also offers minors in mathematical sciences, **and** elementary mathematics education, ~~applied probability and statistics, and actuarial science.~~ These minors ... ..

~~Students interested in the emphasis in probability and statistics, the emphasis in actuarial science, a degree with honors in probability and statistics, a minor in applied probability and statistics or a minor in actuarial science should contact the office of the Division of Statistics.~~

↓

**Department Regulations**

Mathematical sciences majors are not permitted to count courses in computer science (CSCI) toward fulfilling general education area requirements.

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

~~For all majors in the department, the GPA in the major is calculated by using only those mathematical sciences courses numbered 229 or above which are available for credit toward the major.~~

### **Department Requirements**

Students majoring or minoring in mathematical sciences must obtain a minimum GPA of 2.00 in those MATH/STAT ~~and professional education~~ courses applicable to that major or minor. ... ..

All majors are required to have a satisfactory portfolio of work ... ..

~~With department permission, students are allowed to complete certain combinations of the major and one or more minors in the department, or multiple minors within the department. In all such cases, for each minor in the department, the student must earn at least 6 semester hours in MATH/STAT courses that are not counted in fulfillment of the major or any other minors in the department.~~

### **Mathematics Placement Examination Policy**

Students **who planning to take MATH 110, MATH 155, MATH 206, MATH 210, MATH 211, or MATH 229, and do not meet the prerequisite requirements,** must take the Mathematics Placement Examination, so they may begin their mathematical studies at the appropriate level.

### **Proficiency Examination Policy**

↓

Rationale: Updating department info and deleting reference to the former Division of Statistics.

Other Catalog Change

Page 311, 2018-19 Undergraduate Catalog

### **Major in Mathematical Sciences (B.S.)**

The student learning outcomes for this degree are located at  
~~[www.niu.edu/assessment/clearinghouse/outcomes/index.shtml](http://www.niu.edu/assessment/clearinghouse/outcomes/index.shtml)~~

<https://www.niu.edu/effectiveness/files/outcomes/clas/mathematical-sciences-bs.pdf>

### **Emphasis 1. General**

#### **Requirements in Department (40-42)**

MATH 229 - Calculus I (4)

↓

MATH 240 - Linear Algebra and Applications (4)

**MATH 336 - Ordinary Differential Equations (3)**

~~^~~MATH 360 - Model Building in Applied Mathematics (3)

↓

MATH 431 - Advanced Calculus II (3)

~~STAT 350 - Introduction to Probability and Statistics (3)~~

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Two additional ~~mathematical sciences~~ courses from **MATH courses** numbered above MATH 333 or **STAT courses numbered above 299** (6-8).

↓

**Total Hours for Emphasis 1, General: 44-46**

Rationale: Updating course curriculum.

Other Catalog Change

Page 312, 2018-19 Undergraduate Catalog

**Major in Mathematical Sciences (B.S.)**

↓

**Emphasis 2. Applied Mathematics**

**Requirements in Department (~~37-40 -43~~)**

MATH 229 - Calculus I (4)

↓

MATH 431 - Advanced Calculus II (3)

~~STAT 350 - Introduction to Probability and Statistics (3)~~

Two of the following (6-7)

MATH 420 - Abstract Algebra I (3)

↓

MATH 460 - Modeling Dynamical Systems (3)

~~STAT 470 400 - Introduction to Probability Theory (3)~~

STAT 483 401 - Stochastic Processes I (4)

~~Additional mathematical sciences course (3-4)~~

One additional ~~mathematical sciences~~ **MATH/STAT** course numbered above MATH 333 (3-4)

**Requirements outside Department (4 7)**

CSCI 230 - Computer Programming in FORTRAN (4),

OR CSCI 240 - Computer Programming in C++ (4)

**STAT 300 - Introduction to Probability and Statistics (3)**

**Total Hours for Emphasis 2, Applied Mathematics: 44-47**

Rationale: Updating course curriculum.

Other Catalog Change

Page 312, 2018-19 Undergraduate Catalog

**Major in Mathematical Sciences (B.S.)**

↓

**Emphasis 3. Computational Mathematics**

**Requirements in Department (~~40-42 37-38~~)**

MATH 229 - Calculus I (4)

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

↓  
MATH 435 - Numerical Analysis (3)  
~~STAT 350 - Introduction to Probability and Statistics (3)~~  
One of the following (3-4)  
    MATH 380 - Elementary Combinatorics (3)  
    ↓  
    MATH 496 - Seminar in Computational Mathematics (3)  
    STAT 473 435 - ~~Statistical Methods and Models I~~ **Regression Analysis** (3),  
        And ~~STAT 473A - Statistical Computing Packages (1)~~  
One additional course from CSCI 340 (4), and CSCI 464 (4), and ~~mathematical sciences~~  
(MATH/STAT)-courses numbered above 333 (3-4)

**Requirements outside Department (4 7)**

**STAT 300 - Introduction to Probability and Statistics (3)**  
CSCI 230 - Computer Programming in FORTRAN (4),  
    OR CSCI 240 - Computer Programming in C++ (4)

**Total Hours for Emphasis 3, Computational Mathematics: 44- 46 45**

Rationale: Updating course curriculum.

Other Catalog Change

Page 312, 2018-19 Undergraduate Catalog

**Major in Mathematical Sciences (B.S.)**

↓  
**~~Emphasis 4. Probability and Statistics~~**

**Requirements in Department (40-43)**

~~MATH 229 - Calculus I (4)~~  
~~MATH 230 - Calculus II (4)~~  
~~MATH 232 - Calculus III (4)~~  
~~MATH 240 - Linear Algebra and Applications (4)~~  
~~△MATH 360 - Model Building in Applied Mathematics (3)~~  
~~MATH 430 - Advanced Calculus I (3)~~  
~~STAT 350 - Introduction to Probability and Statistics (3)~~  
~~STAT 470 - Introduction to Probability Theory (3)~~  
~~STAT 472 - Introduction to Mathematical Statistics (3)~~  
Two of the following (6-8)  
    ~~STAT 473 - Statistical Methods and Models I (3), and STAT 473A - Statistical~~  
    ~~Computing Packages (1)~~  
    ~~STAT 474 - Statistical Methods and Models II (3)~~  
    ~~STAT 478 - Statistical Methods of Forecasting (3)~~  
    ~~STAT 479 - Practice of Bayesian Statistics (3)~~  
    ~~STAT 483 - Stochastic Processes I (4)~~

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

~~STAT 491—Programming and Computing in Statistics (3)~~

At least 3 additional semester hours from among the following courses (3-4)

- ~~MATH 420—Abstract Algebra I (3)~~
- ~~MATH 423—Linear and Multilinear Algebra (3)~~
- ~~MATH 431—Advanced Calculus II (3)~~
- ~~MATH 434—Numerical Linear Algebra (3)~~
- ~~MATH 435—Numerical Analysis (3)~~
- ~~MATH 440—Elements of Complex Analysis (3)~~
- ~~MATH 444—Linear Programming and Network Flows (3)~~
- ~~MATH 450—Introduction to Topology (3)~~
- ~~STAT 382—Theory of Interest and Financial Derivatives (4)~~
- ~~STAT 473—Statistical Methods and Models I (3), and STAT 473A—Statistical Computing Packages (1)~~
- ~~STAT 474—Statistical Methods and Models II (3)~~
- ~~STAT 478—Statistical Methods of Forecasting (3)~~
- ~~STAT 479—Practice of Bayesian Statistics (3)~~
- ~~STAT 481—Probabilistic Foundations in Actuarial Science (3)~~
- ~~STAT 483—Stochastic Processes I (4)~~
- ~~STAT 491—Programming and Computing in Statistics (3)~~
- ~~STAT 493—Special Topics in Statistics (1-3)~~

**Requirement outside Department (4)**

- ~~CSCI 230—Computer Programming in FORTRAN (4),~~
- ~~OR CSCI 240—Computer Programming in C++ (4)~~

**Total Hours for ~~Emphasis 4, Probability and Statistics: 44-47~~**

Rationale: Program is not being deleted; just removed from the Department of Mathematical Sciences. It will be housed in the new Department of Statistics.

Other Catalog Change                      Page 312-313, 2018-19 Undergraduate Catalog

**Major in Mathematical Sciences (B.S.)**

↓

**Emphasis ~~5~~ 4. Mathematics Education**

↓

**Requirements in Department (~~43~~ 40)**

\*MATH 229 - Calculus I (4)

↓

MATH 430 - Advanced Calculus I (3)

~~STAT 350—Introduction to Probability and Statistics (3)~~

One of the following (3)

MATH 380 - Elementary Combinatorics (3)

↓

MATH 480 - Number Theory (3)



NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

One additional course from the following (3)

MATH 336 - Ordinary Differential Equations (3)

↓

MATH 480 - Number Theory (3)

STAT 470 **400** - ~~Introduction to Probability Theory~~ (3)

**Requirements outside Department (4 **6-7**)**

**STAT 300 - Introduction to Probability and Statistics (3)**

CSCI 230 - Computer Programming in FORTRAN (4),

↓

**Recommendations**

↓

**Total Hours for Emphasis 4, Mathematics Education: 46-47**

Rationale: Changing to Emphasis 4 with the deletion of the current Emphasis 4 which will be housed under the new Department of Statistics. Updating course numbers to coordinate with revisions. Adding the “total hours” since it currently doesn’t show in the PDF catalog.

Other Catalog Change

Page 314, 2018-19 Undergraduate Catalog

**Major in Mathematical Sciences (B.S.)**

↓

**~~Emphasis 6. Actuarial Science~~**

~~This interdisciplinary track prepares students for careers in the actuarial profession and helps them learn material included in the Exams P / 1 (Probability), FM / 2 (Financial Mathematics) and M / 3 (Actuarial Models) of the Society of Actuaries (SOA) / Casualty Actuarial Society (CAS). A few courses relevant to Exam C / 4 (Construction and Evaluation of Actuarial Models) of the SOA / CAS are also available to actuarial students. Interested students should contact the Division of Statistics for advising in this emphasis.~~

~~Note: A student seeking to attain membership with the SOA and/ or CAS is required to complete the *Validation by Educational Experience (VEE)* requirements of the societies in three areas: applied statistics, economics, and corporate finance. Although not a requirement for completion of this emphasis, a student may receive VEE credits by completing STAT 473, STAT 478, ECON 260, ECON 261, FINA 330 and FINA 340 with a grade of B or better in each course.~~

**Requirements in Department (49-52)**

~~\*MATH 229—Calculus I (4)~~

~~MATH 230—Calculus II (4)~~

~~MATH 232—Calculus III (4)~~

~~MATH 240—Linear Algebra and Applications (4)~~

~~△MATH 360—Model Building in Applied Mathematics (3)~~

~~MATH 430—Advanced Calculus I (3)~~

~~STAT 350—Introduction to Probability and Statistics (3)~~

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

~~STAT 382—Theory of Interest and Financial Derivatives (4)~~  
~~STAT 470—Introduction to Probability Theory (3)~~  
~~STAT 473—Statistical Methods and Models I (3), and STAT 473A—Statistical Computing Packages (1)~~  
~~STAT 478—Statistical Methods of Forecasting (3)~~  
~~STAT 481—Probabilistic Foundations in Actuarial Science (3)~~  
~~Three from the following (7-10)~~  
~~STAT 483—Stochastic Processes I (4)~~  
~~STAT 485—Life Contingencies and Payment Models I (3)~~  
~~STAT 486—Life Contingencies and Payment Models II (3)~~  
~~STAT 495—Special Topics in Actuarial Science (1-3)~~

**Requirements outside Department (25)**

~~ACCY 288—Fundamentals of Accounting (3)~~  
~~ACCY 306—Financial Accounting Information for Business Decisions (3)~~  
~~CSCI 240—Computer Programming in C++ (4)~~  
~~\*ECON 260—Principles of Microeconomics (3)~~  
~~\*ECON 261—Principles of Macroeconomics (3)~~  
~~FINA 320—Principles of Finance (3)~~  
~~FINA 330—Corporate Finance (3)~~  
~~FINA 340—Investments (3)~~

**Total Hours for Emphasis 6, Actuarial Science: 74-77**

**Special Requirement**

At least 65 semester hours of the total hours required for the baccalaureate degree must be taken in courses other than those in the Department of Mathematical Sciences and the Division of Statistics.

**Recommendations for Actuarial Students**

The following additional courses cover some of the important topics in, and will help students who plan to take, Exam C / 4 of the SOA / CAS:

~~STAT 472—Introduction to Mathematical Statistics (3)~~  
~~STAT 479—Practice of Bayesian Statistics (3)~~  
~~STAT 491—Programming and Computing in Statistics (3)~~

The skills from the following additional courses will help students after they enter the actuarial profession:

~~COMS 361—Business and Professional Communication (3)~~  
~~CSCI 215—Visual Basic (4)~~  
~~△ENGL 308—Technical Writing (3)~~  
~~GEOG 256—Maps and Mapping (3)~~  
~~GEOG 359—Introduction to Geographic Information Systems (3)~~  
~~STAT 474—Statistical Methods and Models II (3)~~

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

~~Students should see their advisors in the Division of Statistics before scheduling these additional courses in their individual programs of study.~~

Rationale: Program is not being deleted; just removed from the Department of Mathematical Sciences. It will be housed in the new Department of Statistics.

Other Catalog Change                      Page 314, 2018-19 Undergraduate Catalog

**Major in Mathematical Sciences (B.S.)**

↓

**Degree with Honors**

The Department of Mathematical Sciences offers the exceptional student an opportunity to earn a degree with honors in any of the ~~six~~ **four** emphases. Any mathematical ... ..

A student with these qualifications who wishes to become an honors degree candidate should go to the office of the Department of Mathematical Sciences (~~or, in the case of students in the emphasis in probability and statistics or in the emphasis in actuarial science, to the office of the Division of Statistics~~) to fill out a candidacy form ... ..

↓

**Requirements**

Maintain a 3.00 or higher overall GPA.

Maintain a 3.50 or higher GPA for ~~mathematical sciences~~ **MATH/STAT** courses numbered 300 and above.

Take at least four ~~mathematical sciences~~ **MATH** honors courses numbered 300 or higher, which must include a two-course sequence of 400-level honors courses appropriate for the student's emphasis and approved by the honors degree adviser. The honors sequences from which a sequence appropriate for the student's emphasis may be chosen are MATH 420H-MATH 421H, MATH 420H-MATH 423H, MATH 430H-MATH 431H, MATH 434H-MATH 435H, ~~STAT 470H-STAT 472H, STAT 470H-STAT 481H, STAT 481H-STAT 483H.~~

↓

**Minor in Mathematical Sciences**

↓

Rationale: Updates to the program requirements after separating from the new Department of Statistics.

Other Catalog Change                      Page 315, 2018-19 Undergraduate Catalog

**Major in Mathematical Sciences (B.S.)**

↓

**Minor in Mathematical Sciences**

**Option 1. General (22-23)**

\*MATH 229 - Calculus I (4)

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

↓  
MATH 240 - Linear Algebra and Applications (4)  
At least two mathematical sciences courses chosen from STAT ~~350~~ 300 or from MATH courses numbered above MATH 333. At least one of these must be numbered above MATH 419 (6-7).

↓  
**Option 2. Applied Mathematics (21-22)**

\*MATH 229 - Calculus I (4)

↓  
Two courses from MATH 239 (or MATH 240), MATH 336, and STAT ~~350~~ 300 (6-7)  
At least one mathematics course numbered above MATH 419 (3)

↓  
**Option 3. Secondary Mathematics Education (31-32)**

↓  
\*MATH 229 - Calculus I (4)

↓  
MATH 412 - Methods of Instruction in the Mathematics Curriculum for Secondary School II (3)  
STAT ~~350~~ 300 - Introduction to Probability and Statistics (3)

↓  
In addition to completing the above course work, the candidate must pass the Mathematics Content Area Test (115) of the Illinois Licensure Testing Systems (ILTS) to obtain an endorsement in grades 9-12 Mathematics.

Rationale: Revision to course number for STAT 350 (now 300).

Other Catalog Change                      Page 315, 2018-19 Undergraduate Catalog

**Minor in Elementary Mathematics Education (~~23~~ 24)**

↓  
\*MATH 201 - Foundations of Elementary School Mathematics (3 4)  
\*MATH 229 - Calculus I (4)

↓  
MATH 403 - Methods of Instruction in the Mathematics Curriculum for the Elementary School II (3)

STAT ~~301~~ 200 - Elementary Statistics (4)  
One of the following courses (3)

↓  
Six or more semester hours in the minor must be taken at NIU.

Rationale: Revision in credit hours for MATH 201 and revised course number for STAT 301.

Other Catalog Change                      Page 315, 2018-19 Undergraduate Catalog

**Major in Mathematical Sciences (B.S.)**

↓  
~~Minor in Applied Probability and~~

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

**Statistics (21-23)**

~~\*MATH 229—Calculus I (4)~~

~~\*MATH 230—Calculus II (4)~~

~~MATH 232—Calculus III (4)~~

~~Three of the following (9-11)~~

~~STAT 350—Introduction to Probability and Statistics (3)~~

~~STAT 470—Introduction to Probability Theory (3)~~

~~STAT 472—Introduction to Mathematical Statistics (3)~~

~~STAT 473—Statistical Methods and Models I (3),~~

~~STAT 473A—Statistical Computing Packages (1)~~

~~STAT 474—Statistical Methods and Models II (3)~~

~~STAT 478—Statistical Methods of Forecasting (3)~~

~~STAT 483—Stochastic Processes I (4)~~

~~Six or more semester hours in the minor must be taken at NIU.~~

Rationale: Program will be housed in the new Department of Statistics.

Rationale: Program is not being deleted; just removed from the Department of Mathematical Sciences. It will be housed in the new Department of Statistics.

Other Catalog Change                      Page 315, 2018-19 Undergraduate Catalog

**Major in Mathematical Sciences (B.S.)**

↓

**Minor in Actuarial Science (29)**

~~This minor is designed to provide preparatory study in actuarial science. Specifically, students completing the required course work can take the professional Exams P/1 (Probability) and FM/2 (Financial Mathematics) of the Society of Actuaries/Casualty Actuarial Society.~~

~~\*MATH 229—Calculus I (4)~~

~~MATH 230—Calculus II (4)~~

~~MATH 232—Calculus III (4)~~

~~MATH 240—Linear Algebra and Applications (4)~~

~~STAT 350—Introduction to Probability and Statistics (3)~~

~~STAT 382—Theory of Interest and Financial Derivatives (4)~~

~~STAT 470—Introduction to Probability Theory (3)~~

~~STAT 481—Probabilistic Foundations in Actuarial Science (3)~~

~~Ten or more semester hours in the minor must be taken at NIU. For students who have passed the four courses FINA 330, FINA 340, FINA 350, and FINA 455, the STAT 382 requirement in the minor in actuarial science will be waived.~~

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Rationale: Program is not being deleted; just removed from the Department of Mathematical Sciences. It will be housed in the new Department of Statistics.

Other Catalog Change Page 315-316, 2018-19 Undergraduate Catalog

**Major in Mathematical Sciences (B.S.)**

↓

**~~Certificate of Undergraduate Study~~**

**~~Actuarial Science (12)~~**

~~This certificate is open to all undergraduates. It is designed to provide preparatory study in actuarial science. Specifically, students completing the required course work can take the professional Exam P/1 of the Society of Actuaries (SOA)/the Casualty Actuarial Society (CAS). Students must maintain good academic standing in the university, achieve a minimum grade of C in each certificate course, achieve a GPA of at least 3.00 in all certificate courses, and complete all certificate course work within six calendar years. With department approval, some or all of the certificate courses may be applied toward undergraduate degree requirements in the department.~~

**~~Requirements~~**

~~STAT 350—Introduction to Probability and Statistics (3)~~

~~STAT 470—Introduction to Probability Theory (3)~~

~~STAT 481—Probabilistic Foundations in Actuarial Science (3)~~

~~ECON 260—Principles of Microeconomics (3)~~

~~Please note that MATH 240 is a co-requisite for STAT 470.~~

~~Six or more semester hours in the minor must be taken at NIU.~~

Rationale: Program is not being deleted; just removed from the Department of Mathematical Sciences. It will be housed in the new Department of Statistics.

Other Catalog Change Page 319-320, 2018-19 Undergraduate Catalog

**Major in Mathematical Sciences (B.S.)**

↓

**Course List**

**Mathematical Sciences (MATH)**

↓

**~~Statistics (STAT)~~**

~~208. BASIC STATISTICS (3). Designed to provide students with an understanding of reasoning involved in the statistician's approach to a variety of problems in modern society. Topics include data collection, descriptive statistics, graphical displays of data, the normal distribution, elementary probability, elements of statistical inference, estimation and hypothesis testing, and linear regression. Not open for credit toward the major or minor in mathematical sciences. Not~~

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

~~open for credit to students with credit in an upper division statistics course or in OMIS 324 or UBUS 223. Not used in major or minor GPA calculation for mathematical sciences majors or minors.~~

~~301. ELEMENTARY STATISTICS (4). Introduction to basic concepts in statistical methods including probability, theoretical and empirical distributions, estimation, tests of hypotheses, linear regression and correlation, and single classification analysis of variance procedures. Not available for credit toward the major in mathematical sciences. Not used in major GPA calculation for mathematical sciences majors. PRQ: MATH 206 or MATH 210 or MATH 211 or MATH 229.~~

~~324X. INTRODUCTION TO BUSINESS DATA ANALYTIC TOOLS (3). *Crosslisted as OMIS 324.* Introduction to business analytic tools focusing on sampling, multivariate regression, factor analysis and cluster analysis to identify and solve business problems. PRQ: UBUS 223 or STAT 301.~~

~~350. INTRODUCTION TO PROBABILITY AND STATISTICS (3). Introduction to the basic ideas and fundamental laws of probability including sample spaces, events, independence, random variables, special probability distributions and elementary statistical inference. PRQ: MATH 230.~~

~~382. THEORY OF INTEREST AND FINANCIAL DERIVATIVES (4). Learning outcomes of the Exam FM / 2 of the Society of Actuaries / the Casualty Actuarial Society, including rates of interest, present and future values, annuities certain, perpetuities, stocks, bonds, mutual funds and guaranteed investment contracts. Key techniques in financial mathematics including discounting, accumulation, amortization, and yield rate determination. Modern financial concepts including yield curves, spot and forward rates, duration, convexity, and immunization. Introduction to financial derivatives, forwards, options, futures, swaps, and the principle of no arbitrage. Practice in solving typical problems encountered in the above mentioned actuarial examinations. PRQ: MATH 230 or consent of division.~~

~~470. INTRODUCTION TO PROBABILITY THEORY (3). Includes probability spaces, random variables, discrete, continuous, mixed probability distributions, moment generating functions, multivariate distributions, conditional probability, conditional expectation, special distributions, laws of large numbers, and central limit theorem. PRQ: MATH 232 and STAT 350, or consent of division. CRQ: MATH 240 or consent of division.~~

~~472. INTRODUCTION TO MATHEMATICAL STATISTICS (3). Includes distributions of functions of random variables, interval estimation, sufficiency, completeness, point estimation, statistical hypotheses, analysis of variance, and the multivariate normal distribution. PRQ: STAT 470.~~

~~473. STATISTICAL METHODS AND MODELS I (3). A first course in statistical methods and models including exploratory data analysis and graphical techniques, regression analysis, experimental design and basic sampling techniques. Extensive use of statistical computer packages. PRQ: MATH 211 and STAT 301, or STAT 350, or consent of division. CRQ: STAT 473A.~~

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

~~473A. STATISTICAL COMPUTING PACKAGES (1). Introduction to statistical computing with the aid of software packages. Data entry, transformations, simple plots, summary statistics, and statistical procedures. No previous computer experience is required. PRQ: MATH 211 and STAT 301, or STAT 350, or consent of division. CRQ: STAT 473 or consent of division.~~

~~474. STATISTICAL METHODS AND MODELS II (3). Continuation of STAT 473. Topics include factorial experiments: interactions, nested models, and randomized block designs. Categorical response data analysis: ordinal data, measures of association, Cochran-Mantel-Haenszel Test, logistic regression, and measures of agreement. PRQ: STAT 473 and STAT 473A, or consent of division.~~

~~478. STATISTICAL METHODS OF FORECASTING (3). Introduction to forecasting including use of regression in forecasting; removal and estimation of trend and seasonality; exponential smoothing; stochastic time series models; stochastic difference equations; autoregressive, moving average, and mixed models; model identification and estimation; diagnostic checking; and the use of time series models in forecasting. PRQ: STAT 473 or consent of division.~~

~~479. PRACTICE OF BAYESIAN STATISTICS (3). Introduction to Bayesian data analysis and applications with appropriate software. Topics include Bayes Theorem, discrete and continuous single parameter models, comparison of Bayesian and non-Bayesian inference, multi-parameter and hierarchical models, Bayesian computation including Markov chain simulation, mixture models, Bayesian sample size determination and applications to modeling data from a wide variety of areas in business, engineering and science. PRQ: STAT 350 and STAT 473, or consent of division.~~

~~481. PROBABILISTIC FOUNDATIONS IN ACTUARIAL SCIENCE (3). Actuarial populations. Univariate parametric actuarial distributions including Weibull and Pareto. Multivariate actuarial distributions. Exact and asymptotic relationships among these distributions. Mixtures of distributions. Jointly discrete, continuous, and mixed distributions. Moment, cumulant, and probability generating functions. Transformations of variables, and in-depth study of conditioning, for multivariate distributions. Basic theory of individual and collective risk models for aggregate loss from insurance policies. PRQ: STAT 470 or consent of division.~~

~~483. STOCHASTIC PROCESSES I (4). Review of probabilistic tools including conditioning for joint distributions. Random sums. Finite dimensional properties of discrete time Markov chains. Homogeneous, and non-homogeneous, Poisson and compound Poisson processes. Thinning and summing of independent Poisson processes. Brownian motion processes. Introduction to the SDE and Ito's lemma. PRQ: STAT 470 or consent of division.~~

~~484. FINANCIAL DERIVATIVES FOR ACTUARIES (3). *Crosslisted with ECON 484X.* Review of financial derivatives including futures, European and American options and exotic options. Greeks, trading and hedging strategies. Pricing derivative securities with appropriate boundary conditions, including the Black-Scholes formula, binomial trees, lattice models and finite difference methods. Simulation and variance reduction techniques. Interest rate models. Covers the learning outcomes regarding financial models in the exam MFE of the Society of Actuaries (SOA), which is also the Exam 3F of the Casualty Actuarial Society (CAS). PRQ: STAT 483 or consent of division.~~



NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

~~485. LIFE CONTINGENCIES AND PAYMENT MODELS I (3). Survival time distributions, and their curtate versions, for one or two lives, possibly dependent, truncated or censored. Mortality tables, aggregate, select and ultimate, and their use in modeling continuous life time data. Present value of benefit distributions for life insurances and annuities in the single and multiple decrement models. PRQ: STAT 382 and STAT 470, or consent of division.~~

~~486. LIFE CONTINGENCIES AND PAYMENT MODELS II (3). Premium calculations for life insurances and annuities via percentiles and the equivalence principle. Liability calculations for life insurances and annuities via the prospective, retrospective methods. Calculation of reserves for fully discrete life insurances. Discuss the above for single and multiple decrement models. Extend the present value of benefit, present value of loss at issue, present value of future loss random variables and liabilities to discrete time Markov Chain models. PRQ: STAT 485, or consent of division.~~

~~491. PROGRAMMING AND COMPUTING IN STATISTICS (3). A study of algorithms useful for implementing computer intensive techniques in statistical inference and probability. Topics include computation of maximum likelihood estimators, bootstrap approximation, randomization and permutation testing techniques, Bayesian techniques, approximation of distribution functions and quantiles, simulation of random variables and stochastic processes. Implementation of the algorithms is achieved using the C++ (or C or FORTRAN) and R programming languages, as well as other specialized statistical computation software. PRQ: STAT 472 and either CSCI 230 or CSCI 240, or consent of division.~~

~~493. SPECIAL TOPICS IN STATISTICS (1-3). Discussion and study of readings on topics of special interest to undergraduate statistics/probability students. May be repeated to a maximum of 6 semester hours. PRQ: Consent of division.~~

~~495. SPECIAL TOPICS IN ACTUARIAL SCIENCE (1-3). Discussion and study of readings on topics of special interest to undergraduate actuarial students, including preparation for actuarial examinations. May be repeated to a maximum of 6 semester hours. PRQ: Consent of division.~~

Rationale: Courses will be housed in the new Department of Statistics.

## Department of Statistics

### Course Deletions

Page [new section], 2018-19 Undergraduate Catalog

STAT 472. INTRODUCTION TO MATHEMATICAL STATISTICS (3).

STAT 473A. STATISTICAL COMPUTING PACKAGES (1).

STAT 474. STATISTICAL METHODS AND MODELS II (3).

STAT 481. PROBABILISTIC FOUNDATIONS IN ACTUARIAL SCIENCE (3).

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Rationale: Content from STAT 472/473A/474/481 is outdated and has been reorganized, revised, and distributed into several new courses, including: STAT435/410, STAT/ACSC 437/405.

New Course Page [new section], 2018-19 Undergraduate Catalog

CIP: 27.0502

ACSC 400X. PROBABILITY (3). *Crosslisted as STAT 400*. Probability spaces, random variables, discrete, continuous, mixed probability distributions, moment generating functions, multivariate distributions, conditional probability, conditional expectation, and special distributions. PRQ: MATH 232 and STAT 300, or consent of department. CRQ: MATH 240 or consent of department.

Rationale: This course is one of the foundation courses for Actuarial Science.

Non-Duplication: The parent course is an existing course that is being revised from STAT 470 to STAT 400.

New Course Page [new section], 2018-19 Undergraduate Catalog

CIP: 27.0501

ACSC 405. QUANTITATIVE METHODS FOR ACTUARIES (3). Multivariate distributions, transformations of random variables, conditioning for joint distributions, random sums, finite-dimensional properties of discrete-time Markov chains, homogeneous, and non-homogeneous, Poisson and compound Poisson processes, thinning and summing of independent Poisson processes. Together with STAT 400/ACSC 400, it covers the learning outcomes in the exam P of the Society of Actuaries (SOA), which is also the Exam 1 of the Casualty Actuarial Society (CAS). PRQ: STAT 400 or ACSC 400 or consent of department.

Rationale: This course aims at preparing students relevant quantitative methods that are required by SOA exams but are not well covered by the other courses.

Non-Duplication: The Department of Mathematics was notified with regard to this course and has indicated there is no significant duplication with any of their current course offerings.

New Course Page [new section], 2018-19 Undergraduate Catalog

CIP: 27.0501

ACSC 417X. APPLIED STATISTICAL LEARNING (3). *Crosslisted as STAT 417*. Modern statistical methods for supervised and unsupervised learning with an emphasis on model assessment, selection, and regularization. Practical problems are solved using statistical software packages. A particular emphasis is placed on high dimensional problems. PRQ: STAT 410 or consent of department.

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Rationale: By the advancement of technology, data-driven statistical decision-makings are showing desirable and nice performance. For junior and senior students, this course will provide a chance to learn statistical methods to utilize the data in decision-making and also to apply the methods to some practical problems using available software packages. In particular, this course will make students meet the expectation of actuarial scientists for the emerging fields of big data analysis and deep learning.

Non-Duplication: The Departments of Computer Science, Operations Management & Information Systems, and Mathematics were notified with regard to this course and have indicated there is no significant duplication with any of their current course offerings. The parent course, STAT 417 is a new course.

New Course Page [new section], 2018-19 Undergraduate Catalog

CIP: 27.0501

ACSC 437X. CATEGORICAL DATA ANALYSIS (3). *Crosslisted as STAT 437.* Contingency tables. Poisson, binomial, and multinomial regression techniques. PRQ: STAT 435.

Rationale: This is a new undergraduate course introduced for the new major in Statistics at the Division of Statistics. It is a replacement of part of the contents in the current course STAT 474. Special emphasis will be made on actuarial applications.

Non-Duplication: The Department of Mathematics was notified with regard to this course and has indicated there is no significant duplication with any of their current course offerings. The parent course, STAT 437 is a new course.

New Course Page [new section], 2018-19 Undergraduate Catalog

CIP: 27.0501

ACSC 438X. APPLIED TIME SERIES ANALYSIS (3). *Crosslisted as STAT 438.* Removal and estimation of trend and seasonality, autoregressive, moving average, and mixed models; model identification and estimation; diagnostic checking; and the use of time series models in forecasting. PRQ: STAT 435.

Rationale: This is a new undergraduate course introduced for the new major in Statistics at the Department of Statistics. It is a replacement of part of the contents in the current course STAT 478 (now STAT 438 / ACSC 438X).

Non-Duplication: The parent course, STAT 438, is an existing course.

New Course Page [new section], 2018-19 Undergraduate Catalog

CIP: 27.0501

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

ACSC 455. LOSS MODELS I (3). Definition and selection of probability distributions appropriate for insurance data that are heavily tailed and skewed, such as Severity Model, Frequency Model, Aggregate Model, and Risk Measures. PRQ: STAT 410.

Rationale: This course, together with LOSS MODELS II, aims at preparing students for the SOA Short-Term Actuarial Mathematics (STAM) Exam.

Non-Duplication: The Department of Mathematics was notified with regard to this course and has indicated there is no significant duplication with any of their current course offerings.

New Course Page [new section], 2018-19 Undergraduate Catalog

CIP: 27.0501

ACSC 456. LOSS MODELS II (3). Estimation of parameters of probability distributions appropriate for insurance data that are heavy tailed and skewed; assessment of credibility of data for ratemaking, such as Construction and Selection of Parametric Models, Credibility, Insurance and Reinsurance Coverage and its pricing and reserving. PRQ: ACSC 455.

Rationale: This course, together with LOSS MODELS I, aims at preparing students for the SOA Short-Term Actuarial Mathematics (STAM) Exam.

Non-Duplication: The Department of Mathematics was notified with regard to this course and has indicated there is no significant duplication with any of their current course offerings.

New Course Page [new section], 2018-19 Undergraduate Catalog

CIP: 27.0501

ACSC 496. ACTUARIAL INTERNSHIP (1-3). Work as an intern or in a department approved co-op placement for a minimum of 100 hours per credit hour at an off-campus agency, or participate in the regular activities at the NIU Statistical Consulting Services. S/U grading. No more than 3 credit hours of STAT 495 or ACSC 496 can be counted toward NIU's required hours for graduation or toward NIU's 40 upper-division hour requirement. PRQ: Consent of department.

Rationale: Most large actuarial companies require internships before hiring. We want students to have the opportunity for professional development while they are completing their major. Most actuarial students need an internship before being able to find full time employment in the field.

Non-Duplication: The Department of Mathematics was notified with regard to this course and has indicated there is no significant duplication with any of their current course offerings.

New Course Page [new section], 2018-19 Undergraduate Catalog

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

CIP: 27.0501

STAT 410. INTRODUCTION TO MATHEMATICAL STATISTICS I (3). Distributions of functions of random variables, laws of large numbers, central limit theorem, interval estimation, sufficiency, completeness, point estimation, principles of Bayesian estimation. PRQ: STAT 400 or ACSC 400.

Rationale: To provide a strong foundation in mathematical statistics for understanding the concepts of statistical methodology, and to prepare students for further study of statistical inference.

Non-Duplication: The Department of Mathematics was notified with regard to this course and has indicated there is no significant duplication with any of their current course offerings.

New Course Page [new section], 2018-19 Undergraduate Catalog

CIP: 27.0501

STAT 411. INTRODUCTION TO MATHEMATICAL STATISTICS II (3). Principles of statistical hypothesis testing including the likelihood ratio test, uniformly most powerful tests and Bayesian testing techniques, theory of linear models including multiple linear regression and ANOVA. PRQ: STAT 410.

Rationale: To provide a strong foundation in mathematical development of statistical inference methodology.

Non-Duplication: The Department of Mathematics was notified with regard to this course and has indicated there is no significant duplication with any of their current course offerings.

New Course Page [new section], 2018-19 Undergraduate Catalog

CIP: 27.0501

STAT 417. APPLIED STATISTICAL LEARNING (3). *Crosslisted as ACSC 417X*. Modern statistical methods for supervised and unsupervised learning with an emphasis on model assessment, selection, and regularization. Practical problems are solved using statistical software packages. A particular emphasis is placed on high dimensional problems. PRQ: STAT 410 or consent of department.

Rationale: By the advancement of technology, data-driven statistical decision-makings are showing desirable and nice performance. For junior and senior students, this course will provide a chance to learn statistical methods to utilize the data in decision-making and also to apply the methods to some practical problems using available software packages. In particular, this course will make students meet the expectation of statisticians for the emerging fields of big data analysis and deep learning.

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Non-Duplication: The Departments of Computer Science, Operations Management & Information Systems, and Mathematics were notified with regard to this course and have indicated there is no significant duplication with any of their current course offerings. The crosslisted course, ACSC 417X is a new course.

New Course

Page [new section], 2018-19 Undergraduate Catalog

CIP: 27.0501

STAT 419. NONPARAMETRIC STATISTICS (3). A study of statistical methods based on signs and ranks, including the sign test, the median test, the Mann-Whitney test, the Kruskal-Wallis test, Wolcoxon's signed ranks test, the Quade test, the Friedman test, the Durbin test, randomization tests, Kendall's tau, Spearman's rho, nonparametric linear regression, monotonic rank regression, Kolmogorov's goodness-of-fit test, and the Smirnov test. PRQ: STAT 300 or consent of department.

Rationale: This course is proposed as part of the new proposed undergraduate program in applied statistics. Nonparametric statistical methods provide important statistical analysis tools that are widely used in statistical consulting, biomedical, and pharmaceutical applications. It is important for the students in the new undergraduate program in applied statistics to have exposure to these methods.

Non-Duplication: The Department of Mathematics was notified with regard to this course and has indicated there is no significant duplication with any of their current course offerings.

New Course

Page [new section], 2018-19 Undergraduate Catalog

CIP: 27.0501

STAT 421. ELEMENTARY SURVEY SAMPLING (3). An introduction to sampling and the statistical analysis of surveys. Topics include simple random sampling, stratified sampling, systematic sampling, cluster sampling, ratio regression, difference estimation and population size estimation. PRQ: STAT 300 or consent of department.

Rationale: This course is proposed as part of the new proposed undergraduate program in applied statistics. Designing and analyzing surveys is an important aspect of undergraduate education in statistical science. A course that addresses both the application of surveys and the underlying statistical theory is not currently available to undergraduate students in statistics. Applications of survey sampling techniques are useful in a multitude of applications that professional statisticians encounter in marketing, financial services, pharmaceutical and biological research, and economics.

Non-Duplication: The Department of Mathematics was notified with regard to this course and has indicated there is no significant duplication with any of their current course offerings.

New Course

Page [new section], 2018-19 Undergraduate Catalog

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

CIP: 27.0501

STAT 436. DESIGN AND ANALYSIS OF EXPERIMENTS (3). Design and analysis of single, multifactor, factorial, nested, and randomized block designs. PRQ: STAT 435.

Rationale: This is a new undergraduate course introduced for the new major in Statistics at the Division of Statistics. It is a replacement of part of the contents in the current course STAT 474.

Non-Duplication: The Department of Mathematics was notified with regard to this course and has indicated there is no significant duplication with any of their current course offerings.

New Course Page [new section], 2018-19 Undergraduate Catalog

CIP: 27.0501

STAT 437. CATEGORICAL DATA ANALYSIS (3). *Crosslisted as ACSC 437X*. Contingency tables. Poisson, binomial, and multinomial regression techniques. PRQ: STAT 435.

Rationale: This is a new undergraduate course introduced for the new major in Statistics at the Division of Statistics. It is a replacement of part of the contents in the current course STAT 474. The crosslisted course, ACSC 437X, is also a new course.

Non-Duplication: The Department of Mathematics was notified with regard to this course and has indicated there is no significant duplication with any of their current course offerings.

New Course Page [new section], 2018-19 Undergraduate Catalog

CIP: 27.0501

STAT 495. STATISTICS INTERNSHIP (1-3). Work as an intern or in a department approved co-op placement for a minimum of 100 hours per credit hour at an off-campus agency, or participate in the regular activities at the NIU Statistical Consulting Services. S/U grading. No more than 3 credit hours of STAT 495 or ACSC 496 can be counted toward NIU's required hours for graduation or toward NIU's 40 upper-division hour requirement. PRQ: Consent of department.

Rationale: A large part of a statistician's job is to work on applied projects in different settings. We want students to have the opportunity for professional development while they are completing their major. Students that complete internships tend to have an easier time finding full time employment in the field.

Non-Duplication: The Department of Mathematics was notified with regard to this course and has indicated there is no significant duplication with any of their current course offerings.

Course Revision Page [new section], 2018-19 Undergraduate Catalog

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

STAT ~~208~~ 100. BASIC STATISTICS (3). Designed to provide ... .. Not used in major or minor GPA calculation for mathematical sciences, **statistics, or actuarial science** majors or minors.

Rationale: Reorganization of courses, programs, and offerings. Updating description to include majors who will fall under the new Department of Statistics and Actuarial Sciences.

Course Revision Page [new section], 2018-19 Undergraduate Catalog

STAT ~~304~~ 200. ELEMENTARY STATISTICS (4). Introduction to basic ... .. Not available for credit toward the major in mathematical sciences, **statistics, or actuarial science**. Not used in major GPA calculation for mathematical sciences, **statistics, or actuarial science** majors. PRQ: MATH 206 or MATH 210 or MATH 211 or MATH 229.

Rationale: Reorganization of courses, programs, and offerings. Updating description to include majors who will fall under the new Department of Statistics and Actuarial Sciences.

Course Revision Page [new section], 2018-19 Undergraduate Catalog

STAT 324X. INTRODUCTION TO BUSINESS DATA ANALYTIC TOOLS (3). *Crosslisted as OMIS 324*. Introduction to business ... .. PRQ: UBUS 223 or STAT ~~304~~ 200.

Rationale: Revision of STAT 301 (change to STAT 200).

Course Revision Page [new section], 2018-19 Undergraduate Catalog

STAT ~~350~~ 300. INTRODUCTION TO PROBABILITY AND STATISTICS (3). Introduction to the basic ideas ... .. PRQ: MATH 230.

Rationale: Restructuring and renumbering of courses.

Course Revision Page [new section], 2018-19 Undergraduate Catalog

STAT ~~382~~ **ACSC 350**. ~~THEORY OF INTEREST AND FINANCIAL DERIVATIVES~~ (4). ~~Learning outcomes of the Exam FM / 2 of the Society of Actuaries / the Casualty Actuarial Society, including #~~ Rates of interest, present and future values, annuities-certain, perpetuities, **loans**, stocks, bonds, ~~mutual funds~~ and guaranteed investment contracts. ... .. ~~Introduction to financial derivatives, forwards, options, futures, swaps, and the principle of no arbitrage. Practice in solving typical problems encountered in the above mentioned actuarial examinations. Covers the learning outcomes regarding financial mathematics in the exam FM of the Society of Actuaries (SOA), which is also the Exam 2 of the Casualty Actuarial Society (CAS).~~ PRQ: MATH 230 ~~or consent of division~~.

Rationale: Creation of new designator for the Department of Statistics and Actuarial Sciences and reorganization of courses, programs, and offerings. Updating course content to current standards and to match what is currently being taught.



NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Course Revision

Page [new section], 2018-19 Undergraduate Catalog

STAT 470 ~~400~~. ~~INTRODUCTION TO PROBABILITY THEORY (3). *Crosslisted with ACSC 400X*. Includes p~~Probability spaces, random variables, discrete, continuous, mixed probability distributions, moment generating functions, multivariate distributions, conditional probability, conditional expectation, ~~and~~ special distributions, ~~laws of large numbers, and central limit theorem~~. PRQ: MATH 232 and STAT ~~350~~ 300, or consent of ~~division~~ department. CRQ: MATH 240 or consent of ~~division~~ department.

Rationale: Restructuring and renumbering of courses within the newly created department.

Course Revision

Page [new section], 2018-19 Undergraduate Catalog

STAT 473 ~~435~~. ~~APPLIED REGRESSION ANALYSIS STATISTICAL METHODS AND MODELS I (3). A first course in statistical methods and models including~~ An in-depth examination of exploratory data analysis and graphical techniques, ~~and statistical methods for linear regression analysis, experimental design and basic sampling techniques. Includes techniques for model selection, assessment of influential observations, and verification of model assumptions. Extensive use of statistical computer packages.~~ PRQ: MATH 211 and STAT 301, or STAT 300, 350, or consent of division. CRQ: STAT 473A.

Rationale: Restructuring and renumbering of courses within the newly created department. Bringing content up to date to better describe the course offering.

Course Revision

Page [new section], 2018-19 Undergraduate Catalog

STAT 478 ~~438~~. ~~APPLIED TIME SERIES ANALYSIS STATISTICAL METHODS OF FORECASTING (3). *Crosslisted as ACSC 438X*. Introduction to forecasting including use of regression in forecasting; r~~Removal and estimation of trend and seasonality, ~~; exponential smoothing; stochastic time series models; stochastic difference equations; autoregressive, moving average, and mixed models; model identification and estimation; diagnostic checking; and the use of time series models in forecasting. PRQ: STAT ~~435~~ 473 or consent of division.~~

Rationale: Restructuring and renumbering of courses within the newly created department. Bringing content up to date to better describe the course offering.

Course Revision

Page [new section], 2018-19 Undergraduate Catalog

STAT 479 ~~425~~. ~~PRACTICE OF BAYESIAN STATISTICS (3). Introduction to Bayesian data analysis and applications with appropriate software. Topics include Bayes Theorem, discrete and continuous single parameter models, comparison ... . PRQ: STAT ~~410~~ STAT 350 and STAT 473, or consent of division.~~

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Rationale: Restructuring and renumbering of courses within the newly created department. Bringing content up to date to better describe the course offering.

Course Revision Page [new section], 2018-19 Undergraduate Catalog

~~STAT 483~~ **401**. STOCHASTIC PROCESSES I (4). Review of probabilistic tools including conditioning for joint distributions. Random sums. Finite-dimensional properties of discrete-time Markov chains. Homogeneous, and non-homogeneous, Poisson and compound Poisson processes. Thinning and summing of independent Poisson processes. Brownian motion processes. Introduction to the SDE and Ito's lemma. PRQ: ~~STAT 470~~ **400 or ACSC 400X** or consent of ~~division~~ **department**.

Rationale: Restructuring and renumbering of courses within the newly created department.

Course Revision Page [new section], 2018-19 Undergraduate Catalog

~~STAT 484~~ **ACSC 460**. FINANCIAL DERIVATIVES FOR ACTUARIES (3). *Crosslisted with as* ~~ECON 484X~~. Review of financial derivatives ... PRQ: **ACSC 405** ~~STAT 483~~ or consent of ~~division~~.

Rationale: Creation of new designator for the Department of Statistics and Actuarial Sciences and reorganization of courses, programs, and offerings. Updating course title to open it up to a bigger audience and PRQ to show new courses/course numbers, and deleting division consent.

Course Revision Page [new section], 2018-19 Undergraduate Catalog

~~STAT 485~~ **ACSC 450**. LIFE CONTINGENCIES AND PAYMENT MODELS I (3). Survival-time distributions, and their ... PRQ: ~~STAT 382~~ **ACSC 350**, and **ACSC 400X** or ~~STAT 470~~ **400**, or consent of ~~division~~ **department**.

Rationale: Creation of new designator for the Department of Statistics and Actuarial Sciences and reorganization of courses, programs, and offerings. Updating course PRQs to show new courses/course numbers, and changing division to department.

Course Revision Page [new section], 2018-19 Undergraduate Catalog

~~STAT 486~~ **ACSC 451**. LIFE CONTINGENCIES AND PAYMENT MODELS II (3). Premium calculations for life ... PRQ: **ACSC 450** ~~STAT 485~~, or consent of ~~division~~.

Rationale: Creation of new designator for the Department of Statistics and Actuarial Sciences and reorganization of courses, programs, and offerings. Updating course PRQ to show new courses/course numbers, and deleting division consent.

Course Revision Page [new section], 2018-19 Undergraduate Catalog

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

STAT 491 ~~415~~. ~~PROGRAMMING AND COMPUTING~~ **COMPUTATIONAL METHODS** IN STATISTICS (3). **An introduction to the software commonly used in modern statistical methods. Applications will focus on statistical data analysis, data management, and simulation.** A study of algorithms useful for implementing computer-intensive techniques in statistical inference and probability. Topics include computation of maximum-likelihood estimators, bootstrap approximation, randomization and permutation testing techniques, Bayesian techniques, approximation of distribution functions and quantiles, simulation of random variables and stochastic processes. Implementation of the algorithms is achieved using the C++ (or C or FORTRAN) and R programming languages, as well as other specialized statistical computation software. PRQ: STAT **300** 472 and either CSCI 230 or CSCI 240, or consent of division.

Rationale: Restructuring and renumbering of courses within the newly created department. Bringing the course content up to date.

Course Revision Page [new section], 2018-19 Undergraduate Catalog

STAT 493 **490**. SPECIAL TOPICS IN STATISTICS (1-3). Discussion and study of readings on topics of special interest to undergraduate statistics/probability students. May be repeated to a maximum of 6 semester hours. PRQ: Consent of ~~division~~ **department**.

Rationale: Restructuring and renumbering of courses within the newly created department.

Course Revision Page [new section], 2018-19 Undergraduate Catalog

STAT 495 **ACSC 491**. SPECIAL TOPICS IN ACTUARIAL SCIENCE (1-3). Discussion and study of readings ... PRQ: Consent of ~~division~~ **department**.

Rationale: Creation of new designator for the Department of Statistics and Actuarial Sciences and reorganization of courses, programs, and offerings. Updating PRQ to show department instead of division.

Other Catalog Change Page 26, 2018-19 Undergraduate Catalog

**Limited Admissions and Limited Retention Requirements**

↓

**Medical Laboratory Sciences Major  
(School of Health Studies)**

↓

BIOS 208, Fundamentals of Biology I (3), and BIOS 210, Fundamentals of Biology I Laboratory (1)

↓

CHEM 231, Introductory Organic Chemistry Laboratory (1)

\*STAT ~~208~~ **100**, Basic Statistics (3)

↓

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Students interested in the MLS major may access application materials on the website: ....  
Students who are admitted to the MLS program and choose to attend NIU are required to have a  
Hepatitis B titer by blood test prior to beginning the program.

Rationale: Revisions of STAT 208/100.

**Notification: The School of Health Studies was notified of this change via email on DATE.**

Other Catalog Change Page 28, 2018-19 Undergraduate Catalog

**Limited Admissions and Limited Retention Requirements**

↓

**Prerequisite Courses Used in Evaluating Applicants**

\*BIOS 103, General Biology (3) and \*BIOS 105, General Biology Laboratory (1)

↓

\*PSYC 102, Introduction to Psychology (3)

\*STAT 208 100, Basic Statistics (3),  
OR STAT 301 200, Elementary Statistics (4)

The following prerequisite courses must be completed within seven years of admission to the  
nursing program: BIOS 213 or BIOS 313; and BIOS 357.

Rationale: Revisions to STAT 208/100 and STAT 301/200.

Notification: Not required.

Other Catalog Change Page 31-60, 2018-19 Undergraduate Catalog

**University Graduation Requirements**

↓

**Writing-Infused Course List**

↓

CHEM 443. PHYSICAL CHEMISTRY LABORATORY II (1). ... ..

COMD 429. ASSESSMENT PROCEDURES IN COMMUNICATIVE DISORDERS (3).  
Fundamental concepts underlying the evaluation of communicative disorders. PRQ: COMD 220  
and STAT 208 100 or STAT 301 200. CRQ: Junior status.

COMD 435. CLINICAL PROCEDURES AND PROFESSIONAL ISSUES (3). ... ..

↓

FSMD 466. ECONOMICS OF APPAREL AND TEXTILE INDUSTRIES (3). ... ..

GEOG 361. GEOGRAPHIC MEASUREMENT AND QUANTITATIVE ANALYSIS (3).  
Description of measurement ... .. PRQ: STAT 301 200.

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

GEOG 464. LOCATION ANALYSIS (3). ... ..

↓

HOSP 426. STRATEGIC MANAGEMENT IN THE HOSPITALITY INDUSTRY (3). ... ..

HSCI 460. RESEARCH IN HEALTH AND HUMAN SCIENCES (3). An introductory ... ..  
PRQ: STAT ~~208~~ 100 or STAT ~~304~~ 200 or UBUS 223; and CHHS major with at least junior standing; or consent of school.

ISYE 492. INDUSTRIAL AND SYSTEMS ENGINEERING SENIOR DESIGN PROJECT PROPOSAL (1). ... ..

↓

NNGO 495. CAPSTONE SEMINAR IN NONPROFIT AND NGO STUDIES (3). ... ..

NURS 312. NURSING RESEARCH AND EVIDENCE-BASED PRACTICE (3). Principles, methodology, and appraisal ... .. PRQ: STAT ~~208~~ 100 or STAT ~~304~~ 200; and NURS 303 and NURS 304 and NURS 305 and NURS 307 and NURS 308; or R.N. status.

NURS 431. TRANSITION TO PROFESSIONAL NURSING (3). ... ..

↓

PSYC 481. DRUGS AND BEHAVIOR (3). ... ..

STAT ~~304~~ 200. ELEMENTARY STATISTICS (4). Introduction to basic ... .. Not available for credit toward the major in mathematical sciences, statistics, or actuarial science. Not used in major GPA calculation for mathematical sciences, statistics, or actuarial science majors. PRQ: MATH 206 or MATH 210 or MATH 211 or MATH 229.

TECH 245. POLLUTION PREVENTION AND SUSTAINABLE PRODUCTION (3).

↓

**General Education Requirements**

↓

**Foundational Studies**

↓

**Foundational Quantitative Literacy Requirement (0-3 semester hours):**

This requirement can be satisfied by:

- passing MATH 101 or equivalent course, or
- obtaining a C or better in MATH 155, MATH 201, MATH 206, MATH 210, MATH 211, or MATH 229, or an equivalent course,
- obtaining credit for one of the mathematics courses listed above, except MATH 101, through credit by examination (Advanced Placement), or
- obtaining a grade of C or better in STAT ~~208~~ 100, STAT ~~350~~ 300, or ISYE 335; and obtaining
  - a grade of C or better in MATH 110, or
  - an ACT mathematics score of at least 24, or
  - an SAT mathematics score of at least 560, or
  - an A- or B-level placement on the mathematics placement examination
- obtaining equivalent transfer credit, or

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

- passing the Mathematics Competency Examination.

**Foundational Studies Course Descriptions**

COMS 100. FUNDAMENTALS OF ORAL COMMUNICATION (3). ... ..

↓

MATH 229. CALCULUS I (4). ... ..

STAT ~~208~~ 100. BASIC STATISTICS (3). Designed to provide ... .. Not used in major or minor GPA calculation for mathematical sciences, **statistics, or actuarial science** majors or minors.

STAT ~~350~~ 300. INTRODUCTION TO PROBABILITY AND STATISTICS (3). Introduction to the basic ideas and ... .. PRQ: MATH 230.

↓

**General Education Course Titles**

**Foundational Studies**

COMS 100 - Fundamentals of Oral Communication (3)

↓

MATH 229 - Calculus I (4)

STAT ~~208~~ 100 - Basic Statistics (3)

STAT ~~350~~ 300 - Introduction to Probability and Statistics (3)

↓

**Knowledge Domain Course Titles**

↓

**Nature and Technology**

ANTH 103 - The Great Apes (3)

↓

PSYC 481 - Drugs and Behavior (3)

STAT ~~301~~ 200 - Elementary Statistics (4)

TECH 245 - Pollution Prevention and Sustainable Production (3)

↓

Rationale: Revisions to STAT 208/100, STAT 301/200, and STAT 350/300.

Notification: Not required. Departments within the writing infused category will be notified individually.

Other Catalog Change

Page 92, 2018-19 Undergraduate Catalog

**College of Business**

↓

**Minor in Business Administration (36-41)**

↓

ACCY 288 - Fundamentals of Accounting (3)

OR ACCY 206 - Introductory Financial Accounting (3) and

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

- ACCY 207 - Introductory Cost Management (3)  
↓  
\*PSYC 102 - Introduction to Psychology (3)  
UBUS 223 - Introduction to Business Statistics (3),  
OR STAT ~~301~~ 200 - Elementary Statistics (4),  
OR STAT ~~350~~ 300 - Introduction to Probability and Statistics (93)  
Three of the following (9)  
↓

Rationale: Revisions to STAT 301/200 and STAT 350/300.

Notification: The College of Business was notified of these changes via email on {DATE}.

Other Catalog Change Page 99-100, 2018-19 Undergraduate Catalog

**Department of Finance (FINA)**

- ↓  
**Minor in Finance (24-25)**  
↓  
**Pre-admission Requirements (6-7)**

- ↓  
ACCY 206 - Introductory Financial Accounting (3),  
OR ACCY 288 - Fundamentals of Accounting (3)  
UBUS 223 - Introduction to Business Statistics (3),  
OR STAT ~~301~~ 200 - Elementary Statistics (4),  
OR STAT ~~350~~ 300 - Introduction to Probability

**Course List**

- ↓  
320. Principles of Finance (3). Principles underlying ... PRQ: ACCY 206 or ACCY 288, and  
UBUS 223 or STAT ~~208~~ 100 or STAT ~~301~~ 200 or STAT ~~350~~ 300, and sophomore standing.

Rationale: Revisions to STAT 208/100, STAT 301/200, and STAT 350/300.

Notification: The Department of Finance was notified of these changes via email on {DATE}.

Other Catalog Change Page 109-112, 2018-19 Undergraduate Catalog

**Department of Marketing (MKTG)**

- ↓  
**Minor in International Marketing (27-28)**  
↓  
**Pre-admission Requirements (9-10)**

- PSYC 102 - Introduction to Psychology (3)  
UBUS 223 - Introduction to Business Statistics (3),  
OR STAT ~~301~~ 200 - Elementary Statistics (4)

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

OR STAT ~~350~~ 300 - Introduction to Probability and Statistics (3)  
ECON 261 - Principles of Macroeconomics (3)

↓

**Minor in Marketing (24-24)**

↓

**Pre-admission Requirements (9-10)**

ECON 260 - Principles of Microeconomics (3)

PSYC 102 - Introduction to Psychology (3)

UBUS 223 - Introduction to Business Statistics (3),

OR STAT ~~208~~ 100 - Basic Statistics (3),

OR STAT ~~301~~ 200 - Elementary Statistics (4),

OR STAT ~~350~~ 300 - Introduction to Probability and Statistics (3)

**Requirements (15)**

MKTG 295 - Principles of Marketing (3)

↓

MKTG 490 - Current Topics in Marketing (3)

↓

**Course List**

↓

443. MARKETING RESEARCH (3). Research methods ... PRQ: FINA 320 and MGMT 335 and MKTG 295 and OMIS 338 (for business majors); MKTG 295, and UBUS 223 or STAT ~~301~~ 200 or STAT ~~350~~ 300 (for nonbusiness majors).

↓

Rationale: Revisions to STAT 208/100, STAT 301/200, and STAT 350/300.

**Notification: The Department of Marketing was notified of these changes via email on {DATE}.**

Other Catalog Change

Page 114-116, 2018-19 Undergraduate Catalog

**Operations Management and Information Systems (OMIS)**

↓

**Minor in Business Analytics (24-25)**

↓

**Pre-Admission Requirements (9-10)**

UBUS 223 - Introduction to Business Statistics (3),

OR STAT ~~208~~ 100 - Basic Statistics (3),

OR STAT ~~301~~ 200 - Elementary Statistics (4)

OMIS 338 - Principles of Operations Management (3),

OMIS 351 - Information Systems in Organizations (3),

OR ACCY 310 - Accounting Information Systems (3)

**Core Requirements (15)**

↓



NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

**Course List**

↓

OMIS 324. INTRODUCTION TO BUSINESS DATA ANALYTIC TOOLS (3). *Crosslisted as STAT 324X*. Introduction to business ... .. PRQ: UBUS 223 or STAT ~~304~~ 200.

↓

Rationale: Revisions to STAT 208/100, STAT 301/200, and STAT 350/300.

**Notification: The Department of Operations Management and Information Systems was notified of these changes via email on {DATE}.**

Other Catalog Change

Page 123-125, 2018-19 Undergraduate Catalog

**Department of Curriculum and Instruction (LTIC, LTLA, LTRE, TLCI, TLEE)**

↓

**Major in Elementary Education (B.S.Ed.)**

↓

**Emphasis 1. Bilingual/ESL (15)**

↓

MATH 302 - Introduction to Geometry (3)

STAT ~~304~~ 200 - Elementary Statistics (4)

One of the following (3):

MATH 206 - Introductory Discrete Mathematics (3)

↓

**Major in Middle Level Teaching and Learning (B.S.Ed.)**

↓

**Major Content Area Option: Mathematics (29-31)**

\*MATH 155 - Trigonometry and Elementary Functions (3)

↓

MATH 416 - Topics in Mathematics for Teachers (3)

\*STAT ~~304~~ 200 - Elementary Statistics (4)

Two of the following:

↓

**Minor Content Area Option: Mathematics (26)**

\*MATH 155 - Trigonometry and Elementary Functions (3)

↓

MATH 415 - Topics in Mathematics for Teachers (3)

\*STAT ~~304~~ 200 - Elementary Statistics (4)

↓

Rationale: Revision to STAT 301/200.

**Notification: The Department of Curriculum and Instruction was notified of these changes via email on {DATE}.**

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Other Catalog Change

Page 156-160, 2018-19 Undergraduate Catalog

**Department of Electrical Engineering (ELE)**

↓

**Major in Electrical Engineering (B.S.)**

↓

**Emphasis 1. Electrical and Computer Engineering**

↓

**Requirements outside Department (45-47)**

\*CHEM 210 - General Chemistry I (3)

↓

PHYS 283 - Fundamentals of Physics III: Quantum Physics (3)

ISYE 355 - Probability and Statistics for Engineers (3),

OR STAT ~~350~~ 300 - Introduction to Probability and Statistics (3)

UEET 101 - Introduction to Engineering (1)

OR UEET 301 - Transition to the Profession of Engineering (1)

↓

**Emphasis 2. Biomedical Engineering**

↓

**Track 1**

**Requirements outside Department (63-65)**

BIOS 208 - Fundamentals of Biology I (3)

↓

ISYE 335 - Probability and Statistics for Engineers (3),

OR STAT ~~350~~ 300 - Introduction to Probability and Statistics (3)

UEET 101 - Introduction to Engineering (1)

OR UEET 301 - Transition to the Profession of Engineering (1)

↓

**Track 2**

**Requirements outside Department (62)**

BIOS 208 - Fundamentals of Biology I (3)

↓

PHYS 283 - Fundamentals of Physics III: Quantum Physics (3)

ISYE 335 - Probability and Statistics for Engineers (3),

OR STAT ~~350~~ 300 - Introduction to Probability and Statistics (3)

UEET 101 - Introduction to Engineering (1)

OR UEET 301 - Transition to the Profession of Engineering (1)

↓

**Total Hours for Emphasis 2, Biomedical Engineering: 108-113**

↓

**Course List**

**Biomedical Engineering (BME)**

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

↓  
425. BIOMEDICAL SIGNAL PROCESSING (3). Modeling of biomedical ... .. PRQ: ELE 315; and either ISYE 335 or STAT 350 **300**.

↓  
**Electrical Engineering (ELE)**

↓  
360. COMMUNICATIONS SYSTEMS (4). Introduction to ... .. PRQ: ELE 315, ELE 330, and ISYE 335 or STAT 350 **300**.

↓  
456. INTRODUCTION TO PATTERN RECOGNITION (3). Theory and ... .. PRQ: CSCI 240 or CSCI 241; and ELE 250; and STAT 350 **300** or ISYE 335.

↓

Rationale: Revision to STAT 350/300.

**Notification: The Department of Electrical Engineering was notified of these changes via email on {DATE}.**

Other Catalog Change

Page 163-166, 2018-19 Undergraduate Catalog

**Department of Industrial and Systems Engineering (ISYE)**

↓  
**Major in Industrial and Systems Engineering (B.S.)**

↓  
**Electives (15)<sup>1</sup>**

↓  
The following list:

ACCY 206 - Introductory Financial Accounting (3)

↓  
PSYC 372 - Social Psychology (3)

STAT 470 **400** - ~~Introduction to Probability Theory~~ (3)

**OR ACSC 400X - Probability (3)**

STAT 473 **435** - ~~Statistical Methods and Models I~~ **Applied Regression Analysis** (3)

STAT 473A - ~~Statistical Computing Packages~~ (1)

STAT 474 - ~~Statistical Methods and Models II~~ (3)

STAT 478 **438** - ~~Statistical Methods of Forecasting~~ **Applied Time Series Analysis** (3)

**OR ACSC 438X - Applied Time Series Analysis (3)**

Any 300- or 400-level course in electrical engineering, industrial and systems engineering, or mechanical engineering offered in the College of Engineering and Engineering Technology with the exceptions of MEE 330, and MEE 331, and required courses.

**Total Hours for a Major in Industrial and Systems Engineering: 108**

↓  
**Course List**

↓

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

310. WORK MEASUREMENT AND WORK DESIGN (3). Techniques for ... .. CRQ: ISYE 335 or STAT ~~350~~ 300 or UBUS 223.  
↓  
371. OPERATIONS RESEARCH: PROBABILISTIC MODELS (3). Introduction ... .. PRQ: ISYE 335 or STAT ~~350~~ 300.  
↓  
410. HUMAN FACTORS ENGINEERING (3). Introduction to ... .. PRQ: PHYS 253 and ISYE 335 or STAT ~~350~~ 300 or UBUS 223.  
↓  
430. QUALITY CONTROL (3). Importance of ... .. PRQ: ISYE 335 or STAT ~~350~~ 300 or UBUS 223.  
↓  
431. RELIABILITY ENGINEERING (3). Reliability analysis ... .. PRQ: ISYE 335 or STAT ~~350~~ 300.  
↓  
439. SIX SIGMA PERFORMANCE EXCELLENCE AND MODERN PROBLEM SOLVING (3). The Six Sigma formula ... .. PRQ: ISYE 335 or STAT ~~350~~ 300 or UBUS 223.  
↓  
440. PRODUCTION PLANNING AND CONTROL (3). Analysis, design, and ... .. PRQ: ISYE 335 or UBUS 223 or STAT ~~350~~ 300. CRQ: ISYE 370 or OMIS 327.  
  
442. ENGINEERING PROJECT MANAGEMENT (3). Integrated approach ... .. PRQ: MATH 230 and either STAT ~~208~~ 100 or STAT ~~350~~ 300 or ISYE 335; or consent of department.  
↓  
455. MANUFACTURING METROLOGY (3). Study of concepts, theories, and ... .. PRQ: ISYE 335 or STAT ~~350~~ 300.  
↓  
470. INTRODUCTION TO DATA ANALYTICS FOR ENGINEERS (3). A broad ... .. PRQ: ISYE 335 or STAT ~~350~~ 300; and CSCI 240; or consent of the department.  
↓  
475. DECISION ANALYSIS FOR ENGINEERING (3). Elementary ... .. PRQ: ISYE 335 or STAT ~~350~~ 300 or UBUS 223.  
↓  
480. SIMULATION MODELING AND ANALYSIS (3). Design and ... .. PRQ: ISYE 335 or STAT ~~350~~ 300 or UBUS 223; and CSCI 240 and ISYE 371; or consent of department.  
↓  
490. SYSTEMS ENGINEERING MANAGEMENT (3). Introduction to ... .. PRQ: MATH 230; and either ISYE 335 or STAT ~~208~~ 100 or STAT ~~350~~ 300; or consent of department.

Rationale: Revisions to stat 208/100, stat 350/300, STAT 470/400, STAT 473/435, and STAT 478/438.  
Deletion of STAT 473A and STAT 474.

**Notification: The Department of Industrial and Systems Engineering was notified of these changes via email on {DATE}.**

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Other Catalog Change

Page 174-176, 2018-19 Undergraduate Catalog

**Department of Technology (TECH)**

↓

**Major in Technology (B.S.)**

↓

**Emphasis 1. Electrical Engineering Technology**

↓

**Requirements outside Department (26-27)**

\*CHEM 110 - Chemistry (3) and \*CHEM 111 - Chemistry Laboratory (1),  
OR \*CHEM 210 - General Chemistry I (3) and \*CHEM 212 - General Chemistry  
Laboratory I (1)

↓

PHYS 210 - General Physics I (4),  
OR PHYS 253 - Fundamentals of Physics I: Mechanics (4)

\*STAT ~~208~~ 100 - Basic Statistics (3),  
OR STAT ~~304~~ 200 - Elementary Statistics (4)

**Total Hours for Emphasis 1, Electrical Engineering Technology: 100-102**

**Emphasis 2. Manufacturing Engineering Technology**

↓

**Requirements outside Department (22-23)**

\*CHEM 110 - Chemistry (3) and \*CHEM 111 - Chemistry Laboratory (1),  
OR \*CHEM 210 - General Chemistry I (3) and \*CHEM 212 - General Chemistry  
Laboratory I (1)

↓

\*PHYS 210 - General Physics I (4),  
OR \*PHYS 253 - Fundamentals of Physics I: Mechanics (4)

\*STAT ~~208~~ 100 - Basic Statistics (3),  
OR STAT ~~304~~ 200 - Elementary Statistics (4)

**Total Hours for Emphasis 2, Manufacturing Engineering Technology: 100-102**

↓

**Emphasis 3. Industrial Management and Technology**

↓

**Requirements outside Department (17-18)**

ACCY 206 - Introductory Financial Accounting (3),  
OR ACCY 288 - Fundamentals of Accounting (3)

↓

\*PHYS 150 - Physics (3) AND \*PHYS 151 - Physics Laboratory (1),  
OR \*PHYS 210 - General Physics I (4)

\*STAT ~~208~~ 100 - Basic Statistics (3),  
OR STAT ~~304~~ 200 - Elementary Statistics (4)

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

**Total hours for Emphasis 3, Industrial Technology: 89-93**

↓

**Emphasis 4. Energy and Environmental Technology**

↓

**Requirements outside Department (27-28)**

\*CHEM 110 - Chemistry (3) AND \*CHEM 111 - Chemistry Laboratory (1),  
OR \*CHEM 210 - General Chemistry 1 (3) AND CHEM 212 - General Chemistry  
Laboratory (1)

↓

\*PHYS 150 - Physics (3) AND \*PHYS 151 - Physics Laboratory,  
OR \*PHYS 210 - General Physics I (4)  
\*STAT ~~208~~ 100 - Basic Statistics (3),  
OR STAT ~~301~~ 200 - Elementary Statistics (4)

**Total Hours for Emphasis 4, Energy and Environment Technology: 94-96**

↓

**Emphasis 5. Applied Manufacturing Technology**

↓

**Requirements outside Department (14)**

\*CHEM 110 - Chemistry (3)

↓

\*PHYS 150 - Physics (3) AND \*PHYS 151 - Physics Laboratory,  
OR \*PHYS 210 - General Physics I (4)  
\*STAT ~~208~~ 100 - Basic Statistics (3)

**Total Hours for Emphasis 5, Applied Manufacturing Technology: 93**

↓

**Course List**

↓

391. INDUSTRIAL QUALITY CONTROL (3). Techniques of ... .. PRQ: MATH 155 with a C or better, STAT ~~208~~ 100 or STAT ~~301~~ 200, or consent of department.

↓

404. SUPERVISION IN INDUSTRY (3). Principles, methods, and ... .. PRQ: STAT ~~208~~ 100.

↓

407. MAINTENANCE MANAGEMENT TECHNOLOGY (3). Concepts and ... .. PRQ: Either STAT ~~208~~ 100 or STAT ~~301~~ 200; and TECH 265; or consent of department.

↓

415. APPLIED INDUSTRIAL EXPERIMENTAL ANALYSIS (3). Application ... .. PRQ: MATH 155 with a C or better and STAT ~~208~~ 100.

↓

492. MANUFACTURING DISTRIBUTION APPLICATIONS (3). Applications ... .. PRQ: MATH 155 with a C or better, TECH 265, and STAT ~~208~~ 100 or STAT ~~301~~ 200, or consent of the department.

Rationale: Revisions to STAT 208/100 and STAT 301/200.

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Notification: The Department of Technology was notified of these changes via email on {DATE}.

Other Catalog Change

Page 185, 2018-19 Undergraduate Catalog

**School of Allied Health and Communicative Disorders (AHCD, AHPT, COMD)**

↓

**Major in Communicative Disorders (B.S.)**

↓

**Requirements outside School (24-27)**

\*BIOS 109 - Human Biology (3),  
OR BIOS 357 - Human Anatomy and Physiology (5)

↓

REHB 493 - Counseling in Communicative Disorders (3)

\*STAT ~~208~~ 100 - Basic Statistics (3),  
OR STAT ~~301~~ 200 - Elementary Statistics (4)

↓

**Special Requirement**

Students are required to complete a minor selected with program approval.

**Total Hours for a major in Communicative Disorders: 70-78**

↓

**Course List**

**Communicative Disorders (COMD)**

↓

429. ASSESSMENT PROCEDURES IN COMMUNICATIVE DISORDERS (3). Fundamental concepts ... PRQ: COMD 220 and STAT ~~208~~ 100 or STAT ~~301~~ 200. CRQ: Junior status.

Rationale: Revisions to STAT 208/100 and STAT 301/200.

Notification: The School of Allied Health and Communicative Disorders was notified of these changes via email on {DATE}.

Other Catalog Change

Page 187-194, 2018-19 Undergraduate Catalog

**School of Family and Consumer Sciences (FACS, FSMD, HDFS, HOSP)**

↓

**Limited Retention Requirements for Human Development and Family Sciences**

↓

ENGL 203 - Rhetoric and Composition II, Researched Writing in the Domains (3),  
OR ENGL 204 - Rhetoric and Composition, Accelerated Researched Writing in the Domains (3),  
OR pass the English foundational studies exam  
MATH 110 - College Algebra (3),

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

OR STAT ~~208~~ 100 - Basic Statistics (3),  
OR meet the Math foundational studies (MATH 101, MATH 155, MATH 201, MATH  
210, A.S. or A.A. degree)

PSYC 102 - Introduction to Psychology (3)

↓

Students not meeting these requirements will be changed to emphasis 1, Family and Individual  
Development.

↓

**Emphasis 1. Family and Individual Development**

↓

**Requirements outside School (24-26)**

One of the following (3-4)

^ENGL 350 - Writing Across the Curriculum (3)

↓

\*SOCI 260 - Introduction to Social Psychology (3),

OR PSYC 372 - Social Psychology (3)

\*STAT ~~208~~ 100 - Basic Statistics (3),

OR STAT ~~304~~ 200 - Elementary Statistics (4)

UHHS 460 - Introduction to Research in Health and Human Sciences (3),

OR PSYC 305 - Research Methods (3)

**Total Hours for Emphasis 1. Family and Individual Development: 60-62**

↓

**Emphasis 2. Family Social Services**

↓

**Requirements outside the School (15-17)**

One of the following (3-4)

^ENGL 350 - Writing Across the Curriculum (3)

↓

\*SOCI 260 - Introduction to Social Psychology (3),

OR PSYC 372 - Social Psychology (3)

\*STAT ~~208~~ 100 - Basic Statistics (3),

OR STAT ~~304~~ 200 - Elementary Statistics (4)

**Total Hours for Emphasis 2. Family Social Services: 67-69**

↓

**Emphasis 3. Child Development**

↓

**Requirements outside School (15-16)**

\*BIOS 103 - General Biology (3),

OR \*BIOS 109 - Human Biology (3)

\*PSYC 102 - Introduction to Psychology (3)

\*SOCI 170 - Introduction to Sociology (3)

\*STAT ~~208~~ 100 - Basic Statistics (3)

One of the following (3-4)



NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

↓

**Total Hours of Emphasis 3, Child Development: 66-67**

↓

**Major in Fashion Merchandising (B.S.)**

↓

**Requirements outside School (34-35)**

ACCY 288 - Fundamentals of Accounting (3)

↓

\*SOCI 170 - Introduction to Sociology (3)

\*STAT 208 100 - Basic Statistics (3),

OR UBUS 223 - Introduction to Business Statistics (3)

One of the following (3)

↓

**Total Hours for a Major in Fashion Merchandising: 73-78**

↓

**Major in Hospitality and Tourism Management (B.S.)**

↓

**Requirements outside School (29)**

ACCY 206 - Introductory Financial Accounting (3),

OR ACCY 288 - Fundamentals of Accounting (3)

↓

\*PSYC 102 - Introduction to Psychology (3)

STAT 301 200 - Elementary Statistics (4),

OR \*STAT 208 100 - Basic Statistics (3),

OR UBUS 223 - Introduction to Business Statistics (3)

**Total Hours for a Major in Hospitality and Tourism Management: 76-79**

↓

**Course List**

↓

**Fashion Merchandising (FSMD)**

↓

468. CONSUMER BEHAVIOR RELATED TO APPAREL (3). Analysis of ... .. PRQ: FSMD 152 with a grade of C or better, FSMD 258 with a grade of C or better, PSYC 102, SOCI 170, STAT 208 100 or UBUS 223, and at least junior standing.

↓

**Human Development and Family Sciences (HDFS)**

↓

343. FAMILY FINANCIAL PLANNING (3). Principles of management as related to family finances. PRQ: STAT 208 100.

Rationale: Revisions to STAT 208/100 and STAT 301/200.

**Notification: The School of Family and Consumer Sciences was notified of these changes via email on {DATE}.**

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Other Catalog Change

Page 199-205, 2018-19 Undergraduate Catalog

**School of Health Studies (AHLS, HLTH, NUTR, PHHE)**

↓

**Major in Medical Laboratory Sciences (B.S.)**

↓

**Requirements outside School (37-38)**

BIOS 208 - Fundamentals of Biology I (3), and

↓

^HSCI 460 - Research in Health and Human Sciences (3)

\*STAT ~~208~~ 100 - Basic Statistics (3)

**Total Hours for a Major in Medical Laboratory Sciences: 84-97**

↓

**Major in Nutrition Dietetics, and Wellness (B.S.)**

↓

**Requirements outside School (47-49)**

\*BIOS 103 - General Biology (3)

↓

\*SOCI 170 - Introduction to Sociology (3),

OR \*ANTH 120 - Anthropology and Human Diversity (3);

\*STAT ~~208~~ 100 - Basic Statistics (3),

OR STAT ~~304~~ 200 - Elementary Statistics (4)

**Total Hours for a Major in Nutrition, Dietetics and Wellness: 76-81**

↓

**Major in Public Health (B.S.)**

↓

**Requirements outside School (20-23)**

BIOS 103 - General Biology (3) and BIOS 105 - General Biology Laboratory (1),

OR BIOS 208 - Fundamentals of Biology I (3) and BIOS 210 - Fundamentals of Biology  
I Laboratory (1)

↓

\*MATH 110 - College Algebra (3)

OR \*MATH 210 - Finite Mathematics (3),

OR \*MATH 211 - Calculus for Business and Social Sciences (4),

OR \*MATH 229 - Calculus I (4)

\*STAT ~~208~~ 100 - Basic Statistics (3)

OR STAT ~~304~~ 200 - Elementary Statistics (4)

OR UBUS 223 - Introduction to Business Statistics (4)

One of the following emphases: General Public Health, Health Administration, Environment and  
Health, or Health Promotion

↓

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

**Course List**

↓

**Public Health and Health Education (PHHE)**

↓

325. BIOSTATISTICAL APPLICATIONS IN PUBLIC HEALTH (3). Fundamental ... . PRQ:  
STAT ~~208~~ 100, STAT ~~301~~ 200, or UBUS 223 and declared public health major, declared public  
health minor, or consent of school.

Rationale: Revisions to STAT 208/100 and STAT 301/200.

**Notification: The School of Health Studies was notified of these changes via email on {DATE}.**

Other Catalog Change

Page 207-209, 2018-19 Undergraduate Catalog

**School of Interdisciplinary Health Professions (HSCI, REHB)**

↓

**Major in Health Sciences (B.S.)**

↓

**Requirements outside School (15-16)**

\*ENGL 203 - Rhetoric and Composition II: Researched Writing in the Domains (3),  
OR ENGL 204 - Rhetoric and Composition, Accelerated Researched Writing in the  
Domains (3)

↓

\*PSYC 102 - Introduction to Psychology (3)

\*STAT ~~208~~ 100 - Basic Statistics (3)

OR STAT ~~301~~ 200 - Elementary Statistics (4)

UHHS 365 - Overview of Gerontology (3)

**Select one of the following emphases:**

↓

**Major in Rehabilitation and Disability Services (B.S.)**

↓

**Requirements outside School (18-19)**

#CAHC 211 - Career Planning (3)

↓

PSYC 316 - Introduction to Psychopathology (3)

\*STAT ~~208~~ 100 - Basic Statistics (3),

OR \*STAT ~~301~~ 200 - Elementary Statistics (4)

↓

**Total Hours for Rehabilitation and Disability Services: 72-73**

↓

**Course List**

**Health Sciences (HSCI)**

↓

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

460. RESEARCH IN HEALTH AND HUMAN SCIENCES (3). An introductory ... PRQ: STAT 208 100 or STAT 301 200 or UBUS 223; and CHHS major with at least junior standing; or consent of school.

Rationale: Revisions to STAT 208/100 and STAT 301/200.

Notification: The School of Interdisciplinary Health Professions was notified of these changes via email on {DATE}.

Other Catalog Change Page 216, 2018-19 Undergraduate Catalog

**School of Nursing (NURS)**

↓

**Major in Nursing (B.S.)**

↓

**Requirements outside School (31-33)**

BIOS 103 - General Biology (3) and BIOS 105 - General Biology Laboratory (1)

↓

\*PSYC 102 - Introduction to Psychology (3)

\*STAT 208 100 - Basic Statistics (3),

OR STAT 301 200 - Elementary Statistics (4)

**Total Hours for a Major in Nursing: 92-98**

↓

**Course List (NURS)**

↓

312. NURSING RESEARCH AND EVIDENCE-BASED PRACTICE (3). Principles, methodology, and ... PRQ: STAT 208 100 or STAT 301 200; and NURS 303 and NURS 304 and NURS 305 and NURS 307 and NURS 308; or R.N. status.

Rationale: Revisions to STAT 208/100 and STAT 301/200.

Notification: The School of Nursing was notified of these changes via email on {DATE}.

Other Catalog Change Page 232, 2018-19 Undergraduate Catalog

**College of Liberal Arts and Sciences**

↓

**Pre-professional Studies**

↓

**Course Selection for Biomedical Pre-professional Students**

↓

Math: Trigonometry and Elementary Functions (MATH 155) and Calculus I (MATH 229)

↓

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Biology: Fundamentals of Biology I and II with labs (BIOS 208/ BIOS 210 and BIOS 209/BOIS 211), Molecular Biology (BIOS 302), Microbiology (BIOS 313), and Human Physiology (BIOS 355)

Additional recommended classes include Statistics (STAT ~~301~~ 200), Biological Chemistry (CHEM 470 or CHEM 472 and CHEM 473), and Genetics (BIOS 308).

Beyond this core, which will meet most professional school requirements and prepare students for the professional school entrance exams (e.g., MCAT, PCAT, DAT, OAT), individual biomedical programs may also have unique requirements. These include:

**Pre-dentistry**

Most dental schools require PSYC 102, PSYC 225, STAT ~~301~~ 200, and two semesters of English composition.

↓

**Pre-optometry**

Many optometry schools require Elementary Statistics - STAT ~~301~~ 200 and Lifespan Development - PSYC 225.

↓

Rationale: Revision to STAT 301/200.

Notification: Not required.

Other Catalog Change

Page 236, 2018-19 Undergraduate Catalog

**School of Public and Global Affairs**

↓

**B.S.A.M. Core Requirements (21)**

↓

ACCY 288 - Fundamentals of Accounting (3)

↓

POLS 340 - Political Analysis (3)

OR NNGO 390 - Introduction to Research in Non-Governmental and Nonprofit Organizations (3)

OR \*STAT ~~208~~ 100 - Basic Statistics (3)

PSPA 320 - Public Service Leadership (3)

PSPA 411 - The Ethical Public Administrator (3)

SOCI 375 - Sociology of Organizations (3)

Rationale: Revision to STAT 208/100.

Notification: The School of Public and Global Affairs was notified of these changes via email on {DATE}.

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Other Catalog Change

Page 243, 2018-19 Undergraduate Catalog

**Department of Biological Sciences (BIOS)**

↓

**Major in Biological Sciences (B.S.)**

↓

**Requirements outside Department (33).**

\*CHEM 210 - General Chemistry I (3), and

\*CHEM 212 - General Chemistry Laboratories I (1)

↓

\*MATH 155 - Trigonometry and Elementary Functions (3),

OR satisfactory performance on the Mathematics Placement Exam

\*MATH 229 - Calculus I (4), and MATH 230 - Calculus II (4),

OR \*MATH 211 - Calculus for Business and Social Science (4),

and **AND** STAT ~~301~~ **200** - Elementary Statistics (4)

↓

**Total Hours for a Major in Biological Sciences: 79**

↓

**Admission and Retention Requirements in the Discipline**

Students interested in pursuing licensure in biology ... .. In addition, those seeking licensure must complete the equivalent of the mathematics sequence MATH 211 and STAT ~~301~~ **200**, BIOS 305, BIOS 313, BIOS 316, BIOS 317, BIOS 355, and BIOS 484, and a ... ..

↓

Rationale: Revision to STAT 301/200 and correction to the title of CHEM 212.

**Notification: The Department of Biological Sciences was notified of this change via email on {DATE}.**

Other Catalog Change

Page 250, 2018-19 Undergraduate Catalog

**Department of Chemistry and Biochemistry (CHEM)**

↓

**Major in Chemistry (B.S.)**

↓

**Emphasis 1. Chemistry**

↓

**Recommendations**

CSCI 230 - Computer Programming in FORTRAN (4),

OR CSCI 240 - Computer Programming in C++ (4)

↓

Students interested in forensic science are encouraged to take at least one of the following.

BIOS 355 - Human Physiology (4)

↓

CHEM 471 - Biological Chemistry Laboratory (3)

STAT ~~301~~ **200** - Elementary Statistics (4),

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

OR STAT ~~350~~ 300 - Introduction to Probability and Statistics (3)

Students should meet with a departmental adviser to determine the appropriate electives for their program of study.

**Emphasis 2. Biochemistry**

↓

**Recommendations**

Students are encouraged to take at least one of the following:

CHEM 462 - Inorganic Chemistry of the Main Group Elements (3),

↓

Students interested in forensic science are encouraged to take at least one of the following.

BIOS 355 - Human Physiology (4)

BIOS 440 - Immunobiology (3)

BIOS 477 - Human Genetics (3)

STAT ~~301~~ 200 - Elementary Statistics (4),

OR STAT ~~350~~ 300 - Introduction to Probability and Statistics (3)

Students should meet with a departmental adviser to determine the appropriate electives for their program of study.

Rationale: Revision to STAT 301/200 and STAT 350/300.

**Notification: The Department of Chemistry and Biochemistry was notified of this change via email on {DATE}.**

Other Catalog Change

Page 265, 2018-19 Undergraduate Catalog

**Department of Computer Science (CSCI)**

↓

**Major in Computer Science (B.S.)**

↓

**Emphasis 1. Software Development**

↓

**Requirements outside Department (10-15)**

MATH 206 - Introductory Discrete Mathematics (3)

MATH 211 - Calculus for Business and Social Science (4),

OR MATH 229 and MATH 230 - Calculus I and II (8)

STAT ~~301~~ 200 - Elementary Statistics (4),

OR STAT ~~350~~ 300 - Introduction to Probability and Statistics (3)

↓

**Emphasis 2. Enterprise Software**

↓

**Requirements outside Department (19-27)**

ACCY 288 - Fundamentals of Accounting (3),

OR ACCY 206 - Introductory Financial Accounting (3), and

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

↓  
MATH 211 - Calculus for Business and Social Science (4),  
OR MATH 229 and MATH 230 - Calculus I and II (8)  
STAT ~~301~~ 200 - Elementary Statistics (4),  
OR STAT ~~350~~ 300 - Introduction to Probability and Statistics (3)  
Two of the following (6)

↓  
**Total Hours for Emphasis 2, Enterprise Software: 65-75**

**Emphasis 3. Computational Software**

↓  
**Requirements outside Department (32-33)**  
MATH 206 - Introductory Discrete Mathematics (3)  
↓  
\*PHYS 253 - Fundamentals of Physics I: Mechanics (4)  
STAT ~~350~~ 300 - Introduction to Probability and Statistics (3)  
Two of the following (6-7)  
MATH 434 - Numerical Linear Algebra (3)  
↓  
MATH 444 - Linear Programming and Network Flows (3)  
STAT 473 435 - ~~Statistical Methods and Models I~~ Applied Regression Analysis (3), and  
STAT 473A - ~~Statistical Computing Packages (1)~~

**Total Hours for Emphasis 3, Computational Software: 77-80**

Rationale: Revisions to STAT 301/200, STAT 350/300, and STAT 473/435. Deletion of STAT 473A.

**Notification: The Department of Computer Science was notified of this change via email on {DATE}.**

Other Catalog Change

Page 269-271, 2018-19 Undergraduate Catalog

**Department of Economics (ECON)**

↓  
**Major in Economics (B.A. or B.S.)**  
↓  
**Requirements outside Department (B.A., 3-16; B.S., 11-15)**  
*For the B.A. degree*  
Fulfillment of B.A. foreign language requirement (0-12)  
(See “Foreign Language Requirement for the B.A. Degree.”)  
\*STAT ~~208~~ 100 - Basic Statistics (3),  
OR STAT ~~301~~ 200 - Elementary Statistics (4),  
OR UBUS 223 - Introduction to Business Statistics (3)

*For the B.S. degree*  
One of the following groups (11-15)



NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

- \*MATH 210 - Finite Mathematics (3)
- \*MATH 211 - Calculus for Business and Social Science (4)
- STAT ~~304~~ 200 - Elementary Statistics (4)
- OR
- \*MATH 229, and MATH 230 - Calculus I and II (8)
- STAT ~~350~~ 300 - Introduction to Probability and Statistics (3)

**Total Hours for a Major in Economics: 36-49 (B.A.) OR 50 (B.S.)**

↓

**Emphasis 1. Financial Economics (B.S. only) (50)**

↓

**Requirements in Department (35)**

ECON 260 - Principles of Microeconomics (3)

↓

ECON 492 - Research Methods in Economics (3)

Select from economics courses at the 300- or 400-level (3)

Recommended: ECON 484X/STAT-484 ACSC 460 - Financial Derivatives (3)

**Requirements outside the Department (15)**

CSCI 240 - Computer Programming in C++ (4)

\*MATH 229 - Calculus I (4)

MATH 230 - Calculus II (4)

STAT ~~350~~ 300 - Introduction to Probability and Statistics (3)

**Total Hours for Emphasis 1, Financial Economics: 49 (B.S. only)**

↓

**Accelerated B.S./ M.A. Program in Economics**

**Admission**

This program leads to both the B.S. and M.A. in Economics degrees. Students who wish to participate in this program should identify themselves to the Department of Economics as majors who will complete the requirement for the B.S. degree having taken the calculus option (MATH 229, MATH 230, and STAT ~~350~~ 300). Ideally students will ... ..

Students who are interested in this program and have completed or are in the process of completing ECON 360, ECON 361, ECON 390, MATH 230, and STAT ~~350~~ 300 should apply to the Economics M.A. program ... .. Students who have completed the courses MATH 229, MATH 230, STAT ~~350~~ 300, and ECON 390 with a grade of B or better ... ..

↓

**Curriculum**

Students must complete all general education requirements and MATH 229, MATH 230, STAT ~~350~~ 300, ECON 360, ECON 361, and ECON 390 by the end of their junior year. During their senior year, students will take ECON 590 in the fall semester and 9 semester ... ..

↓

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

**Course List**

↓

390. BASIC ECONOMETRICS AND ECONOMIC APPLICATIONS (3). Introduction to econometric ... .. PRQ: STAT ~~301~~ 200 or STAT ~~350~~ 300 or UBUS 223. CRQ: ECON 390A.

Rationale: Revisions to STAT 208/100, STAT 301/200, STAT 350/300, and STAT 484/ACSC 460.

**Notification: The Department of Economics was notified of these changes via email on {DATE}.**

Other Catalog Change

Page 282, 2018-19 Undergraduate Catalog

**Environmental Studies (ENVS)**

↓

**Major in Environmental Studies (B.A. or B.S.)**

↓

**Requirements outside Environmental Studies (B.A., 10-22; B.S., 15-16)**

*For the B.A. degree*

Fulfillment of foreign language requirement (0-12)

↓

MATH 155 - Trigonometry and Elementary Functions (3),

OR MATH 211 - Calculus for Business and Social Science (4)

STAT ~~208~~ 100 - Basic Statistics (3)

*For the B.S. degree*

CHEM 210 - General Chemistry I (3)

↓

MATH 211 - Calculus for Business and Social Science (4),

OR MATH 229 - Calculus I (4) and MATH 230 - Calculus II (4)

STAT ~~301~~ 200 - Elementary Statistics (4)

Rationale: Revisions to STAT 208/100 and STAT 301/200.

**Notification: Environmental Studies was notified of these changes via email on {DATE}.**

Other Catalog Change

Page 290-295, 2018-19 Undergraduate Catalog

**Department of Geographic and Atmospheric Sciences (GEOG, MET)**

↓

**Major in Geography**

↓

**Emphasis 1: Geography (B.A. or B.S.)**

↓

**Natural Environmental Systems<sup>1</sup>**

↓

**Requirements outside Department (B.A., 7-20; B.S., 10-15)**

\*MATH 210 - Finite Mathematics (3),

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

OR \*MATH 211 - Calculus for Business and Social Science (4),  
OR \*MATH 229 - Calculus I (4)  
STAT ~~301~~ 200 - Elementary Statistics (4)  
*For the B.A. degree*

↓

**Total Hours for Emphasis 1, Geography: 42-56 (B.A.) OR 45-51 (B.S.)**

↓

**Emphasis 2: Geomatics (B.S.)**

↓

**Requirements outside Department (16)**

\*MATH 211 - Calculus for Business and Social Science (4),  
OR \*MATH 229 - Calculus I (4)  
\*PHYS 210 - General Physics I (4)  
\*PHYS 211 - General Physics II (4)  
STAT ~~301~~ 200 - Elementary Statistics (4)

↓

**Major in Meteorology (B.S.)**

↓

**Requirements outside Department (30-31)**

CSCI 240 - Computer Programming in C++ (4)  
OR GEOG 493 - Computer Programming for the Geospatial and Atmospheric Sciences  
(3)

↓

\*PHYS 273 - Fundamentals of Physics II: Electromagnetism (4)  
STAT ~~301~~ 200 - Elementary Statistics (4)

**Total Hours for a Major in Meteorology (B.S.): 64-65**

↓

**Course List**

**Geography (GEOG)**

↓

361. GEOGRAPHIC MEASUREMENT AND QUANTITATIVE ANALYSIS (3). Description  
of measurement ... .. PRQ: STAT ~~301~~ 200.

↓

370. REGIONAL CLIMATOLOGY (3). Principles of ... .. PRQ: GEOG 105 and GEOG 106,  
or MET 300. CRQ: STAT ~~301~~ 200.

↓

461. APPLIED STATISTICS IN GEOGRAPHIC RESEARCH (3). Application ... .. PRQ:  
STAT ~~301~~ 200.

↓

490. COMMUNITY GEOGRAPHY (3). Team research ... .. PRQ: GEOG 359, STAT ~~301~~ 200,  
and at least 15 semester hours in geography or meteorology.

Rationale: Revision to STAT 301/200.

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Notification: The Department of Geography and Atmospheric Sciences was notified of these changes via email on {DATE}.

Other Catalog Change

Page 297-298, 2018-19 Undergraduate Catalog

**Department of Geology and Environmental Geosciences (GEOL)**

↓

**Major in Geology and Environmental Geosciences (B.S.)**

↓

**Emphasis 2. Environmental Geosciences**

↓

**Requirements outside Department (33-36)**

\*CHEM 210 - General Chemistry I (3), and \*CHEM 212 - General Chemistry Laboratory I (1)

↓

\*MATH 229 - Calculus I (4), and MATH 230 - Calculus II (4),  
OR \*MATH 211 - Calculus for Business and Social Science (4),  
and **AND** STAT ~~301~~ **200** - Elementary Statistics (4)

**Total Hours for Emphasis 2, Environmental Geosciences: 67-73**

↓

**Emphasis 3. Earth and Space Science Education<sup>1,2</sup>**

↓

**Requirements outside Department (47-53)**

BIOS 208 - Fundamentals of Cellular Biology (3)

AND BIOS 210 - Fundamentals of Cellular Biology Laboratory (1)

↓

\*MATH 229 - Calculus I (4),  
OR \*MATH 155 - Trigonometry and Elementary Functions (3),  
AND MATH 211 - Calculus for Business and Social Science (4),  
AND STAT ~~301~~ **200** - Elementary Statistics (4)  
\*PHYS 210 - General Physics I (4), and \*PHYS 211 - General Physics II (4),  
OR \*PHYS 253 - Fundamentals of Physics I: Mechanics (4),  
and **AND** \*PHYS 273 - Fundamentals of Physics II: Electromagnetism (4)

↓

**Total Hours for Emphasis 3, Earth and Space Science Education: 90-96**

Rationale: Revision to STAT 301/200.

Notification: The Department of Geology and Environmental Geosciences was notified of these changes via email on {DATE}.

Other Catalog Change

Page 332-334, 2018-19 Undergraduate Catalog

**Department of Political Science (POLS)**

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

↓

**Emphasis 1. Politics and Governance**

**Requirements in Department (36)**

\*POLS 100 - American Government and Politics (3),  
OR \*POLS 150 - Democracy in America (3)

Two of the following (6)

↓

Electives in political science (27)

Students must ensure that the field ... . Students are also strongly encouraged to complete POLS 340 prior to taking STAT ~~304~~ 200 or STAT ~~350~~ 300.

**Requirements outside Department (B.A., 0-12; B.S., 10-15)**

*For the B.A. degree*

↓

*For the B.S. degree*

Laboratory science/mathematical/computational skills sequence (10-15) [Students selecting a sequence that does not include STAT ~~304~~ 200 (4) or STAT ~~350~~ 300 (3) will also be required to take one of these courses.]

(See “College Requirement for the B.S. Degree”)

**Total Hours for Emphasis 1, Politics and Governance: 36-48 (B.A.) OR 46-51 (B.S.)**

**Emphasis 2. Public Law**

**Requirements in Department (36)**

↓

\*POLS 100 - American Government and Politics (3),  
OR \*POLS 150 - Democracy in America (3)

↓

One additional course from either of the two preceding lists (3)

Electives in political science (15)

Students must ensure that the field ... . Students are also strongly encouraged to complete POLS 340 prior to taking STAT ~~304~~ 200 or STAT ~~350~~ 300.

**Requirements outside Department (B.A., 0-12; B.S., 10-15)**

*For the B.A. degree*

↓

*For the B.S. degree*

Laboratory science/mathematical/computational skills sequence (10-15) [Students selecting a sequence that does not include STAT ~~304~~ 200 (4) or STAT ~~350~~ 300 (3) will also be required to take one of these courses.]

(See “College Requirement for the B.S. Degree”)

**Total Hours for Emphasis 2, Public Law: 36-48 (B.A.) OR 46-51 (B.S.)**

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

**Emphasis 3. Public Administration and Service**

↓

**Requirements in Department (36)**

\*POLS 100 - American Government and Politics (3)

↓

Electives in political science (15)

Students must ensure that the field ... .. Students are also strongly encouraged to complete POLS 340 prior to taking STAT ~~304~~ 200 or STAT ~~350~~ 300. The B.S. is highly recommended for students planning careers in public policy and public administration.

**Requirements outside Department (B.A., 0-12; B.S., 10-15)**

*For the B.A. degree*

↓

*For the B.S. degree*

Laboratory science/mathematical/computational skills sequence (10-15) [Students selecting a sequence that does not include STAT ~~304~~ 200 (4) or STAT ~~350~~ 300 (3) will also be required to take one of these courses.]

(See “College Requirement for the B.S. Degree”)

**Total Hours for Emphasis 3, Public Administration and Service: 36-48 (B.A.) OR 46-51 (B.S.)**

↓

**Emphasis 4. International Politics**

↓

**Requirements in Department (36)**

\*POLS 100 - American Government and Politics (3),  
OR \*POLS 150 - Democracy in America (3)

↓

Electives in political science (12)

Students must ensure that the field ... .. Students are also strongly encouraged to complete POLS 340 prior to taking STAT ~~304~~ 200 or STAT ~~350~~ 300.

**Requirements outside Department (B.A., 0-12; B.S., 10-15)**

*For the B.A. degree*

↓

*For the B.S. degree*

Laboratory science/mathematical/computational skills sequence (10-15) [Students selecting a sequence that does not include STAT ~~304~~ 200 (4) or STAT ~~350~~ 300 (3) will also be required to take one of these courses.]

(See “College Requirement for the B.S. Degree.”)

**Total Hours for Emphasis 4, International Politics: 36-48 (B.A.) OR 46-51 (B.S.)**

↓

**Emphasis 5. Justice and Democracy: The American Experiment**

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

**Requirements in Department (36)**

**Foundational Courses (6)**

↓

**Senior Seminar (3)**

POLS 494 - Senior Seminar in Political Science (3)

Electives in political science (12)

Students must ensure that the field distribution ... .. Students are also strongly encouraged to complete POLS 340 prior to taking STAT ~~301~~ 200 or STAT ~~350~~ 300.

**Requirements outside Department (B.A., 0-12; B.S., 10-15)**

*For the B.A. degree*

↓

*For the B.S. degree*

Laboratory science/mathematical/computational skills sequence (10-15) [Students selecting a sequence that does not include STAT ~~301~~ 200 (4) or STAT ~~350~~ 300 (3) will also be required to take one of these courses.]

(See “College Requirements for the B.S. Degree”)

**Total Hours for Emphasis 5, Justice and Democracy: The American Experiment: 36-48 (B.A.) OR 46-51 (B.S.)**

Rationale: Revisions to STAT 301/200 and STAT 350/300.

**Notification: The Department of Political Science was notified of these changes via email on {DATE}.**

Other Catalog Change

Page 341-343, 2018-19 Undergraduate Catalog

**Department of Psychology (PSYC)**

↓

**Major in Psychology (B.A. or B.S.)**

↓

**Requirements outside Department (B.A., 3-16; B.S., 14-16)**

*For the B.A. degree*

\*STAT ~~208~~ 100 - Basic Statistics (3),

OR STAT ~~301~~ 200 - Elementary Statistics (4)

Fulfillment of foreign language requirement (0-12)

(See “Foreign Language Requirement for the B.A. Degree.”)

*For the B.S. degree*

One of the following groups

Group 1

One of the following (4)

↓

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

\*MATH 211 - Calculus for Business and Social Science (4)  
STAT ~~301~~ 200 - Elementary Statistics (4)

Group 2

One of the following (4)

↓

\*MATH 229 and MATH 230 - Calculus I and II (4)  
STAT ~~350~~ 300 - Introduction to Probability and Statistics (3)

Group 3

MATH 211 - Calculus for Business and Social Science (4)  
STAT ~~301~~ 200 - Elementary Statistics (4)  
OR UBUS 223 - Introduction to Business Statistics (3)

A two-semester laboratory sequence to be met by one of the following sequences (7-9)

↓

**Total Hours for a Major in Psychology: 38-51 (B.A.) OR 49-51 (B.S.)**

↓

**Course List**

↓

305. RESEARCH METHODS (3). Introduction to ... .. PRQ: At least sophomore standing, PSYC 102, and a grade of C or better in STAT ~~208~~ 100, STAT ~~301~~ 200, or STAT ~~350~~ 300, or consent of department.

306. ADVANCED RESEARCH METHODS (3). Advanced research ... .. PRQ: At least sophomore standing, PSYC 102, a grade of C or better in a statistics course (STAT ~~208~~ 100, STAT ~~301~~ 200, or STAT ~~350~~ 300) and PSYC 305, or consent of department.

↓

351. INTRODUCTION TO PSYCHOLOGICAL TESTS (3). Includes group ... .. PRQ: At least sophomore standing, PSYC 102, and either STAT ~~301~~ 200 or STAT ~~350~~ 300; or consent of department.

↓

Rationale: Revisions to STAT 208/100, STAT 301/200, and STAT 350/300.

**Notification: The Department of Psychology was notified of these changes via email on {DATE}.**

Other Catalog Change

Page 347, 2018-19 Undergraduate Catalog

**Department of Sociology (SOCl)**

↓

**Requirements outside Department (B.A., 3-16; B.S., 11-15)**

*For the B.A. Degree*

\*STAT ~~208~~ 100 - Basic Statistics (3),  
OR STAT ~~301~~ 200 - Elementary Statistics (4)  
Fulfillment of B.A. foreign language requirement (0-12)



NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

(See “Foreign Language Requirement for the B.A. Degree”)

*For the B.S. Degree*

One of the following groups (11-15)

Group 1

CSCI 210 - Elementary Programming (4)

\*MATH 210 - Finite Mathematics (3)

\*MATH 211 - Calculus for Business and Social Science (4)

STAT ~~301~~ 200 - Elementary Statistics (4)

OR

Group 2

\*MATH 229 and MATH 230 - Calculus I and II (8)

STAT ~~350~~ 300 - Introduction to Probability and Statistics (3)

**Total Hours for a Major in Sociology: 40-53 (B.A.) OR 49-53 (B.S.)**

↓

**Course List**

↓

377B. SOCIOLOGICAL INQUIRY II (4). Review of the ... .. PRQ: SOCI 300 or consent of department; STAT ~~208~~ 100 or STAT ~~301~~ 200 or STAT ~~350~~ 300 or UBUS 223.

Rationale: Revisions to STAT 208/100, STAT 301/200, and STAT 350/300.

Notification: The Department of Sociology was notified of these changes via email on {DATE}.

Other Catalog Change

Page [new section], 2018-19 Undergraduate Catalog

**Department of Statistics and Actuarial Science (STAT, ACSC)**

The Department of Statistics and Actuarial Science offers B.S. degrees with a major in statistics, and actuarial science.

The department also offers minors in statistics, and actuarial science. These minors should be of interest to students majoring in the physical or social sciences or in business. In addition, the department offers an honors program in statistics and actuarial science and participates in the University Honors Program.

Several of the department's courses partially fulfill the university quantitative literacy foundational studies requirement, and others can be used by non-majors toward fulfilling the nature and technology knowledge domain requirement in the university's general education program. In addition, several of its courses are included as requirements for other programs.

**Department Regulations**

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

For all majors in the department, the GPA in the major is calculated by using only those statistics and actuarial science courses numbered 300 or above which are available for credit toward the major.

**Department Requirements**

Students majoring or minoring in statistics or actuarial science must obtain a minimum GPA of 2.00 in those STAT/ACSC and mathematics and professional education courses applicable to their major or minor.

All majors are required to have a satisfactory portfolio of work done during their undergraduate studies on file in the Department of Statistics and Actuarial Science. The contents of the portfolio are to be used to assess the department's program and are to be accumulated largely through course work assignments and examinations; students are expected to cooperate with instructors as these items are collected. In addition, each student must submit in his or her senior year a 250-300 word typed essay describing the student's experience in the major, including comments on the connections of statistics with other disciplines. Details on the submission of materials and approval of the portfolio should be obtained from the student's adviser in the Department of Statistics and Actuarial Science.

With department permission, students are allowed to complete one major and one minor in the department. For the minor, the student must earn at least 6 semester hours in STAT/ACSC courses that are not counted in fulfillment of the major in the department. The major and the minor may not be in the same area.

**Proficiency Examination Policy**

Ordinarily students will not be allowed to attempt a proficiency examination for a course if they have received credit for a higher numbered course (for exceptions, consult the department).

**Major in Statistics (B.S.)**

The student learning outcomes for this degree are located at [www.niu.edu/assessment/clearinghouse/outcomes/index.shtml](http://www.niu.edu/assessment/clearinghouse/outcomes/index.shtml).

**Requirements in Department (30-32)**

STAT 300 - Introduction to Probability and Statistics (3)

STAT 400 - Probability (3)

OR ACSC 400 - Probability (3)

STAT 410 - Mathematical Statistics I (3)

STAT 415 - Computational Methods in Statistics (3)

STAT 435 - Applied Regression Analysis (3)

STAT 437 - Categorical Data Analysis (3)

OR ACSC 437 - Categorical Data Analysis (3)

At least 6 additional semester hours of STAT courses numbered 400 or higher, courses that are crosslisted with a STAT course may be counted towards this requirement (6-8)

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

At least 6 additional semester hours of STAT/ACSC/MATH courses numbered 400 or higher (6)

**Requirements outside Department (20)**

CSCI 240 - Computer Programming in C++ (4)

\*MATH 229 - Calculus I (4)

MATH 230 - Calculus II (4)

MATH 232 - Calculus III (4)

MATH 240 - Linear Algebra and Applications (4)

**Total Hours for a Major in Statistics: 50-52 (B.S.)**

**Recommendations for Statistics Students**

A minor in a discipline that uses Statistics is highly recommended.

Internship opportunities in statistics are available with many employers, including pharmaceutical companies, insurance companies, manufacturing companies, and government agencies.

**Major in Actuarial Science (B.S.)**

The student learning outcomes for this degree are located at [www.niu.edu/assessment/clearinghouse/outcomes/index.shtml](http://www.niu.edu/assessment/clearinghouse/outcomes/index.shtml).

This major prepares students for careers in the actuarial profession and helps them learn material included in the Exams P / 1 (Probability), FM / 2 (Financial Mathematics), and Statistics and Risk Modeling of the Society of Actuaries (SOA) / Casualty Actuarial Society (CAS). A few courses relevant to Exam C / 4 (Construction and Evaluation of Actuarial Models) of the SOA / CAS, and to Exam MLC (Models for Life Contingencies) of the SOA are also available to actuarial students. The major also provides the Validation by Educational Experience (VEE) required by the societies if the students complete those courses with a grade of B or better.

**Requirements in Department (40)**

ACSC 417X - Applied Statistical Learning (3)

OR STAT 417 - Applied Statistical Learning (3)

ACSC 350 - Theory of Interest (4)

ACSC 400X - Probability (3)

OR STAT 400 - Probability (3)

ACSC 405 - Quantitative Methods for Actuaries (3)

ACSC 450 - Life Contingencies and Payment Models I (3)

STAT 300 - Introduction to Probability and Statistics (3)

^STAT 410 - Introduction to Mathematical Statistics I (3)

STAT 415 - Computational Methods in Statistics (3)

At least 12 additional semester hours of ACSC courses numbered 400 or higher or STAT 411, courses that are crosslisted with an ACSC course may be counted towards this requirement (12)

At least 3 additional semester hours of STAT/ACSC courses numbered 400 or higher (3)

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

**Requirements outside Department (32)**

^ACCY 288 - Fundamentals of Accounting (3)  
CSCI 240 - Computer Programming in C++ (4)  
\*^ECON 260 - Principles of Microeconomics (3)  
\*^ECON 261 - Principles of Macroeconomics (3)  
^FINA 320 - Principles of Finance (3)  
\*MATH 229 - Calculus I (4)  
MATH 230 - Calculus II (4)  
MATH 232 - Calculus III (4)  
MATH 240 - Linear Algebra and Applications (4)

**Total Hours for a Major in Actuarial Science: 72 (B.S.)**

**Recommendations for Actuarial Students**

A minor in Computer Science is highly recommended.

**Degree with Honors**

The Department of Statistics and Actuarial Science offers the exceptional student an opportunity to earn a degree with honors in any of the two majors. Any statistics or actuarial student may become a candidate for an honors degree at the end of the sophomore year provided the student has a 3.00 or higher overall GPA and has a 3.50 or higher GPA in all STAT/ACSC courses completed.

A student with these qualifications who wishes to become an honors degree candidate should go to the Department of Statistics and Actuarial Science to fill out a candidacy form and be assigned an honors adviser. After the end of the sophomore year, a student showing exceptional talent may also become an honors degree candidate by obtaining consent from the department.

Most 300-level and 400-level statistics and actuarial courses may be taken as honors courses.

**Requirements**

Maintain a 3.00 or higher overall GPA.

Maintain a 3.50 or higher GPA for STAT/ACSC courses numbered 300 and above.

Take at least four STAT/ACSC honors courses numbered 300 or higher. In one of the 400-level honors courses, prepare and submit an independent study paper on a suitable topic. The paper must be approved by the instructor of the course and by the honors degree adviser.

**Minor in Statistics (21-23)**

\*MATH 229 - Calculus I (4)  
MATH 230 - Calculus II (4)  
MATH 232 - Calculus III (4)  
STAT 300 - Introduction to Probability and Statistics (3)

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Two STAT courses numbered 400 or above, courses that are crosslisted with a STAT course may be counted towards this requirement (6-8)

Six or more semester hours in the minor must be taken at NIU.

**Minor in Actuarial Science (29)**

This minor is designed to provide preparatory study in actuarial science. Specifically, students completing the required course work can take the professional Exams P/1 (Probability) and FM/2 (Financial Mathematics) of the Society of Actuaries/Casualty Actuarial Society.

ACSC 350 - Theory of Interest (4)

ACSC 400X - Probability (3)

OR STAT 400 - Probability (3)

ACSC 405 - Quantitative Methods for Actuaries (3)

\*MATH 229 - Calculus I (4)

MATH 230 - Calculus II (4)

MATH 232 - Calculus III (4)

MATH 240 - Linear Algebra and Applications (4)

STAT 300 - Introduction to Probability and Statistics (3)

Ten or more semester hours in the minor must be taken at NIU.

**Course List**

**Actuarial Sciences (ACSC)**

ACSC 350. THEORY OF INTEREST (4). Rates of interest, present and future values, annuities-certain, perpetuities, loans, bonds, and guaranteed investment contracts. Key techniques in financial mathematics including discounting, accumulation, amortization, and yield rate determination. Modern financial concepts including yield curves, spot and forward rates, duration, convexity, and immunization. Covers the learning outcomes regarding financial mathematics in the exam FM of the Society of Actuaries (SOA), which is also the Exam 2 of the Casualty Actuarial Society (CAS). PRQ: MATH 230.

ACSC 400X. PROBABILITY (3). *Crosslisted as STAT 400.* Probability spaces, random variables, discrete, continuous, mixed probability distributions, moment generating functions, multivariate distributions, conditional probability, conditional expectation, and special distributions. PRQ: MATH 232 and STAT 300, or consent of department. CRQ: MATH 240 or consent of department.

ACSC 405. QUANTITATIVE METHODS FOR ACTUARIES (3). Multivariate distributions, transformations of random variables, conditioning for joint distributions, random sums, finite-dimensional properties of discrete-time Markov chains, homogeneous, and non-homogeneous, Poisson and compound Poisson processes, thinning and summing of independent Poisson processes. Together with STAT 400/ACSC 400, it covers the learning outcomes in the exam P of

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

the Society of Actuaries (SOA), which is also the Exam 1 of the Casualty Actuarial Society (CAS). PRQ: STAT 400 or ACSC 400 or consent of department.

ACSC 417X. APPLIED STATISTICAL LEARNING (3). *Crosslisted as STAT 417*. Modern statistical methods for supervised and unsupervised learning with an emphasis on model assessment, selection, and regularization. Practical problems are solved using statistical software packages. A particular emphasis is placed on high dimensional problems. PRQ: STAT 410 or consent of department.

ACSC 437X. CATEGORICAL DATA ANALYSIS (3). *Crosslisted as STAT 437*. Contingency tables. Poisson, binomial, and multinomial regression techniques. PRQ: STAT 435.

ACSC 438X. APPLIED TIME SERIES ANALYSIS (3). *Crosslisted as STAT 438*. Removal and estimation of trend and seasonality, autoregressive, moving average, and mixed models; model identification and estimation; diagnostic checking; and the use of time series models in forecasting. PRQ: STAT 435.

ACSC 450. LIFE CONTINGENCIES AND PAYMENT MODELS I (3). Survival-time distributions, and their curtate versions, for one or two lives, possibly dependent, truncated or censored. Mortality tables, aggregate, select and ultimate, and their use in modeling continuous life-time data. Present-value-of-benefit distributions for life insurances and annuities in the single and multiple-decrement models. PRQ: ACSC 350, and ACSC 400X or STAT 400, or consent of department.

ACSC 451. LIFE CONTINGENCIES AND PAYMENT MODELS II (3). Premium calculations for life insurances and annuities via percentiles and the equivalence principle. Liability calculations for life insurances and annuities via the prospective, retrospective methods. Calculation of reserves for fully-discrete life insurances. Discuss the above for single and multiple-decrement models. Extend the present-value-of-benefit, present-value-of-loss-at-issue, present-value-of-future-loss random variables and liabilities to discrete-time Markov Chain models. PRQ: ACSC 450.

ACSC 455. LOSS MODELS I (3). Definition and selection of probability distributions appropriate for insurance data that are heavily tailed and skewed, such as Severity Model, Frequency Model, Aggregate Model, and Risk Measures. PRQ: STAT 410.

ACSC 456. LOSS MODELS II (3). Estimation of parameters of probability distributions appropriate for insurance data that are heavy tailed and skewed; assessment of credibility of data for ratemaking, such as Construction and Selection of Parametric Models, Credibility, Insurance and Reinsurance Coverage and its pricing and reserving. PRQ: ACSC 455.

ACSC 460. FINANCIAL DERIVATIVES (3). *Crosslisted as ECON 484X*. Review of financial derivatives including futures, European and American options and exotic options. Greeks, trading and hedging strategies. Pricing derivative securities with appropriate boundary conditions, including the Black-Scholes formula, binomial trees, lattice models and finite difference methods.

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Simulation and variance reduction techniques. Interest rate models. Covers the learning outcomes regarding financial models in the exam MFE of the Society of Actuaries (SOA), which is also the Exam 3F of the Casualty Actuarial Society (CAS). PRQ: ACSC 405.

ACSC 491. SPECIAL TOPICS IN ACTUARIAL SCIENCE (1-3). Discussion and study of readings on topics of special interest to undergraduate actuarial students, including preparation for actuarial examinations. May be repeated to a maximum of 6 semester hours. PRQ: Consent of department.

ACSC 496. ACTUARIAL INTERNSHIP (1-3). Work as an intern or in a department approved co-op placement for a minimum of 100 hours per credit hour at an off-campus agency, or participate in the regular activities at the NIU Statistical Consulting Services. S/U grading. No more than 3 credit hours of STAT 495 or ACSC 496 can be counted toward NIU's required hours for graduation or toward NIU's 40 upper-division hour requirement. PRQ: Consent of department.

### **Statistics (STAT)**

STAT 100. BASIC STATISTICS (3). Designed to provide students with an understanding of reasoning involved in the statistician's approach to a variety of problems in modern society. Topics include data collection, descriptive statistics, graphical displays of data, the normal distribution, elementary probability, elements of statistical inference, estimation and hypothesis testing, and linear regression. Not open for credit toward the major or minor in mathematical sciences. Not open for credit to students with credit in an upper-division statistics course or in OMIS 324 or UBUS 223. Not used in major or minor GPA calculation for mathematical sciences, statistics, or actuarial science majors or minors.

STAT 200. ELEMENTARY STATISTICS (4). Introduction to basic concepts in statistical methods including probability, theoretical and empirical distributions, estimation, tests of hypotheses, linear regression and correlation, and single classification analysis of variance procedures. Not available for credit toward the major in mathematical sciences, statistics, or actuarial science. Not used in major GPA calculation for mathematical sciences, statistics, or actuarial science majors. PRQ: MATH 206 or MATH 210 or MATH 211 or MATH 229.

STAT 300. INTRODUCTION TO PROBABILITY AND STATISTICS (3). Introduction to the basic ideas and fundamental laws of probability including sample spaces, events, independence, random variables, special probability distributions and elementary statistical inference. PRQ: MATH 230.

STAT 324X. INTRODUCTION TO BUSINESS DATA ANALYTIC TOOLS (3). *Crosslisted as OMIS 324.* Introduction to business analytic tools focusing on sampling, multivariate regression, factor analysis and cluster analysis to identify and solve business problems. PRQ: UBUS 223 or STAT 200.

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

STAT 400. PROBABILITY (3). *Crosslisted with ACSC 400X.* Probability spaces, random variables, discrete, continuous, mixed probability distributions, moment generating functions, multivariate distributions, conditional probability, conditional expectation, and special distributions. PRQ: MATH 232 and STAT 300, or consent of department. CRQ: MATH 240 or consent of department.

STAT 401. STOCHASTIC PROCESSES (4). Review of probabilistic tools including conditioning for joint distributions. Random sums. Finite-dimensional properties of discrete-time Markov chains. Homogeneous, and non-homogeneous, Poisson and compound Poisson processes. Thinning and summing of independent Poisson processes. Brownian motion processes. Introduction to the SDE and Ito's lemma. PRQ: STAT 400 or ACSC 400X or consent of department.

STAT 410. INTRODUCTION TO MATHEMATICAL STATISTICS I (3). Distributions of functions of random variables, laws of large numbers, central limit theorem, interval estimation, sufficiency, completeness, point estimation, principles of Bayesian estimation. PRQ: STAT 400 or ACSC 400.

STAT 411. INTRODUCTION TO MATHEMATICAL STATISTICS II (3). Principles of statistical hypothesis testing including the likelihood ratio test, uniformly most powerful tests and Bayesian testing techniques, theory of linear models including multiple linear regression and ANOVA. PRQ: STAT 410.

STAT 415. COMPUTATIONAL METHODS IN STATISTICS (3). An introduction to the software commonly used in modern statistical methods. Applications will focus on statistical data analysis, data management, and simulation. PRQ: STAT 300.

STAT 417. APPLIED STATISTICAL LEARNING (3). *Crosslisted as ACSC 417X.* Modern statistical methods for supervised and unsupervised learning with an emphasis on model assessment, selection, and regularization. Practical problems are solved using statistical software packages. A particular emphasis is placed on high dimensional problems. PRQ: STAT 410 or consent of department.

STAT 419. NONPARAMETRIC STATISTICS (3). A study of statistical methods based on signs and ranks, including the sign test, the median test, the Mann-Whitney test, the Kruskal-Wallis test, Wolcoxon's signed ranks test, the Quade test, the Friedman test, the Durbin test, randomization tests, Kendall's tau, Spearman's rho, nonparametric linear regression, monotonic rank regression, Kolmogorov's goodness-of-fit test, and the Smirnov test. PRQ: STAT 300 or consent of department.

STAT 421. ELEMENTARY SURVEY SAMPLING (3). An introduction to sampling and the statistical analysis of surveys. Topics include simple random sampling, stratified sampling, systematic sampling, cluster sampling, ratio regression, difference estimation and population size estimation. PRQ: STAT 300 or consent of department.



NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

STAT 425. BAYESIAN STATISTICS (3). Introduction to Bayesian data analysis and applications with appropriate software. Topics include Bayes Theorem, discrete and continuous single-parameter models, comparison of Bayesian and non-Bayesian inference, multi-parameter and hierarchical models, Bayesian computation including Markov chain simulation, mixture models, Bayesian sample-size determination and applications to modeling data from a wide variety of areas in business, engineering and science. PRQ: STAT 410.

STAT 435. APPLIED REGRESSION ANALYSIS (3). An in-depth examination of exploratory data analysis and graphical techniques, and statistical methods for linear regression analysis. Includes techniques for model selection, assessment of influential observations, and verification of model assumptions. PRQ: STAT 300.

STAT 436. DESIGN AND ANALYSIS OF EXPERIMENTS (3). Design and analysis of single, multifactor, factorial, nested, and randomized block designs. PRQ: STAT 435.

STAT 437. CATEGORICAL DATA ANALYSIS (3). *Crosslisted as ACSC 437X*. Contingency tables. Poisson, binomial, and multinomial regression techniques. PRQ: STAT 435.

STAT 438. APPLIED TIME SERIES ANALYSIS (3). *Crosslisted as ACSC 438X*. Removal and estimation of trend and seasonality, autoregressive, moving average, and mixed models; model identification and estimation; diagnostic checking; and the use of time series models in forecasting. PRQ: STAT 435.

STAT 490. SPECIAL TOPICS IN STATISTICS (1-3). Discussion and study of readings on topics of special interest to undergraduate statistics/probability students. May be repeated to a maximum of 6 semester hours. PRQ: Consent of department.

STAT 495. STATISTICS INTERNSHIP (1-3). Work as an intern or in a department approved co-op placement for a minimum of 100 hours per credit hour at an off-campus agency, or participate in the regular activities at the NIU Statistical Consulting Services. S/U grading. No more than 3 credit hours of STAT 495 or ACSC 496 can be counted toward NIU's required hours for graduation or toward NIU's 40 upper-division hour requirement. PRQ: Consent of department.

**Statistics and Actuarial Science Faculty**

Nader Ebrahimi, Ph.D., Iowa State University, Distinguished Research Professor

Barbara Gonzalez, Ph.D., Cornell University, associate professor, chair

Lei Hua, Ph.D., University of British Columbia, assistant professor

Alan Polansky, Ph.D., Southern Methodist University, associate professor

Duchwan Ryu, Ph.D., Texas A&M University, assistant professor

Chaoxiong Xia, Ph.D., University of British Columbia, assistant professor

Haiming Zhou, Ph.D., University of South Carolina, assistant professor

NORTHERN ILLINOIS UNIVERSITY  
COLLEGE OF LIBERAL ARTS AND SCIENCES  
CURRICULUM COMMITTEE  
#9 Meeting – October 31, 2018  
Approved Attachments

Rationale: Creation of the new Department of Statistics and Actuarial Sciences program.

Other Catalog Change Page 397, 2018-19 Undergraduate Catalog

**Inter-College Interdisciplinary Certificates and Programs**

**Certificates of Undergraduate Study**

↓

**Environmental and Hazards Risk Assessment Track (12)**

**Coordinators: David Changnon, Department of Geographic and Atmospheric Sciences;  
Alan Polansky, Department of Mathematical Sciences**

STAT 350 **300** - Introduction to Probability and Statistics (3)

Three of the following (9)

CSCI 350 - Computer Security Basics (3)

GEOG 359 - Introduction to Geographic Information Systems (3)

GEOG 406 - Natural Hazards and Environmental Risk (3)

GEOG 408 - Tropical Environmental Hazards (3)

GEOG 459 - Geographic Information Systems (3)

STAT 470 **400** - ~~Introduction to Probability Theory~~ (3)

**OR ACSC 400 - Probability (3)**

~~STAT 481 - Probabilistic Foundations in Actuarial Science (3)~~

Elective course chosen with approval of certificate coordinator (3-6)

Rationale: Revision of STAT 470/400 and deletion of STAT 481.

**Notification: The coordinators for the Environmental and Hazards Risk Assessment Track were notified of this change via email on {DATE}.**