SECTION C – Items previously in Section B, now reported for inclusion in the 2019-20 Undergraduate Catalog

COLLEGE OF LIBERAL ARTS AND SCIENCES

Department of Mathematical Sciences

BOT. 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)~~
~~↓~~
~~STAT 472 - Introduction to Mathematical Statistics (3)~~
~~Two of the following (6-8)~~
~~↓~~
~~At least 3 additional semester hours from among the following courses (3-4)~~
~~MATH 420 - Abstract Algebra I (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**~~

~~**Internship opportunities … government agencies.**~~

Note: once approved by the BOT, the name change for emph 5 (below) can go forward.

BOT 3/7/19, BC Sec C 3/21/19

Pres. Freeman Other Catalog Change Page 312, 2018-19 Undergraduate Catalog

Major in Mathematical Sciences (B.S.)
↓
Emphasis ~~5~~ 4. Mathematics Education
↓
Total Hours for Emphasis 4 ~~5~~, Mathematics Education: 46-47

Pres. Freeman 1/24/19, pending approval of the deletion of emphasis 4 by the BOT, BC Sec C 2/14/19
BOT 3/7/19, BC Sec C 3/21/19

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Freeman/BOT

Major in Mathematical Sciences (B.S.)
↓
~~**Emphasis 6. Actuarial Science**~~

~~This interdisciplinary track … this emphasis.~~

~~Note: A student seeking to … better in each course.~~

~~**Requirements in Department (49-52)**~~
~~*MATH 229 - Calculus I (4)~~
↓
~~STAT 481 - Probabilistic Foundations in Actuarial Science (3)~~
~~Three from the following (7-10)~~
↓
~~**Requirements outside Department (25)**~~
↓
~~FINA 340 - Investments (3)~~
~~**Total Hours for Emphasis 6, Actuarial Science: 74-77**~~

~~**Special Requirement**~~
~~At least 65 semester hours … 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.~~
↓
~~The skills from the following additional courses will help students after they enter the actuarial profession.~~
↓
~~Students should see their advisors in the Division of Statistics before scheduling these additional courses in their individual programs of study.~~

BOT 3/7/19, BC Sec C 3/21/19

Pres. Other Catalog Change Page 314, 2018-19 Undergraduate Catalog
Freeman/BOT

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)~~

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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, …. 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~~.
↓

BOT 3/7/19, BC Sec C 3/21/19

Pres. Freeman/BOT — Other Catalog Change — Page 315, 2018-19 Undergraduate Catalog

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

~~**Actuarial Science (12)**~~
~~This certificate is open to … requirements in the department.~~

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

BOT 3/7/19, BC Sec C 3/21/19

Department of Statistics and Actuarial Science

Pres. Freeman/BOT — Other Catalog Change — New Section, 2018-19 Undergraduate Catalog

Note: Only the two majors are new proposals. The minors and the certificate are being moved from the Department of Mathematical Sciences.

Department of Statistics and Actuarial Science (STAT, ACSC)

The Department of Statistics and Actuarial Science offers B.S. degrees with a majors 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
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~~ that 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.

Requirements in Department (30-32)
*STAT 300 - Introduction to Probability and Statistics (3)
STAT 400 - Probability (3)
OR ACSC 400X - Probability (3)
STAT 410 - Mathematical Statistics I (3)
STAT 415 - Computational Methods in Statistics (3)

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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. C~~,~~ ~~c~~ourses that are crosslisted with a STAT course may be counted towards this requirement (6-8)

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~~ 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.

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)

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ACSC 450 - Life Contingencies and Payment Models I (3)
STAT 300 - Introduction to Probability and Statistics (3)
ΔSTAT 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. C, ~~c~~ourses 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)

Requirements outside Department (32)
ΔACCY 288 - Fundamentals of Accounting (3)
CSCI 240 - Computer Programming in C++ (4)
*ΔECON 260 - Principles of Microeconomics (3)
*ΔECON 261 - Principles of Macroeconomics (3)
ΔFINA 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~~ computer ~~Science~~ 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.

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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)
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)
↓
Statistics (STAT)
↓

Pres. Freeman 1/8/19 for name change for Department of Statistics and Actuarial Science; Pres. Freeman for name change to minor in statistics, BC Sec. C 2/14/19

BOT 3/7/19, IBHE 3/21/19, BC Sec C 3/21/19