STATISTICS MINOR (CAS)

Description
Statistics is the science of data collection, classification, analysis and interpretation. It has evolved into a core discipline for a well-rounded liberal arts education, and is of central importance to nearly all of the biological, physical and social sciences. The Department of Statistics offers introductory courses to acquaint students from all disciplines with the essential elements of statistical thinking.

The department offers a minor in statistics, which is a useful complement for many students. In addition, the minor provides background beneficial for graduate study in statistics. Career opportunities for statisticians with masters and doctoral degrees abound in industry, government and education. Employers include pharmaceutical, health and medical organizations, quality improvement in manufacturing and service, marketing and opinion research, credit and security risk analysis, agribusiness, various governmental agencies including Environmental Protection, Food and Drug Administration, Departments of Census, Energy, Agriculture, and Homeland Security, and emerging fields ranging from bioinformatics to statistical applications in sports.

Other
Graduate Work. The following advanced degrees are offered: master of science and doctor of philosophy in statistics. For details, see the Graduate and Professional Catalog (https://catalog.unl.edu/graduate-professional).

College Requirements

College Admission
College Admission
The entrance requirements for the College of Arts and Sciences are the same as the University of Nebraska–Lincoln General Admission Requirements. Students who are admitted through the Admission by Review process may have certain conditions attached to their enrollment at Nebraska. These conditions are explained under "Removal of Deficiencies."

In addition to these requirements, the College of Arts and Sciences strongly recommends a third and fourth year of one foreign language. Four years of high school course work in the same language will fulfill the College of Arts and Sciences' language requirement. It will also allow students to continue language study at a more advanced level at the University of Nebraska–Lincoln, and provide more opportunity to study abroad.

Transfer Students
To be considered for admission as a transfer student, Nebraska resident or nonresident, students must have an accumulated average of C (2.0 on a 4.0 scale) and a minimum C average in the last semester of attendance at another college. Transfer students who graduated from high school January 1997 and after must also meet the University of Nebraska–Lincoln General Admission Requirements. Those transfer students who graduated before January 1997 must have completed in high school, 3 years of English, 2 years of the same foreign language, 2 years of algebra, and 1 year of geometry. Transfer students who have completed less than 12 credit hours of college study must also submit either their ACT or SAT scores.

Ordinarily, hours earned at a similarly accredited college or university are applicable to the University of Nebraska–Lincoln degree. The College, however, will evaluate all hours submitted on an application for transfer, and reserves the right to accept or reject any of them, based upon its exclusion and restriction policies. Sixty (60) is the maximum number of hours the University will accept on transfer from a two-year college or international institution. Transfer credit in the major or minor must be approved by the departmental advisor on a Request for Substitution Form to meet specific course requirements, group requirements, or course level requirements in the major or minor. At least half of the hours in the major field must be completed at the University regardless of the number of hours transferred.

The College of Arts and Sciences will accept no more than 15 semester hours of C- and D grades from other schools. The C- and D grades cannot be applied toward requirements for a major or minor. This policy does not apply to the transfer of grades from UNO or UNK to the University of Nebraska–Lincoln. All D grades may be transferred from UNO or UNK, but they are not applicable to a major or minor.

Readmitted Students
University of Nebraska–Lincoln students who choose not to take courses for more than two consecutive terms, must reapply to the University of Nebraska–Lincoln. Students readmitted to the College of Arts and Sciences will follow the requirements stated in the catalog for the academic year of readmission and re-enrollment as a degree-seeking student in Arts and Sciences. In consultation with advisors, a student may choose to follow a catalog for any academic year in which they are admitted to and enrolled as a degree-seeking student at Nebraska in the College of Arts and Sciences. Students must complete all degree requirements from a single catalog year. Beginning in 1990-1991, the catalog which a student follows for degree requirements may not be more than 10 years old at the time of graduation.

Admission Deficiencies/Removal of Deficiencies
Students must remove entrance deficiencies in geometry and foreign language as soon as possible, and before graduating from the College of Arts and Sciences. For questions and more information, students should consult a college advisor in the Academic and Career Advising Center in 107 Oldfather Hall.

Removing Foreign Language Deficiencies
Students must complete the second semester of a first year language sequence to clear the deficiency and the second semester of the second year language sequence to complete the college graduation requirement in language.

Removing Geometry Deficiencies
A deficiency of one year of geometry can be removed by taking high school geometry courses through an approved independent study program, or by completing a geometry course from an accredited community college or a four-year institution. Neither of these options will count for college credit.

College Degree Requirements
College Distribution Requirements
Bachelor of Arts or Bachelor of Science (16 hours + Language)
The College of Arts and Sciences distribution requirements are designed to further the purposes of liberal education by encouraging study in several different areas within the College. All requirements are in addition to University ACE requirements. A student may not use a single course to satisfy more than one of the following five distribution requirements. A student cannot use a single course to satisfy both an ACE outcome
and a College distribution requirement. A student cannot use a course
from their primary major to satisfy the Breadth Requirement (F), but
may apply an ancillary requirement of the primary major or a course
from their second major toward this requirement. Independent study or
reading courses and internships cannot be used to satisfy distribution
requirements. To see a complete list of excluded courses, run a degree
audit through MyRED.

Courses from interdisciplinary programs will count in the same area as
courses from the home/cross-listed department(s).

**College Distribution Requirements**

**CDR A - Written Communication**
- Select from courses approved for ACE outcome 1.

**CDR B and BL - Natural, Physical, and Mathematical Sciences with Lab**
- Select from biochemistry, biological sciences, chemistry,
  computer science, geology, meteorology, mathematics,
  physics and statistics. Must include one lab in the natural
  or physical sciences. Lab courses may be selected from
  biochemistry, biological sciences, chemistry, geology,
  meteorology and physics.

Some courses from geography and anthropology may also be
used to satisfy the lab requirement above. 1

**CDR C - Humanities**
- Select from classics, English, history, modern languages and
  literatures, philosophy, and religious studies. 2

**CDR D - Social Science**
- Select from: anthropology, communication studies,
  geography, political science, psychology, or sociology. 3

**CDR E - Language**
- Fulfilled by the completion of the 6-credit-hour second-year
  sequence in a single foreign language in one of the following
departments: Classics and religious studies, modern
languages and literatures, or anthropology. Instruction is
currently available in Arabic, Chinese, Czech, French, German,
Greek, Japanese, Latin, Omaha, Russian, and Spanish. A
student who has completed the fourth-year level of one
foreign language in high school is exempt from the languages
requirement.

**CDR F - Additional Breadth**
- Select from: natural, physical and mathematical sciences
  (Area B), humanities (Area C), or social sciences (Area D).
  Cannot be a course from the primary major.

Credit Hours Subtotal: 16-32

1  See degree audit or a College of Arts and Sciences advisor for approved
geography and anthropology courses that apply as natural science.

2  Language courses numbered 210 or below apply only for the foreign
language requirement.

3  See degree audit or College of Arts and Sciences advisor for list of
natural/physical science courses in anthropology, geography, and
psychology that do not apply as social science.

**Scientific Base**

**Bachelor of Science Only (60 hours)**
The bachelor of science degree requires students to complete 60 hours
in mathematical, physical and natural sciences. Approved courses
for scientific base credit come from the following College of Arts and
Sciences disciplines: actuarial science, anthropology (selected courses),
astronomy, biochemistry (excluding BIOC 101), biological sciences
(excluding BIOS 203), chemistry (excluding CHEM 101), computer science
(excluding CSCE 10), geography (selected courses), geology, life sciences,
mathematics (excluding courses below MATH 104), meteorology,
microbiology, physics and statistics.

See your degree audit or a College of Arts and Sciences advisor for
a complete list including individual classes that fall outside of the
disciplines listed above. Up to 12 hours of scientific and technical
courses offered by other colleges may be accepted toward this
requirement with approval of a college advisor.

**Foreign Languages/Language Requirement**

**Languages Exemption Policy**
The University of Nebraska–Lincoln and the College of Arts and Sciences
will exempt or waive students from the Nebraska entrance requirement
of two years of the same foreign language or from the College’s language
distribution requirement based on documentation only. The following are
the options and procedures for documentation:

**High School Transcripts**
For the University entrance requirement, students must show an official
high school transcript with two or more years of the same foreign
language.

For the College of Arts and Sciences College Distribution Requirement
**E-Language**, students must show an official high school transcript with
four or more years of the same foreign language in high school, or show
evidence of graduation from a non-English-speaking foreign high school.
Students whose native language is not English must show English as a
Second Language study on an official high school transcript. Four years
of ESL at the high school level (9th, 10th, 11th and 12th grades) will be
the basis for a waiver of the CDR E Language requirement.

**Proficiency Examination at UNL**
For the University entrance requirement, students who do not have
transcript documentation can request to take a proficiency exam in the
language. (This is not the same test as the Modern Languages Placement
Exam.) However, the University will provide testing only in the languages it
teaches. Currently, these languages are: Arabic, French, German, Spanish,
Russian, Czech, Japanese, Chinese.

For the College of Arts and Sciences College Distribution Requirement
**E-Language**, the Department of Modern Languages will oversee the test
at the 202 level. If the student passes the test, the department will sign
the College Request for Waiver form and indicate the level of proficiency.
The form is then forwarded to the Arts and Sciences Advising Center for
approval.

The Department of Modern Languages will oversee the test and provide
written documentation to the Arts and Sciences Advising Center the level
of proficiency passed.

**Distance Education**
For the University entrance requirement, students without transcript
documentation who claim proficiency in a language not taught at the
University of Nebraska–Lincoln, have the option of seeking out a distance
education program in languages. If the student completes the equivalent
of 102 from an approved distance education program, the student will
meet the University’s entrance requirement. The student must have the
course work approved before he/she takes/completes the course as
equivalent to 102 by a College advisor. The student then completes the
course and has the distance education program send the transcript to the
Admissions Office.
For the College of Arts and Sciences College Distribution Requirement E-Language, the student can seek out a distance education program and complete the equivalent of the 202-level course. The student must submit the request on the College Request for Substitution form and have the course work approved by a College advisor. The student then completes the course and has the distance education program send the transcript to the Admissions Office.

Third Language Option
If a student demonstrates knowledge of two foreign languages at the 102 level, the College of Arts and Sciences may consider waiving two semesters of the four semester College Distribution Requirement E-Languages requirement. If this waiver were granted, the student would then be required to complete 101 and 102 in another, 3rd foreign language at Nebraska.

Minimum Hours Required for Graduation
A minimum of 120 semester hours of credit is required for graduation from the College of Arts and Sciences. A total grade point average of at least 2.0 is required.

Grade Rules
Restrictions on C- and D Grades
The College will accept no more than 15 semester hours of C- and D grades from other schools except for UNO and UNK. No transfer C- and D grades can be applied toward requirements in a major or a minor. No University of Nebraska–Lincoln C- and D grades can be applied toward requirements in a major or a minor.

Pass/No Pass Privilege
University regulations for the Pass/No Pass (P/N) privilege state:

• The Pass/No Pass option is designed for your use by seeking to expand your intellectual horizons by taking courses in areas where you may have had minimal preparation.
• Neither the P nor the N grade contribute to your GPA.
• P is interpreted to mean C or above.
• A change to or from a Pass/No Pass may be made until mid-term (see academic calendar for specific dates per term).
• The Pass/No Pass or grade registration cannot conflict with the policy of the professor, department, college, or University governing the grading option.
• Changing to or from Pass/No Pass requires using the MyRED system to change the grading option or filing a Drop/Add form with the Office of the University Registrar, 107 Canfield Administration Building. After mid-term of the course, a student registered for Pass/No Pass cannot change to a grade registration unless the Pass/No Pass registration is in conflict with the policy of the professor, department, college, or University governing Pass/No Pass.
• The Pass/No Pass grading option cannot be used for the removal of C- or D or F grades.

Pass/No Pass privileges in the College of Arts and Sciences are extended to students according to the following additional regulations:

• Pass/No Pass hours can count toward fulfillment of University ACE requirements and college distribution requirements up to the 24-hour maximum.
• Most Arts and Sciences departments and programs do not allow courses graded Pass/No Pass to apply to the major or minor. Students should refer to the department’s or program’s section of the catalog for clarification. By college rule, departments can allow up to 6 hours of Pass/No Pass in the major or minor.
• Departments may specify that certain courses of theirs can be taken only on a P/N basis.
• The college will permit no more than a total of 24 semester hours of P/N grades to be applied toward degree requirements. This total includes all Pass grades earned at the University and other U.S. schools. NOTE: This 24-hour limit is more restrictive than the University regulation.

Grading Appeals
A student who feels that he/she has been unfairly graded must ordinarily take the following sequential steps in a timely manner, usually by initiating the appeal in the semester following the awarding of the grade:

1. Talk with the instructor concerned. Most problems are resolved at this point.
2. Talk to the instructor’s department chairperson.
3. Take the case to the Grading Appeal Committee of the department concerned. The Committee should be contacted through the department chairperson.
4. Take the case to the College Grading Appeals Committee by contacting the Dean’s Office, 1223 Oldfather Hall.

Course Level Requirements

Courses Numbered above 299
Thirty of the 120 semester hours of credit must be in courses numbered above 299. Of the 30 hours above 299, 15 hours (1/2) must be completed in residence at UNL.

Graduate Courses
Seniors in the University who have obtained in advance the approval of the dean for Graduate Studies may receive up to 12 hours credit for graduate courses taken in addition to the courses necessary to complete their undergraduate work, provided that such credits are earned within the calendar year prior to receipt of the baccalaureate. For procedures, inquire at the Office of Graduate Studies.

Course work taken prior to receipt of the baccalaureate may not always be accepted for transfer to other institutions as graduate work.

Residency

Residency Requirement and Open Enrollment and Summer Independent Study Courses
Students must complete at least 30 of the 120 total hours for their degree at the University of Nebraska–Lincoln. Students must complete at least 1/2 of their major course work including 6 hours above 299 in their major, and 15 of the 30 hours required above 299 in residence. Credit earned during education abroad may be used toward the residency requirement if students register through the University and participate in prior-approved education abroad programs. The University of Nebraska–Lincoln open enrollment and summer independent study courses count toward residence.

ACE Requirements
Consistent with the mission and values of the University, ACE is based on a shared set of four institutional objectives and ten student learning outcomes. The ACE program was approved by faculty in all eight undergraduate colleges and endorsed by the Faculty Senate, the student government, and the Academic Planning Committee in January 2008
for implementation in the fall 2009. ACE aligns with current national initiatives in general education.

Key characteristics of ACE demonstrate the benefits of the program to students:

- Students receive a broad education with exposure to multiple disciplines, critical life skills and important reasoning, inquiry, and civic capacities.
- ACE is simple and transparent for students, faculty and advisors. Students complete the equivalent of 3 credit hours for each of the ten student learning outcomes.
- Students connect and integrate their ACE experiences with their selected major.
- Students can transfer all ACE certified courses across colleges within the institution to meet the ACE requirement and any course from outside the institution that is directly equivalent to a University of Nebraska–Lincoln ACE-certified course. Courses from outside institutions without direct equivalents may be considered with appropriate documentation for ACE credit (see academic advisor).

ACE allows faculty to assess and improve their effectiveness and facilitate students’ learning.

ACE Institutional Objectives and Student Learning Outcomes
To meet the ACE Program requirement, a student will complete a minimum of 3 credit hours for each of the ten ACE Student Learning Outcomes (a total of 30 ACE credit hours). See the ACE website at: http://ace.unl.edu for the most current information and the most recently certified courses.

Catalog Rule
Students must fulfill the requirements stated in the catalog for the academic year in which they are first admitted to and enrolled as a degree-seeking student at the University of Nebraska—Lincoln. In consultation with advisors, a student may choose to follow a subsequent catalog for any academic year in which they are admitted to and enrolled as a degree-seeking student at Nebraska in the College of Arts and Sciences. Students must complete all degree requirements from a single catalog year. Beginning in 1990-1991 the catalog which a student follows for any academic year in which they are admitted to and enrolled as a degree-seeking student at Nebraska in the College of Arts and Sciences. Students must complete all degree requirements from a single catalog year. Beginning in 1990-1991 the catalog which a student follows for degree requirements may not be more than 10 years old at the time of graduation.

Requirements for Minor Offered by Department
Select either Track 1 or Track 2 for completion of the minor.

### Track 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 462</td>
<td>Introduction to Mathematical Statistics I: Distribution Theory</td>
<td>4</td>
</tr>
<tr>
<td>STAT 463</td>
<td>Introduction to Mathematical Statistics II: Statistical Inference</td>
<td>4</td>
</tr>
<tr>
<td><strong>Select at least 6 hours of the following:</strong></td>
<td></td>
<td><strong>6</strong></td>
</tr>
<tr>
<td>STAT 318</td>
<td>Introduction to Statistics II</td>
<td></td>
</tr>
<tr>
<td>STAT 380</td>
<td>Statistics and Applications</td>
<td></td>
</tr>
<tr>
<td>STAT 412</td>
<td>Introduction to Experimental Design</td>
<td></td>
</tr>
<tr>
<td>STAT 414</td>
<td>Introduction to Survey Sampling</td>
<td></td>
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<tr>
<td>STAT 450</td>
<td>Introduction to Regression Analysis</td>
<td></td>
</tr>
<tr>
<td>STAT 494</td>
<td>Topics in Statistics and Probability</td>
<td></td>
</tr>
</tbody>
</table>

### Track 2

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>STAT 218</td>
<td>Introduction to Statistics</td>
<td>3</td>
</tr>
<tr>
<td>STAT 318</td>
<td>Introduction to Statistics II</td>
<td>3</td>
</tr>
<tr>
<td><strong>Select at least 9 hours of the following:</strong></td>
<td></td>
<td><strong>9</strong></td>
</tr>
<tr>
<td>STAT 412</td>
<td>Introduction to Experimental Design</td>
<td></td>
</tr>
<tr>
<td>STAT 414</td>
<td>Introduction to Survey Sampling</td>
<td></td>
</tr>
<tr>
<td>STAT 450</td>
<td>Introduction to Regression Analysis</td>
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</tr>
<tr>
<td>STAT 462</td>
<td>Introduction to Mathematical Statistics I: Distribution Theory</td>
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<tr>
<td>STAT 463</td>
<td>Introduction to Mathematical Statistics II: Statistical Inference</td>
<td></td>
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<tr>
<td>STAT 494</td>
<td>Topics in Statistics and Probability</td>
<td></td>
</tr>
<tr>
<td>STAT 496</td>
<td>Independent Study</td>
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### ACE Institutional Objectives

#### ACE 3 Math/Stat/Reasoning

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 496</td>
<td>Independent Study</td>
<td>14</td>
</tr>
</tbody>
</table>

**Total Credit Hours:** 14

### Grade Rules

**C- and D Grades**

A grade of C or better must be earned in all courses in the minor.

### Pass/No Pass

No courses taken for Pass/No Pass credit will be applicable to the minor.

### STAT 218 Introduction to Statistics

**Prerequisites:** Removal of all entrance deficiencies in mathematics.

**Notes:** Y

**Description:** The practical application of statistical thinking to contemporary issues; collection and organization of data; probability distributions; statistical inference; estimation; and hypothesis testing.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Format:** LEC

**Prerequisite for:** ABUS 341, MRKT 341; ACCT 308; AECN 436; ASCI 330; BLAW 371; BLAW 371H; BLAW 372; ECON 311; FINA 361; FINA 361H; FORS 411; MNGT 301; MNGT 301H; MRKT 345; MRKT 350; MRKT 446; SCMA 331; SCMA 335; SCMA 350; SCMA 350H; SCMA 350L; STAT 318; STAT 432

**ACE:** ACE 3 Math/Stat/Reasoning

### STAT 318 Introduction to Statistics II

**Prerequisites:** STAT 218 or equivalent.

**Description:** Tests for means/proportions of two independent groups, analysis of variance for completely randomized design, contingency table analysis, correlation, single and multiple linear regression, nonparametric procedures, design of experiments.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Format:** LEC

**Prerequisite for:** ABUS 341, MRKT 341; ACCT 308; AECN 436; ASCI 330; BLAW 371; BLAW 371H; BLAW 372; ECON 311; FINA 361; FINA 361H; FORS 411; MNGT 301; MNGT 301H; MRKT 345; MRKT 350; MRKT 446; SCMA 331; SCMA 335; SCMA 350; SCMA 350H; SCMA 350L; STAT 318; STAT 432

**ACE:** ACE 3 Math/Stat/Reasoning
STAT 380 Statistics and Applications
Crosslisted with: MATH 380, MATH 380H, STAT 380H, RAIK 270H
Prerequisites: A grade of P, C, or higher in MATH 107 or MATH 107H.
Notes: Y
Description: Probability calculus; random variables, their probability distributions and expected values; t, F and chi-square sampling distributions; estimation; testing of hypothesis; and regression analysis with applications.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
Prerequisite for: ABUS 341, MRKT 341; BLAW 371; BLAW 371H; BLAW 372; BSAD 371H, RAIK 371H; CSCE 970; ECEN 325; ECEN 850, ECEN 450; ECON 311; FINA 361; FINA 361H; MATH 435; MATH 809, MATH 409; MECH 343; MNGT 301; MNGT 301H; MRKT 345; MRKT 350; MRKT 446; RAIK 370H, CSCE 370H; SCMA 331; SCMA 335; SCMA 350; SCMA 350H; SCMA 350L; STAT 412; STAT 414; STAT 450
ACE: ACE 3 Math/Stat/Reasoning
Groups: Advanced Mathematics Courses

STAT 380H Statistics and Applications
Crosslisted with: MATH 380, MATH 380H, STAT 380, RAIK 270H
Prerequisites: A grade of P, C, or higher in MATH 107 or MATH 107H.
Notes: Y
Description: Probability calculus; random variables, their probability distributions and expected values; t, F and chi-square sampling distributions; estimation; testing of hypothesis; and regression analysis with applications.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
Prerequisite for: ABUS 341, MRKT 341; BLAW 371; BLAW 371H; BLAW 372; BSAD 371H, RAIK 371H; CSCE 970; ECEN 325; ECEN 850, ECEN 450; ECON 311; FINA 361; FINA 361H; MATH 435; MATH 809, MATH 409; MECH 343; MNGT 301; MNGT 301H; MRKT 345; MRKT 350; MRKT 446; RAIK 370H, CSCE 370H; SCMA 331; SCMA 335; SCMA 350; SCMA 350H; SCMA 350L; STAT 412; STAT 414; STAT 450
ACE: ACE 3 Math/Stat/Reasoning
Groups: Advanced Mathematics Courses

STAT 412 Introduction to Experimental Design
Prerequisites: STAT 380.
Description: Survey of elementary experimental designs and their analyses completely randomized, randomized block, factorial, and split-plot designs.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

STAT 414 Introduction to Survey Sampling
Prerequisites: STAT/MATH 380 or IMSE 321.
Description: Sampling Techniques: simple random sampling, sampling proportions, estimation of sample size, stratified random sampling, ratio and regression estimates.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
Prerequisite for: ACTS 401; STAT 463

STAT 430 Sensory Evaluation
Crosslisted with: FDST 430, FDST 830, STAT 830
Prerequisites: Introductory course in statistics.
Description: Food evaluation using sensory techniques and statistical analysis.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

STAT 432 Introduction to Spatial Statistics
Prerequisites: STAT 218 or equivalent.
Description: Spatial point patterns, test of randomness, Morans I statistic and similar measures, checking assumptions for independence of observations, variography, estimation (point and global), Kriging, nearest neighbor techniques, cokriging, mixed models and their role in designed spatial experiments.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

STAT 442 Computational Biology
Crosslisted with: BIOC 842, STAT 842, BIOC 442
Prerequisites: Any introductory course in biology, or genetics, or statistics.
Description: Databases, high-throughput biology, literature mining, gene expression, next-generation sequencing, proteomics, metabolomics, system biology and biological networks.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

STAT 450 Introduction to Regression Analysis
Prerequisites: STAT/MATH 380 or IMSE 321, and knowledge of matrix algebra.
Description: General linear models for estimation and testing problems, analysis and interpretation for various experimental designs.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

STAT 462 Introduction to Mathematical Statistics I: Distribution Theory
Prerequisites: MATH 208 or 107H
Notes: Y
Description: Sample space, random variable, expectation, conditional probability and independence, moment generating function, special distributions, sampling distributions, order statistics, limiting distributions, and central limit theorem.
Credit Hours: 4
Max credits per semester: 4
Max credits per degree: 4
Format: LEC

STAT 463 Introduction to Mathematical Statistics II: Estimation Theory
Prerequisites: STAT/MATH 450
Notes: Y
Description: Point estimation, interval estimation, hypothesis testing, and confidence interval for one and two parameter families.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

Statistics Minor (CAS) 5
STAT 463 Introduction to Mathematical Statistics II: Statistical Inference  
**Prerequisites:** STAT 462  
**Description:** Interval estimation; point estimation, sufficiency, and completeness; Bayesian procedures; uniformly most powerful tests, sequential probability ratio test, likelihood ratio test, goodness of fit tests; elements of analysis of variance and nonparametric tests.  
**Credit Hours:** 4  
**Max credits per semester:** 4  
**Max credits per degree:** 4  
**Format:** LEC

STAT 494 Topics in Statistics and Probability  
**Prerequisites:** Permission.  
**Description:** Special topics in either statistics or the theory of probability.  
**Credit Hours:** 1-5  
**Min credits per semester:** 1  
**Max credits per semester:** 5  
**Max credits per degree:** 24  
**Format:** LEC

STAT 496 Independent Study  
**Prerequisites:** Prior arrangement with a faculty member and submission of proposed study plan to department office.  
**Credit Hours:** 1-5  
**Min credits per semester:** 1  
**Max credits per semester:** 5  
**Max credits per degree:** 5  
**Format:** IND