Mathematics and Statistics

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The Department of Mathematics and Statistics offers a B.S. degree in three majors: mathematics, mathematics secondary education*; and mathematics education* for elementary, early childhood, deaf and hard of hearing, and special education.

> *These programs are considered "dual majors" under the College's system of classification. Dual majors are formed when at least one program must be attached to the other to be viable. The Elementary Education, Early Childhood Education, Special Education, and Education of the Deaf and Hard-of-Hearing sequences and all secondary education programs fall into this category.

The Mathematics major offers specializations in three areas: Applied Mathematics; Mathematics, and Statistics. In each of these programs, students are provided with a basic mathematical background which will be utilized in advanced study in one of these areas:

Mathematics (Mathematics specialization): This program is built on taking a wide range of mathematics courses, including analysis and abstract algebra. Each student will develop a program, through advisement, of taking upper-level mathematics courses according to his/her own interests. These courses will reflect the student's goals: to develop his/her knowledge and appreciation of mathematics, to prepare him/her for careers in mathematics, and/or prepare him/her for future graduate study.

Mathematics (Applied Mathematics specialization): The foundation of this program is based on differential equations and analysis. Students in this program have a great deal of flexibility in their choice of upper-level courses in order to allow students to pursue their interests in mathematics and statistics. This specialization prepares students to pursue careers in mathematics following graduation, and prepares students who wish to go on to graduate study in Applied Mathematics.

Mathematics (Statistics specialization): This program builds upon mathematical skills acquired in the freshman and sophomore years so that students become equipped with the knowledge necessary to enable them to apply advanced statistical techniques to a wide variety of real-life problems arising in application areas such as business, government, and research. Students are prepared to enter either graduate study or employment as a statistician.

Mathematics Secondary Education: In this program, students take mathematics and professional courses which prepare them to meet the educational requirements for the New Jersey certificate to teach mathematics K–12. Students participate in student-teaching experiences in their senior year. A 5-year Urban Secondary Education option that leads to a Master's degree in addition to the K-12 Mathematics certification is available.

Mathematics Education–Elementary, Early Childhood, Urban, Deaf and Hard of Hearing, and Special Education: In this program, students take mathematics and professional courses which prepare them to meet the educational requirements for the New Jersey certificate to teach in their respective education field. Students wishing to take the mathematics Praxis test could also be certified to teach mathematics K–12.

Minors: The department offers minors in four areas: Mathematics, Statistics, Actuarial and Financial Risk Studies, and Quantitative Criminology.

Academic Regulations

Prerequisites

- If a student has not met the exact prerequisites of a course as stated in this Bulletin but believes that the requirements have been satisfied through equivalent experiences, the student may gain admission to the course with the approval of the department chair.
- Majors must earn a minimum grade of C– in a course which is a prerequisite to another course.

Graduation Requirements

- A minimum of six course units in the major must be earned in the department. A minimum of four of the final six course units in the major must be earned in the department.
- Students must satisfy the retention requirements for their major to graduate.
- In courses offered by the Department of Mathematics and Statistics, a grade of C- or better must be earned in the courses that satisfy a graduation requirement, with the following exception. Students may count one D or D+ grade in a 300 or 400 level course.
- In addition to these general requirements, there are additional requirements for the following majors and specializations:

  Mathematics major: Applied Math Specialization

  1. A grade of C- or better must be earned in the Computer Science Correlate courses.

  Mathematics Teaching and Mathematics Secondary Education majors

  1. Overall 3.0 grade point average to meet the state certification requirements.
  2. A 2.75 GPA in order to enroll in Clinical Practice I (SED 399, MTT 390 and RAL 328)
  3. A 3.0 GPA and a B- in all Clinical Practice I courses in order to enroll in Clinical Practice II (MTT 490)
  4. Students must meet the State of New Jersey's Basic Skills requirement before applying for Clinical Practice I and II.
  5. B- or better in MTT 490 (Student teaching).

Retention Requirements

- Students must meet the above graduation requirements and the following grade requirements to be retained in the major. If a student fails to meet the standard, students will have one year to meet the standard. Students concerned about the standards should speak with their advisor.
- Majors must earn a C- in all courses that count towards the degree. A single grade of D or D+ may be earned in a s 300/400 MAT/STA courses that is not a prerequisite for a subsequent course.
- A 2.5 GPA in the required courses MAT 127, 128, 200, 205, 229 (and STA 215 for the Statistics specialization).

Dismissal Policy

At the end of the semester, if a major in the Department of Mathematics and Statistics has not met one or more of the department's retention standards, he/she will be given notice that he/she must meet the standard(s) within one calendar year in order to continue in the major. If the standard has not been satisfied within one calendar year the student may be dismissed from the major. In addition, if a student who is a major in the Department of Mathematics and Statistics does not pass any courses satisfying requirements for the major for a calendar year (2 regular semesters), he/she may be dismissed from the major.

Entrance Requirements

In order to transfer into all Mathematics majors, a student must meet the following grade requirements and be approved by the chair(s):

a. C- or better in MAT 127
b. C- or better in MAT 200

For the **Mathematics Secondary Education or Mathematics Teaching majors**, students must also meet:

c. Praxis Core Basic Skills Test passing score (or equivalent)
d. Additional requirements for the respective Education department.

Seminar Requirement

All students are required to attend four departmental seminars in their junior and/or senior year before they can take the capstone course. Both department seminars and School of Science colloquia (in which mathematics or statistics is presented) will count.

All students in the Mathematics major (Mathematics, Applied Mathematics, and Statistics specializations) are required to take a .5 unit seminar in their sophomore year. Details will be provided by the department.

Requirements for Honors

For all majors and specializations within the Department of Mathematics and Statistics:

1. Eligibility: A 3.5 GPA in math courses.

2. To receive departmental honors, a student must engage in independent research during their junior or senior year. The student should successfully complete an Independent Research 493 course during a semester they spend on-campus, and prepare a paper which will be due the middle of their last (graduating) term. A presentation will be given in the two week period following the submission of the paper. The members of the student's Honors Committee will be present, and will question the students about their research.

Independent Study/Guided Study/Independent Research Courses

- At most one course unit of Independent Study, Guided Study, or Independent Research may count as one of the "Mathematics options" or "Statistics options" listed in the major requirements under "Courses in the major."
- The total course load of a student taking Independent Study, Guided Study, or Independent Research should be at most 4.5 course units.
- Independent Study, Guided Study, or Independent Research may not be taken in order to improve a grade, or to replace a course that a student failed to sign up for.
- In exceptional circumstances, the above rules may be overruled by the department chair.
- A minimum 3.0 GPA in courses taken in the Department of Mathematics and Statistics is required of any student enrolling in Independent Study or Guided Study.

Course Waiver

If a student has a strong background in a particular course, then he/she may acquire or receive a course waiver in one of two ways: 1) credit by examination; or 2) waiver of the course through prior equivalent experience. Students given permission to waive a course are required to replace it with an upper-level (300 or 400) major course.

Calculus Readiness Requirement

Any student who has not satisfied the College's calculus readiness requirements is not allowed to register for any calculus course offered by the Department of Mathematics and Statistics. The College's calculus readiness requirements are as follows:

TCNJ Calculus Readiness Course Placement Criteria

SAT-Math score 630 or ACT score 28 or higher and four years of math including Algebra I, Algebra II, Geometry and Trigonometry	Placed into Calculus
SAT-Math score between 550 and 620 or ACT score between 24 and 27 and at least two years of math including Algebra and Geometry.	Placed into Introduction to Functions (MAT 119) or Precalculus (MAT 120). Upon completion of MAT 119, a student may take MAT 125: Calculus for Business and Social Sciences. Upon completion of MAT 120, a student may take MAT 125 or MAT 127: Calculus A.
SAT-Math score below 550 or ACT score below 24	Placed into Intermediate Algebra, MAT 095. *(MAT 095 does not count toward graduation but is considered credit-bearing for financial aid, tuition and full-time status.)*

Note:Introduction to Functions (MAT 119), Precalculus (MAT 120) and Intermediate Algebra (MAT 095) are offered every semester and often during the Summer Sessions.

Study Abroad
One of the opportunities available to students pursuing a degree in Mathematics or Statistics is to study abroad for a semester or a year. Students interested in studying abroad should meet with their faculty advisor early in their college career to plan a curriculum so that they may complete their studies in four years. They will also need to meet with the Director of the Center for Global Engagement. The students must receive approval from the chair of the department in order for courses taken abroad to count toward requirements for the major.

Mathematics Major: Mathematics Specialization

Requirements for the Major: Please see above for the program retention and graduation requirements. All Mathematics specialization students are required to take 12.5 mathematics course units and a 0-course-unit orientation. The 12 course units will consist of the following **eight required** courses:

MAT 099/Orientation to Mathematics and Statistics	0 course units
MAT 128/Calculus B	1 course unit
MAT 200/Proof Writing through Discrete Mathematics	1 course unit
MAT 205/Linear Algebra: Theory and Applications	1 course unit
MAT 229/Multivariable Calculus	1 course unit
MAT 2xx/Sophomore Seminar	.5 course unit
MAT 305/Abstract Algebra	1 course unit
MAT 310/Real Analysis	1 course unit

and **six additional** course units. The six additional course units can be any MAT courses at the 300- or 400-level. Two of these course units must be MAT courses at the 400-level.

In addition, the senior capstone experience requirement is fulfilled by passing MAT 498 in the senior year.

Additional Required Correlates (two course units): 1) CSC 220/Computer Science I; 2) One natural science lab course from the list approved by the Department of Mathematics and Statistics, (posted on the department's website).

Suggested First-Year Course Sequence

Fall

First Seminar (FSP) course	1 course unit
MAT 099/Orientation to Mathematics and Statistics	0 course units
MAT 127/Calculus A (if not exempted)*	1 course unit
CSC 220/Computer Science I	1 course unit
Foreign Language (if not exempted)**	1 course unit

Spring

MAT 128/Calculus B	1 course unit
MAT 200/Proof Writing through Discrete Mathematics	1 course unit
WRI 102/Academic Writing (if not exempted)**	1 course unit
Foreign Language (if not exempted)***	1 course unit

**It is recommended that students exempted from this course take Calculus B.*

*** It is recommended that students exempted from these courses take other liberal learning courses.*

***It is recommended that students exempted from these courses take other liberal learning courses. Note: *Arabic 151 and 152, Chinese 151 and 152, Japanese 151 and 152, and Russian 151 and 152 are intensive courses and carry two course units of credit each. Students should take this into account when planning a normal four-course semester.*

Mathematics Major: Applied Mathematics

Requirements for the Major: Please see above for program retention and graduation requirements. The Applied Mathematics Specialization requires 12 course units in the major, plus fulfilling the MAT 498 capstone requirement, MAT 099, and 3 course units of correlate courses.

A. Required Foundational Courses (6.5 course units)
   1. MAT 128/Calculus B
   2. MAT 229/Multivariable Calculus
   3. MAT 200/Proof Writing through Discrete Mathematics
   4. MAT 205/Linear Algebra: Theory and Applications
   5. MAT 2xx/Sophomore Seminar (.5 course unit)
   6. MAT 326/Differential Equations
   7. MAT 310/Real Analysis
   8. MAT 099/Orientation to Mathematics & Statistics (0 Course units)

B. Applied Mathematics Options (3 course units required)
   1. One 400 level course on the Applied Mathematics Options List
   2. Two additional 300 or 400 level courses on the Applied Mathematics Options List

C. Mathematics/Statistics Options (3 course units required)

Three MAT/STA courses at the 300 or 400 level. These courses are in addition to those satisfying Category B. At least one of these courses cannot appear on the Applied Mathematics Options List.

D. MAT 498/Capstone in Applied Mathematics
   1. Please see PAWS for the capstone prerequisites (1 course unit)

E. Correlates (3 course units required)
   1. Students must complete one of the following:
      i. CSC 220 and CSC 230; or (with prior permission) CSC 250/Accelerated Computer Science 1 and 2
   2. Two course units of a lab science. Acceptable courses are PHY 201, PHY 202, CHE 201, CHE 202, BIO 201/185, and any upper-level BIO course that counts towards the Biology Liberal Arts (BIOA) major.

Suggested First-Year Course Sequence

Fall

First Seminar (FSP) course	1 course unit
MAT 099/Orientation to Mathematics and Statistics	0 course units
MAT 127/Calculus A (if not exempted)*	1 course unit
CSC 220/Computer Science I	1 course unit
Foreign Language (if not exempted)**	1 course unit

Spring

MAT 128/Calculus B	1 course unit
MAT 200/Proof Writing through Discrete Mathematics	1 course unit
WRI 102/Academic Writing (if not exempted)**	1 course unit
Foreign Language (if not exempted)***	1 course unit

**It is recommended that students exempted from this course take Calculus B.*

*** It is recommended that students exempted from these courses take other liberal learning courses.*

***It is recommended that students exempted from these courses take other liberal learning courses. Note: *Arabic 151 and 152, Chinese 151 and 152, Japanese 151 and 152, and Russian 151 and 152 are intensive courses and carry two course units of credit each. Students should take this into account when planning a normal four-course semester.*

Mathematics Secondary Education

Requirements for the Major: Please see above for program retention and graduation requirements. An overview of the entire secondary-level teacher-preparation sequence and requirements can be found in the section of this bulletin for the Department of Educational Administration and Secondary Education.

Students planning to teach high school mathematics should consult with advisors in both mathematics and secondary education in planning their academic program. These plans should take into account requirements for: the major, liberal learning, professional courses, and state certification. To be retained in the program, a student must earn at least a 2.75 cumulative grade point average (CGPA) before enrolling in the full year of Clinical Practice, as well as have a Praxis Core Basic Skills Test passing score (or equivalent). The student must establish a minimum 3.0 CGPA, obtain at least a B- in MTT 390, and must have completed STA 216, MAT 301, MAT 351, and MAT 305 and all but at most 3 of their math major requirements prior to Clinical Practice II.

Teacher-education candidates must have a 3.0 or higher cumulative grade point average to be recommended by TCNJ for a New Jersey issued teaching license. They also must meet the state hygiene/physiology requirement, the state Harassment, Intimidation, and Bullying Prevention (HIB) training certificate requirement, pass edTPA in their certification area, and pass the appropriate Praxis Subject examination. Teacher-education candidates will receive a "certificate of eligibility with advanced standing" which requires a candidate to be provisionally certified for his or her first year of teaching. After successfully completing State required mentoring teaching, the candidate will be eligible for a permanent certificate.

Mathematics/Statistics Course Requirements: All Mathematics:Secondary Education students are required to take a minimum of twelve mathematics/statistics course units, and a 0-course-unit orientation. The eleven course units will consist of nine required course units and two MAT/STA options:

MAT 099/Orientation to Mathematics and Statistics	0 course units
MAT 200/Proof Writing through Discrete Mathematics	1 course unit
MAT 205/Linear Algebra: Theory and Applications	1 course unit
MAT 229/Multivariable Calculus	1 course unit
MAT 255/Perspectives on the Development of Mathematics	1 course unit
MAT 301/Number Theory	1 course unit
MAT 305/Abstract Algebra	1 course unit
MAT 310/Real Analysis	1 course unit
MAT 351/Geometry	1 course unit
STA 216/Statistical Inference and Probability	1 course unit
MAT 497/Topics in Secondary Mathematics from an Advanced Viewpoint	1course unit
and two MAT/STA options which can be any MAT/STA courses at the 300/400 level	2 course units

Content Methods and Professional Sequence Courses: All Mathematics:Secondary Education students are required to take the following methods and professional courses:

SED 224/Adolescent Learning and Development	1 course unit
EFN 299/School and Communities	1 course unit
SPE 103/Social and Legal Foundations of Special Education	1 course unit
MTT 380/Methods of Teaching Mathematics I	1 course unit
SED 399/Pedagogy in Secondary Schools	1.5 course units
RAL 328/Reading in Secondary Education	0.5 course unit
MTT 390/Methods of Teaching Mathematics II	1 course unit
MTT 490/Clinical Practice II: Student Teaching	2 course units
SED 498/Collaborative Capstone for Professional Inquiry	1 course unit

Additional Required Correlates

CSC 220/Computer Science I: Computational Problem Solving	1 course unit
One science course (BIO 185, CHE 201, or PHY 201)	1 course unit

Quantitative Reasoning Requirements

MAT 127/Calculus A	1 course unit
MAT 128/Calculus B	1 course unit

Suggested First-Year Course Sequence

Fall

First Seminar (FSP) course (Arts and Humanities or Social Change in Historical Perspective)	1 course unit
MAT 099/Orientation to Mathematics and Statistics	0 course unit
MAT 127/Calculus A*	1 course unit
CSC 220/Computer Science I	1 course unit
Second Language	1 course unit

Spring

MAT 200/Proof Writing through Discrete Mathematics	1 course unit
MAT 128/Calculus B	1 course unit

WRI 102/Academic Writing (if not exempted)**	1 course unit
Second Language	1 course unit
SED 099/Secondary Education College Seminar	0 course unit

**It is recommended that students exempted from this course take Calculus B*

**It is recommended that students exempted from this course take a liberal learning course

Mathematics Major: Education-Teacher Preparation for Elementary, Early Childhood, Deaf and Hard of Hearing, and Special Education majors

Requirements for the Major: Please see above for program retention and graduation requirements. Students should consult with advisors in both mathematics and in the School of Education in planning their academic program. These plans should take into account requirements for the majors, liberal learning, professional courses, and state certification. To be retained in the program, a student must earn at least a 2.75 cumulative grade point average (CGPA) before enrolling in Clinical Practice I, as well as have a Praxis Core Basic Skills Test passing score (or equivalent). The student must establish a minimum 3.0 CGPA, and must have completed all education prerequisites in order to be allowed to enroll in Clinical Practice II.

Candidates for a teacher education certificate must have a 3.0 or higher cumulative grade point average to successfully complete their teacher education program. They also must meet the state hygiene/physiology requirement, the state Harassment, Intimidation, and Bullying Prevention (HIB) training certificate requirement, pass edTPA in their certification area, and pass the appropriate Praxis examination. Teacher-education candidates will receive a "certificate of eligibility with advanced standing" which requires a candidate to be provisionally certified for his or her first year of teaching. After one year of successful teaching, the candidate is eligible for a permanent certificate.

Mathematics/Statistics Course Requirements for the Major
All Mathematics/Elementary, Early Childhood, Deaf and Hard of Hearing, and Special Education students will be required to take a **minimum** of eleven mathematics/statistics course units, and a 0 course unit orientation. Eleven course units will consist of **ten required** course units, and a MAT/STA option:

MAT 099/Orientation to Mathematics and Statistics	0 course units
MAT 105/Mathematical Structures & Algorithms for Educators	1 course unit
MAT 200/Proof Writing through Discrete Mathematics	1 course unit
MAT 205/Linear Algebra: Theory and Applications	1 course unit
MAT 229/Multivariable Calculus	1 course unit
MAT 255/Perspectives on the Development of Mathematics	1 course unit
MAT 301/Number Theory	1 course unit
MAT 305/Abstract Algebra	1 course unit
MAT 310/Real Analysis	1 course unit
MAT 351/Geometry	1 course unit
STA 216/Statistical Inference and Probability	1 course unit
One MAT/STA option which can be any MAT/STA course at the 300/400 level	1 course unit

Quantitative Reasoning Requirements

MAT 127/Calculus A	1 course unit
MAT 128/Calculus B	1 course unit

*Suggested First-Year Mathematics Course Sequence**

Fall

MAT 099/Orientation to Mathematics and Statistics	0 course unit
MAT 127/Calculus A	1 course unit
MAT 105/Mathematical Structures & Algorithms for Educators	1 course unit

Spring

MAT 128/Calculus B	1 course unit
MAT 200/Proof Writing through Discrete Mathematics	1 course unit

**Consult individual major in the School of Education for remaining courses.*

Mathematics Major: Statistics

*Requirements for the Major**:*** Please see above for program retention and graduation requirements. Statistics graduates need to have a strong underpinning in mathematics in addition to acquiring all the necessary statistical knowledge and skills. The sequence consists of the following:

Required Courses: **Seven required** course units and a 0-course-unit orientation

MAT 099/Orientation to Mathematics and Statistics	0 course units
MAT 200/Proof Writing through Discrete Mathematics	1 course unit
MAT 205/Linear Algebra: Theory and Applications	1 course unit
MAT 229/Multivariable Calculus	1 course unit
MAT 2xx/Sophomore Seminar	.5 course unit
MAT 316/Probability	1 course unit
STA 215/Statistical Inference	1 course unit
STA 305/Regression Analysis	1 course unit
STA 410/Mathematical Statistics	1 course unit

Three statistics options chosen from the following courses

STA 303/Design of Experiments	1 course unit
STA 304/Sampling and Non-Parametric Statistics	1 course unit
STA 306/Applied Multivariate Analysis	1 course unit
STA 307/Data Mining and Predictive Modeling	1 course unit
STA 314/Statistical Quality Control	1 course unit

Two additional options courses which can be chosen from any

MAT/STA courses at the 300/400-level	2 course units

Senior capstone experience requirement is fulfilled by taking

STA 498 in the senior year	1 course unit

Additional Required Correlates

CRI 215/Data Management and Analysis	1 course unit
Any two natural science courses from the list approved by the Mathematics and Statistics department. One must have a lab component	2 course units

Suggested First-Year Course Sequence

Fall

First Seminar (FSP) course	1 course unit
MAT 099/Orientation to Mathematics and Statistics	0 course units
MAT 127/Calculus A (if not exempted)*	1 course unit
Foreign Language (if not exempted)**	1 course unit
STA 215/Statistical Inference	1 course unit

Spring

MAT 128/Calculus B	1 course unit
WRI 102/Academic Writing (if not exempted)**	1 course unit
MAT 200/Proof Writing through Discrete Mathematics	1 course unit
Foreign Language (if not exempted)***	1 course unit
Liberal Learning course (Arts and Humanities or Social Sciences and History)	1 course unit

**It is recommended that students exempted from this course take Calculus B.*

*** It is recommended that students exempted from these courses take other liberal learning courses.*

***It is recommended that students exempted from these courses take other liberal learning courses. Note: *Arabic 151 and 152, Chinese 151 and 152, Japanese 151 and 152, and Russian 151 and 152 (offered annually) are intensive courses and carry two course units of credit each. Students should take this into account when planning a normal four-course semester*.

Minors in the Department of Mathematics and Statistics

Students planning to pursue a minor in Mathematics, Statistics, Actuarial and Financial Risk Studies, or Quantitative Criminology should apply to the department as soon as possible. The minor requirements will be defined by the Bulletin description at the time of application. Students must maintain the same mathematics and statistics cumulative average as required for graduation in the major.

Per TCNJ college policy, only one course taken as a part of the student's major may also be counted toward the student's minor; however, correlate courses for the major may be applied freely to the minor. Multiple minors may overlap by only one course.

Mathematics Minor

For a mathematics minor, a student must pass five MAT courses that are either MAT 128 or at the 200-level or above (except MAT 255, MAT 265, MAT 270). At least two of the courses must be at the 3xx/4xx level. Students must earn a 2.0 overall GPA in courses that count for the minor. All courses must have a grade of C- of higher, with the exception that a single grade of D or D+ is permitted in a 3xx/4xx level course. A minimum of four course units for the mathematics minor must be earned at The College of New Jersey.

Statistics Minor

For a statistics minor, a student must complete five courses as detailed below:

Required Courses: (2 course units)

STA 215/Statistics or Statistical Inference	1 course unit
STA 305/Regression Analysis	1 course unit

Any three courses from the following list:	(3 course units)
Any STA course at the 300 or 400 level	1 course unit
MAT 316/Probability	1 course unit
MAT 317/Linear Programming	1 course unit

TOTAL: 5 **COURSE UNITS**

A minimum of three course units for the statistics minor must be earned at The College of New Jersey. Only courses with earned grade of C- or higher taken at TCNJ can be used to fulfill the requirements for the minor. Transfer courses require a grade of C or higher. Students intending to take Independent Study or Independent Research courses should first seek permission from the Statistics Program Coordinator.

Actuarial and Financial Risk Studies Minor

For the Actuarial and Financial Risk Studies Minor, a student must complete the prerequisites of MAT 125 or 127, MAT 128, MAT 200 and STA 215, and complete five required courses from the following two groups. The choice of courses depends on the major (see details following the two groups). The groups are:

GROUP A:

MAT 229/Multivariable Calculus	1 course unit
STA 305/Regression Analysis OR ECO 231/Applied Business Statistics *Gives VEE-Applied Statistics credit*	1 course unit
MAT 316/Probability	1 course unit
STA 410/MAT 318/Mathematical Statistics	1 course unit

GROUP B:

MAT 265/ Introduction to Financial Mathematics	1 course unit
ECO 102/Principles of Macroeconomics	1 course unit
FIN 201/Fundamental Financial Methods AND MIT 201/Information Systems: Concepts and Applications *Both of these are half-courses*.	1 course unit total
FIN 310/Introduction to Investments and Financial Analysis *Gives VEE-Corporate Finance credit.*	1 course unit
FIN 360/Financial Modeling OR FIN 410/Portfolio Management and Derivative Securities *Only one of these two courses can count towards the minor.*	1 course unit

For Statistics Majors: Students will select one course from Group A, which are all required in the Statistics major, and double-count this course towards the Minor. They will then take four courses listed in Group B.

For Business Majors: Students will choose one course from Group B (which will be the double-counting course), and the four courses from Group A.

For Mathematics Majors: Students may choose 5 courses from Groups A and B but it is highly recommended that MAT 316 and STA 410/MAT 318 are among those selected.

For Other Majors: Selections from Groups A and B as advised.

Note: While only ECO 102 is listed in Group B, it is recommended that all students take ECO 101/*Principles of Microeconomics* as an elective in order to obtain VEE-Economics credit.

Quantitative Criminology Minor

For the Quantitative Criminology Minor, a student must complete the prerequisites of MAT 125 or MAT 127, STA 215, and one semester of Criminology (CRI 205 or CRI 215). Students completing the minor will not be required to complete CRI 100 as the prerequisite for CRI 205.

Students must take five courses from the following two groups. The choice of courses depends on the major (see details following the two groups).

GROUP A:

STA 303/Design of Experiments	1 course unit
STA 305/Regression Analysis	1 course unit
STA 306/Applied Multivariate Analysis	1 course unit
STA 307/Data Mining and Predictive Modeling	1 course unit
STA 370/Topics in Statistics	1 course unit
STA 318/Operations Research	1 course unit

GROUP B:

CRI 304/Victimology	1 course unit
CRI 306/Research Methods	1 course unit
CRI 340/International Terrorism	1 course unit
CRI 350/Advanced Criminology: Juvenile Delinquency and Justice	1 course unit
CRI 498/Senior Capstone in Policy Analysis	1 course unit

Note: CRI 390 (Research Course in Criminology) may be substituted for either CRI 340 or CRI 350 with permission of the chair of the Criminology Department.

For Students Majoring in Statistics: Students will be able to double-count STA 305 since this course is required in the Statistics major. They will then take four courses from the five courses listed in Group B.

For Students Majoring in Criminology: Students will be required to take the sequence MAT 125 and STA 215 to enable them to meet the prerequisites above. Students will be able to double-count one of the Advanced Criminology courses from Group B (i.e., 350, 351, or 352). Students will then take 4 courses from Group A.

For Students Majoring in Mathematics: Students must choose at least two courses from both Groups A and B, and five courses in total.

For Students in Other Majors: Selections from Groups A and B as advised by the Department of Criminology and by the Department of Mathematics and Statistics.