

Law and Society

Coordinator Steven Sorenson

The minor in law and society provides a network of courses designed to focus the student's attention on the role of law and legal structure in a human community. Law is a primary means of ordering conduct and resolving social conflicts. The minor seeks to help the student understand the function, nature, and limits of law.

The minor is not intended as a pre-professional curriculum for the student interested in a career in law. Rather, it is designed for a wider audience interested in the entire question of the role of law and legal structures in a human community. Students interested in pre-professional preparation for a career in law should see the prelaw advisor.

Requirements for a minor in law and society: POL 312; 4 credits of independent study at the senior level in a topic in law and society in philosophy, politics and government, sociology, or other appropriate department; and 12 credits selected from among the following courses (no more than eight hours of elective courses from one department may be counted toward the minor):

ECO 332: Resource and Environmental Economics (same as ENV 332)

ENV 120: Environmental Studies

GLB 112: Global Political Economy (same as POL 112)

HIS 262: American Race Relations

PHL 241: Ethics

PHL 353: Human Rights

POL 220: American Politics and Government

POL 412: Constitutional Law I: Landmark Decisions

POL 413: Constitutional Law II: The Bill of Rights

SOC 110: Introduction to the Sociological Imagination

SOC 306: Criminology, or other law-related courses, with the consent of the Coordinator.

Linguistics

332. Introduction to Linguistics

Poncelet

Four credits.

A survey of the major aspects of theoretical and applied linguistics. Emphasis is placed on the study of language structure and patterns of language use. Recommended for students seeking teacher licensure in English. Required for students seeking teacher licensure in a foreign language. Required for majors in Foreign Languages, French and Spanish. *Prerequisite: open to sophomores, juniors and seniors or permission of the instructor.*

Mathematics and Computer Science

Professor Karl A. Beres;

Associate Professors Diane L. Beres, Kristine J. Peters, David W. Scott (*Chair*);

Assistant Professors Chester I. Ismay, McKenzie R. Lamb, Andrea N. Young;

Adjunct Professor Michele A. Wittler

Mathematics

Communicating Plus - Mathematics: Students completing a mathematics major will develop skills in the four Communicating Plus skills areas—written communi-

cation, oral communication, critical thinking, and problem solving—throughout all of their courses. Problem solving is central to the study of mathematics, but it is not enough to solve problems; one must be able to explain one's work. Consequently, critical thinking about mathematical processes and communication are also central in the mathematics curriculum. The senior capstone experience requires groups of students to work together to learn something in mathematics new to them. The group organizes presentations to teach the new concept to others in the seminar, and each individual prepares a paper addressing the same material in an expository manner. Thus, problem solving and communication are at the heart of this capstone experience.

Requirements for a major in mathematics: Either CSC 101 or 211, MTH 206, 224, either 248 or 331, 501-502, and at least four additional mathematics courses numbered above 206 (excluding 401). At least two of the additional mathematics courses must be at the 400 level. Note that, while MTH 201 and 202 are not a part of the major, MTH 202 is a prerequisite for several courses in the major, particularly MTH 206 and 224. Students intending to study mathematics in graduate school should consult with their advisors about appropriate additional courses.

Requirements for a minor in mathematics: Eighteen credits in mathematics courses (excluding 401), normally including MTH 224 or 248, together with a capstone experience. A coherent program of courses must be designed in consultation with a member of the department and approved by the department. The capstone experience could be a course in any department, an independent study course, or an internship. The student will successfully present a talk based on the capstone experience to the senior seminar.

Students seeking secondary teaching licensure with a major in mathematics must take: MTH 261, either 120 or 220 or 432, 401, either 405 or 412 or 422, and CSC 101.

Students seeking secondary teaching licensure with a minor in mathematics must take: MTH 201-202, 224, either 261 or 422, 401; and CSC 101.

The department conducts a colloquium series. These meetings are open to all students; majors are expected to attend.

Many courses are offered on an alternate-year basis. Consult with the department to ascertain the current scheduling.

Departmental assistants are available to help students taking mathematics courses.

All prerequisites for mathematics courses must be passed with a grade of C- or better.

120. Elementary Statistics

Four credits.

Descriptive and inferential statistics. Topics include probability distributions and sampling distributions, regression and correlation, point estimates and confidence intervals, and hypothesis testing.

123. Finite Mathematics

Four credits.

An introductory course in discrete mathematics. Topics selected from set theory, combinatorics, probability, matrices, linear programming, Markov chains, graph theory, and other applications. Applications to the life sciences, social sciences, and computer science.

130. Mathematical Thinking and Writing

Four credits.

An introduction to mathematics with special emphasis on the development of students' problem solving and communication skills. Topics will be determined by the instructor.

143. Elementary Models

Four credits.

An exploration of polynomials, exponential and logarithmic functions, power functions, and trigonometric functions, viewed as models of real phenomena. Fitting models to data. Applications. *Prerequisite: consent of the department.*

146. Computer Modeling

Four credits.

An introduction to computer simulations and the use of computer models as an aid to decision-making. Examples will be drawn from a variety of disciplines. Students will explore and create models using various software, such as spreadsheets and GIS. Students will work on projects both individually and in small groups. Normally offered in alternate years.

150. Structure of Mathematics

Four credits.

A special section of MTH 130 particularly suitable for future teachers. Students will work on problem solving and mathematical discourse while studying topics chosen to foster a clearer and deeper understanding of the mathematical concepts underlying the school mathematics taught particularly in grades K-8. Enrollment priority will be given to students certifying as teachers.

201, 202. Calculus I and II

Four credits each semester.

Analysis of the elementary functions of a single variable including differentiation and integration, techniques of integration, theory of limits, infinite series, applications. *Prerequisite for MTH 201: MTH 143 or consent of the department. Prerequisite for MTH 202: MTH 201 or consent of the department.*

206. Multiple Variable Calculus

Four credits.

Calculus of functions of several variables; parametric equations; polar coordinates; applications. *Prerequisite: MTH 202 or consent of the department.*

220. Data Analysis

Four credits.

An integrated treatment of statistical procedures as tools for building and testing models of data. Topics include regression, correlation, analysis of variance, and analysis of covariance. Normally offered in alternate years. *Prerequisite: MTH 120.*

224. Linear Algebra

Four credits.

Matrices, vectors, determinants, vector spaces, linear transformations, and applications. *Prerequisite: MTH 202 or consent of the department.*

232. Topics in Statistics**Staff**

Variable credit course, 1-4 credits.

Advanced topics in statistics. Please see the pertinent Schedule of Courses for the listing of topics courses. This course may be repeated for credit when topics change. *Prerequisite: dependent on topics.*

246. Mathematical Modeling

Four credits.

An introduction to applied mathematics. Topics chosen by the instructor. With permission of the instructor, this course may be repeated for credit as MTH 346 and 446. Normally offered in alternate years. *Prerequisite: MTH 201.*

248. Discrete Mathematics

Four credits.

Topics chosen from set theory, combinatorics, recurrence relations, graph theory, Boolean algebra, applications. Familiarity with a programming language is desirable. Same as CSC 248. *Prerequisite: Any mathematics course numbered above 120, or consent of the department.*

261. Geometry

Four credits.

Topics from modern Euclidean geometry, transformations, projective geometry, and non-Euclidean geometry. Normally offered in alternate years. *Prerequisite: Consent of the department.*

290. Modeling Club

Two credits.

Continuous and discrete mathematical models are studied in preparation for the COMAP Mathematical Contest in Modeling. May be counted only once towards major or minor requirements. Grading is S-U.

300. Departmental Studies

Variable credit course, 1-4 credits.

Special subjects in mathematics not covered by regular courses. Please see the pertinent Schedule of Courses for the listing of topics courses. This course may be repeated for credit when topics change. *Prerequisites: Dependent on topics.*

323. Number Theory

Four credits.

An introduction to classical number theory, with computer applications. Some experience in programming is helpful. Normally offered in alternate years. *Prerequisite: Consent of the department.*

331. Probability

Four credits.

Probability as a mathematical system, combinatorics, random variables and their distributions, limit theorems, and applications. Normally offered in alternate years. *Prerequisite: MTH 202 or consent of the department.*

343. Differential Equations

Four credits.

Ordinary differential equations, numerical solutions, and applications. Normally offered in alternate years. *Prerequisite: MTH 202 or consent of the department.*

390. Student Research

Two credits.

Supervised investigation of research problems in mathematics. This course may be repeated for credit (8 credit maximum). Does not count toward major. *Prerequisites: Agreement of a department member to act as supervisor and consent of the department chair.*

401. Secondary Teaching Methods

Two credits.

Mathematics education methods, materials, and philosophies. *Prerequisite: Consent of the department.*

403. Complex Analysis

Four credits.

Complex numbers, elementary functions, analytic functions, integrals, mappings. Normally offered in alternate years. *Prerequisites: MTH 206 and one mathematics course numbered 224 or higher.*

405. Real Analysis

Four credits.

The real numbers, metric concepts and continuity, differentiation and integration of real functions, infinite sequences and series of functions. Normally offered in alternate years. *Prerequisites: MTH 206 and one mathematics course numbered 224 or higher.*

412. Topology

Four credits.

An introduction to point-set topology. Normally offered in alternate years. *Prerequisite: One mathematics course numbered 224 or higher, but not 232, 246, 290, or 343.*

422. Algebraic Structures

Four credits.

Groups, homomorphisms, isomorphisms, factor groups, rings, fields, and polynomials. Normally offered in alternate years. *Prerequisites: MTH 224 and one higher-numbered mathematics course.*

432. Mathematical Statistics

Four credits.

Correlation and regression, sampling and estimation theory, testing hypotheses, and applications. Normally offered in alternate years. *Prerequisites: MTH 206 and 331.*

501. Senior Seminar I

Fall semester. Two credits.

Selected topics presented by students. Expected of senior majors; open to others by consent of the department. Same as CSC 501. *Prerequisite: senior standing and one course in the department at the 300 level or higher, or consent of the department.*

502. Senior Seminar II

Spring semester. Two credits.

Continuation of Senior Seminar I. Required of senior majors; open to others by consent of the department. Same as CSC 502. *Prerequisite: MTH 501 or consent of the department.*

540. Independent Study

Variable credit course, 1-4 credits.

Supervised investigation of problems in mathematics of special interest to the student. No more than twelve credit hours of independent study or internship may be taken, and no more than eight credit hours may be in one department. A registration form is required. *Prerequisites: junior or senior standing, consent of the department chair and a department project director, and 12 credits toward the major.*

550. Independent Study: Internship

Variable credit course, 1-5 credits.

Supervised work, normally while employed by a business, industry, government agency, or other institution. The employment must be arranged by the student. A paper or presentation is required. No more than twelve credit hours of independent study or internship may be taken, and no more than eight credit hours may be in one department. A registration form is required. *Prerequisites: junior or senior standing, consent of the department chair and a department project director, and 12 credits toward the major.*

Computer Science

Communicating Plus - Computer Science: Students completing a computer science major will develop skills in the four Communicating Plus skills areas—written communication, oral communication, critical thinking, and problem solving. The introductory sequence of courses helps students develop and improve their abilities to communicate both with the computer and with each other. As students progress through the curriculum they continue to develop communication skills and learn to solve more complex problems as their understanding of computing deepens. They also gain experience in thinking critically about technology and its applications and in communicating with others about the workings of technology and its role in human affairs. The senior capstone experience requires groups of students to work together to learn something in computer science new to them. The group organizes presentations to teach the new concept to others in the seminar, and each individual prepares an expository paper addressing the same material. Thus, problem solving and communication are at the heart of this capstone experience.

Requirements for a major in computer science: Thirty credits in computer science courses numbered above 101 (excluding CSC 292), including CSC 211 and 212, 248, 313, 336, 452, and 500-501.

Requirements for a minor in computer science: Eighteen credits (excluding CSC 292) plus a capstone experience. The eighteen credits will include CSC 211, 248; and two of CSC 313, 336, and 452. The capstone experience can be a course in any department, an independent study course, or an internship. It must be approved by an advisor in the department, and the student will successfully present a talk based on the capstone experience to the senior seminar.

Students seeking secondary teaching licensure with a minor in computer science must take: Twenty-two credits including CSC 212, 313, 336, and 452; and EDU 540.

Note that all majors and minors are required to take CSC 248, which has a mathematics course numbered above 120 or consent of the department as a prerequisite.

The department conducts a colloquium series. These meetings are open to all students; majors are expected to attend.

Many courses are offered on an alternate-year basis, consult with the department to ascertain the current scheduling.

Departmental assistants are available to help students taking computer science courses.

All prerequisites for computer science courses must be passed with a grade of C- or better.

101. Introduction to Programming

Four credits.

Development and implementation of algorithms; structured program design; array manipulation; searching and sorting algorithms; sequential files.

211, 212. Computer Science I and II

Four credits each semester.

Overview of computer science; development and implementation of elementary data structures; linked lists, queues, stacks, trees; data abstraction; searching and sorting algorithms; algorithm complexity; object oriented programming; software development. *Prerequisite: CSC 101 or its equivalent.*

248. Discrete Mathematics

Four credits.

Topics chosen from set theory, combinatorics, recurrence relations, graph theory, Boolean algebra, applications. Familiarity with a programming language is desirable. Same as MTH 248. *Prerequisite: any mathematics course numbered above 120 or consent of the department.*

251. Systems Analysis and Design

Four credits.

Methods used in analyzing and designing information systems. Functional decomposition, data dictionary, process specification, structure chart, coupling, cohesion, transform analysis, transaction analysis, objected-oriented techniques. Offered in response to students' needs and interests. *Prerequisites: CSC 211 and 248.*

Programming Languages

Two credits.

The programming languages courses will concentrate on those features of the language that differ from C++. With permission of the instructor, programming languages courses can be repeated for credit at the 300 and 400 levels. *Prerequisite: CSC 211.*

281. Visual BASIC

282. C+

284. Java Prerequisite: CSC 212.

285. FORTRAN

286. Python

287. LISP

288. LOGO

292. Programming Practicum

One credit.

Participation in a national or regional programming contest. Students must successfully solve a contest problem and present the solution at a departmental colloquium. This course may be repeated for a maximum of four credits towards graduation. Grading is Pass-Fail. *Prerequisite: consent of the department.*

300. Departmental Studies

Variable credit course, 1-4 credits.

Special subjects in computer science not covered by regular courses. This course may be repeated for credit when topics change. Please see the pertinent Schedule of Courses for the listing of topics courses. *Prerequisite: consent of the department.*

313. Computer Organization

Four credits.

An introduction to machine organization, machine language, and assembly language programming. Normally offered in alternate years. *Prerequisites: CSC 211 and 248, or the consent of the department.*

336. Data Structures and Algorithms

Four credits

Study of algorithms and their complexity; advanced data structures such as trees, graphs, hash tables; recursion; searching and sorting algorithms; NP-completeness. Normally offered in alternate years. *Prerequisites: CSC 212 and 248.*

353. File and Database Systems

Four credits.

Techniques for organizing, storing, accessing, and processing data, ranging from simple file handling to the use of complete database management systems. Offered in response to students' needs and interests. *Prerequisites: CSC 211 and 248.*

371. Artificial Intelligence

Four credits.

An introduction to the field of artificial intelligence, including discussion of such topics as game playing, automated reasoning, expert systems, and natural language. Offered in response to students' needs and interests. *Prerequisites: CSC 211 and 248.*

421. Principles of Programming Languages

Four credits.

Principles of design and implementation of contemporary programming languages. Language syntax (lexical properties, BNF, and parsing), processors (compilers and interpreters), representations (data structures, control structures, and binding), and styles (procedural, functional programming, logic programming, modular programming). Offered in response to students' needs and interests. *Prerequisite: CSC 336 or consent of the department.*

436. Algorithms

Four credits.

Further study of algorithms with emphasis on creation, understanding, and analysis of algorithms, rather than on their implementation. Offered in response to students' needs and interests. *Prerequisite: CSC 336.*

452. Operating Systems

Four credits.

An introduction to operating systems, emphasizing the interrelationships between the subsystems that manage system resources and the cooperative interactions between the operating system and hardware. Normally offered in alternate years. *Prerequisite: CSC 313.*

501. Senior Seminar I

Fall semester. Two credits.

Selected topics presented by students. Expected of senior majors; open to others by consent of the department. Same as MTH 501. *Prerequisite: senior standing and one course in the department at the 300 level or higher, or consent of the department.*

502. Senior Seminar II

Spring semester. Two credits.

Continuation of Senior Seminar I. Required of senior majors; open to others by consent of the department. Same as MTH 502. *Prerequisite: CSC 501 or consent of the department.*

540. Independent Study

Variable credit course, 1-4 credits.

Supervised investigation of problems in computer science of special interest to the student. No more than twelve credit hours of independent study or internship may be taken, and no more than eight credit hours may be in one department. A registration form is required. *Prerequisites: junior or senior standing, consent of the department chair and a department project director, and 12 credits toward the major.*

550. Independent Study: Internship

Variable credit course, 1-5 credits.

Supervised field work involving part-time employment as a computer programmer. The employment must be arranged by the student. A paper or presentation is required. No more than twelve credit hours of independent study or internship may be taken, and no more than eight credit hours may be in one department. A registration form is required. *Prerequisites: junior or senior standing, consent of the department chair and a department project director, and 12 credits toward the major.*

Military Science

Professor LTC Fred J. Toti;

Instructor MSG Jessie R. Crane (Chair)

The military science program consists of two phases. The first phase is introductory and consists of 100 and 200 level courses that are practical as well as being preparatory for the advanced phase. The first phase consists of MIL 151, 152, 251, and 252. All first-year and sophomore students are encouraged to take lower level military science classes and acquaint themselves with military vocational opportunities without incurring a service obligation.

The second phase is designed to qualify upper-level students for commissioned officer roles in the Active Army, Army Reserve, or the Army National Guard. The advanced phase consists of MIL 301, 302, 401, and 402. Enrollment in the advanced phase is limited to those students who qualify physically and academically, and who have completed the introductory phase, Leader's Training Course (LTC - a twenty-