

Department of Mathematics

Phone: (512) 245-2551

Office: Math/Computer Science Building 470

Fax: (512) 245-3425

Web: <http://www.txstate.edu/math/welcome.html/>

Degree Programs Offered

- BS, major in Applied Mathematics
- BA, major in Mathematics
- BA, major in Mathematics (with teacher certification)
- BS, major in Mathematics
- BS, major in Mathematics (with teacher certification)

Minor Offered

- Mathematics

The study of mathematics is more than four thousand years old and comprises an enormous body of knowledge. Mathematics remains a very active area of research continually giving rise to new theories and questions. The knowledge accumulated and the questions being considered concern both mathematics itself and its many applications.

Mathematics is a fundamental skill required at some minimal level of all educated people, and required in depth in many professions. The teaching objective of our Department includes the development of reasoning and computations skills, and the preparation of students for careers requiring a significant mathematical background.

Majors

The department offers the Bachelor of Arts and the Bachelor of Science majors in Mathematics with or without teacher certification and the Bachelor of Science with a major in Applied Mathematics. Any major requires 17 credit hours in core courses and 15 additional credit hours, which vary with the student's program. See the degree plans below.

For the BA or BS, a major in mathematics requires at least 32 semester hours, including MATH 2471, 2472, 3330, 3380, 4307 and 15 semester hours of advanced mathematics. The fifteen hours must follow one of two plans. The first consists of 3373, 3377, 4315, and 4330 plus any one of the following courses: 3305, 3323, 3325, 3348, 3375, 3398, 4305, 4306, 4336, or 4382. The second is the certification plan and consists of 3305, 3315, 3377, 4304 and 4311. Notice that MATH 3315, 4302, 4304 and 4311 are not in the list of elective courses when taking the plan that includes MATH 3373. Even though MATH 2471 is the first required mathematics course, some students will need to take courses numbered below 2471. Credit examinations in MATH 1315, 2417, and 2471 are available.

For the BS, a major in applied mathematics requires at least 32 semester hours, including Math 2471, 2472, 3305, 3323, 3373, 3377 and 12 semester hours from Math 3348, 3375, 3398, 4305, 4306, 4336.

Teacher Certification

A student seeking certification to teach at the secondary level must take RDG 3323; EDST 4681; and CI 3310, 3325, 4332, and 4343. The student who has further questions should see the undergraduate advisor in Mathematics.

For students who are seeking teacher certification within their major and are not in the College of Science, but would like a second teaching field in Mathematics (Texas Grades 8-12) the requirements are: MATH 2471, 2472, 3305, 3315, 3330, 3377, 3380, 4304, and 4307.

Bachelor of Science
Major in Applied Mathematics
 Minimum required: 120 semester hours

General Requirements:

1. A minimum of 9 writing intensive hours and a total of 36 advanced hours are required to graduate. An advanced course is one that is numbered above 3000 and below 5000.
2. See the University College section of this catalog for general education core curriculum requirements. PHYS 1430 is highly recommended as one of the 7-8 hours of natural science since it is a prerequisite for MATH 3375 in the advance MATH electives.
3. If two years of the same foreign language were taken in high school, then no additional language hours required for the degree. In the absence of such high school language, two semesters of the same modern language must be taken at the college level.
4. Even though MATH 2471 is the first required mathematics course, some students will need to take courses numbered below 2471. Credit examinations in MATH 1315, 2417, and 2471 are available.
5. At least 32 hours are required in mathematics. and must include MATH 2471, 2472, 3305, 3323, 3373, 3377, and 12 semester hours of advanced mathematics from the following courses: MATH 3348 (fall), 3375 (spring), 3398 (fall, spring, summer II), 4305 (spring), 4306 (spring), or 4336 (see dept.).
6. See the list of minors under the Degrees and Programs section of this catalog. Minor and electives should be chosen in consultation with the academic advisor.

Freshman Year – 1st Semester	Hours
US 1100	1
ENG 1310	3
HIST 1310.....	3
COMM 1310.....	3
ART, DAN, MU, or TH 2313	3
Social Science Component (see gen. req. 2).....	3
Total	16

Sophomore Year – 1st Semester	Hours
MATH 2472.....	4
Minor (see gen. req. 6)	3
Natural Science Component (see gen. req. 2).....	4
Electives (see gen. req. 1, 3, 4 & 6).....	3
PFW one course	1
Total	15

Junior Year – 1st Semester	Hours
MATH 3323.....	3
MATH 3377.....	3
CS 2308	3
Minor (see gen. req. 1 & 6).....	3
POSI 2310.....	3
Total	15

Senior Year – 1st Semester	Hours
MATH Advanced Elective (see gen. req. 5).....	3
Minor (see gen. req. 1 & 6).....	3
Electives (see gen. req. 1, 3, 4 & 6).....	3-4
ENG 3303	3
PFW one course	1
Total	13-14

Freshman Year – 2nd Semester	Hours
MATH 2471	4
ENG 1320.....	3
HIST 1320.....	3
Natural Science Component (see gen. req. 2).....	3-4
PHIL 1305.....	3
Total	16-17

Sophomore Year – 2nd Semester	Hours
MATH 3305.....	3
Minor (see gen. req. 6)	3
CS 1428.....	4
ENG Literature (see gen. req. 2).....	3
Electives (see gen. req. 1, 3, 4 & 6)	3
Total	16

Junior Year – 2nd Semester	Hours
MATH 3373.....	3
MATH Advanced Elective (see gen. req. 5).....	3
Minor (see gen. req. 1 & 6).....	3
POSI 2320.....	3
Electives (see gen. req. 1, 3, 4 & 6)	3
Total	15

Senior Year – 2nd Semester	Hours
MATH Advanced Elective (see gen. req. 5).....	3
MATH Advanced Elective (see gen. req. 5).....	3
Minor (see gen. req. 1 & 6).....	3
Electives (see gen. req. 1, 3, 4 & 6)	4
Total	13

**Bachelor of Arts
Major in Mathematics**

Minimum required: 120 semester hours

General Requirements:

1. A minimum of 9 writing intensive hours and a total of 36 advanced hours are required to graduate. An advanced course is one that is numbered above 3000 and below 5000.
2. See the University College section of this catalog for general education core curriculum requirements.
3. Even though MATH 2471 is the first required mathematics course, some students will need to take courses numbered below 2471. Credit examinations in MATH 1315, 2417 and 2471 are available.
4. At least 32 hours are required in mathematics, and must include MATH 2471, 2472, 3330, 3380, 4307, 3373, 3377, 4315, and 4330; and three hours of advanced mathematics from the following courses: MATH 3305, 3323, 3325, 3348, 3375, 3398, 4305, 4306, 4336, or 4382.
5. See the list of minors under the Degrees and Programs section of this catalog. Minor and electives should be chosen in consultation with the academic advisor.

Freshman Year – 1st Semester	Hours	Freshman Year – 2nd Semester	Hours
US 1100	1	MATH 2471	4
ENG 1310	3	ENG 1320	3
HIST 1310	3	HIST 1320	3
COMM 1310	3	Natural Science Component (see gen. req. 2)	3-4
ART, DAN, MU, or TH 2313	3	PHIL 1305	3
Social Science Component (see gen. req. 2)	3		
Total	16	Total	16-17
Sophomore Year – 1st Semester	Hours	Sophomore Year – 2nd Semester	Hours
MATH 2472	4	MATH 3330	3
Minor (see gen. req. 5)	3	Minor (see gen. req. 5)	3
Modern Language 1410	4	CS 1428	4
Natural Science Component (see gen. req. 2)	4	Modern Language 1420	4
PFW one course	1	ENG Literature (see gen. req. 2)	3
Total	16	Total	17
Junior Year – 1st Semester	Hours	Junior Year – 2nd Semester	Hours
MATH 3377	3	MATH 3373	3
MATH 3380	3	MATH Advanced Elective (see gen. req. 4)	3
Minor (see gen. req. 1 & 5)	3	Minor (see gen. req. 1 & 5)	3
Modern Language 2310	3	Modern Language 2320	3
POSI 2310	3	POSI 2320	3
Total	15	Total	15
Senior Year – 1st Semester	Hours	Senior Year – 2nd Semester	Hours
MATH 4330	3	MATH 4307	3
Minor (see gen. req. 1 & 5)	3	MATH 4315	3
Electives (see gen. req. 1, 3 & 5)	2-3	Minor (see gen. req. 1 & 5)	3
PFW one course	1	Electives (see gen. req. 1, 3 & 5)	3
Second ENG Literature (see gen. req. 2)	3		
Total	12-13	Total	12

Bachelor of Arts
Major in Mathematics
(with Teacher Certification)

Minimum required: 120 semester hours

General Requirements:

1. A minimum of 9 writing intensive hours and a total of 36 advanced hours are required to graduate. An advanced course is one that is numbered above 3000 and below 5000.
2. See the University College section of this catalog for general education core curriculum requirements.
3. Even though MATH 2471 is the first required mathematics course, some students will need to take courses numbered below 2471. Credit examinations in MATH 1315, 2417 and 2471 are available.
4. At least 32 hours are required in mathematics and must include MATH 2471, 2472, 3330, 3380, 4307, 3305, 3315, 3377, 4304, and 4311.
5. A minor in Secondary Education is required.
6. Electives should be chosen in consultation with the academic advisor.

Freshman Year – 1st Semester	Hours	Freshman Year – 2nd Semester	Hours
US 1100	1	MATH 2472	4
ENG 1310	3	Modern Language 1420	4
HIST 1310	3	ENG 1320	3
MATH 2471	4	HIST 1320	3
Modern Language 1410	4	PHIL 1305	3
Total	15	Total	17
Sophomore Year – 1st Semester	Hours	Sophomore Year – 2nd Semester	Hours
MATH 3330	3	MATH 3305	3
MATH 3315	3	MATH 3377	3
Modern Language 2310	3	Modern Language 2320	3
Natural Science Component (see gen. req. 2)	3-4	Natural Science Component (see gen. req. 2)	4
Electives (see gen. req. 1, 3 & 6)	2-3	PFW one course	1
Total	15	Total	14
Sophomore Year – Summer I	Hours	Sophomore Year – Summer II	Hours
POSI 2310	3	POSI 2320	3
CS 1428	4	ENG Literature (see gen. req. 2)	3
Total	7	Total	6
Junior Year – 1st Semester	Hours	Junior Year – 2nd Semester	Hours
MATH 3380	3	MATH 4304	3
MATH 4311	3	MATH 4307	3
CI 4332	3	CI 3325	3
COMM 1310	3	Social Science Component (see gen. req. 2)	3
ART, DAN, MU, or TH 2313	3	PFW one course	1
Total	15	Total	13
Senior Year – 1st Semester	Hours	Senior Year – 2nd Semester	Hours
CI 4370	3	EDST 4681	6
CI 4343	3		
RDG 3323	3		
Second ENG Literature (see gen. req. 2)	3		
Total	12	Total	6

Bachelor of Science Major in Mathematics

Minimum required: 120 semester hours

General Requirements:

1. A minimum of 9 writing intensive hours and a total of 36 advanced hours are required to graduate. An advanced course is one that is numbered above 3000 and below 5000.
2. See the University College section of this catalog for general education core curriculum requirements.
3. If two years of the same language were taken in high school, then no additional language hours will be required for the degree. In the absence of such high school language, two semesters of the same modern language must be taken at the college level.
4. Even though MATH 2471 is the first required mathematics course, some students will need to take courses numbered below 2471. Credit examinations in MATH 1315, 2417 and 2471 are available.
5. At least 32 hours are required in mathematics and must include MATH 2471, 2472, 3330, 3380, 4307, 3373, 3377, 4315, and 4330; and three hours of advanced MATH from the following courses: MATH 3305, 3323, 3325, 3348, 3375, 3398, 4305, 4306, 4336, or 4382.
6. The fourth English course may be sophomore level English Literature or ENG 3303 Technical Writing.
7. See the list of minors under the Degrees and Programs section of this catalog. Minor and electives should be chosen in consultation with the academic advisor.

Freshman Year – 1st Semester	Hours	Freshman Year – 2nd Semester	Hours
US 1100	1	MATH 2471	4
ENG 1310	3	ENG 1320	3
HIST 1310	3	HIST 1320	3
COMM 1310	3	Natural Science Component (see gen. req. 2)	3-4
ART, DAN, MU, or TH 2313	3	PHIL 1305	3
Social Science Component (see gen. req. 2)	3		
Total	16	Total	16-17
Sophomore Year – 1st Semester	Hours	Sophomore Year – 2nd Semester	Hours
MATH 2472	4	MATH 3330	3
Minor (see gen. req. 7)	3	Minor (see gen. req. 7)	3
Natural Science Component (see gen. req. 2)	4	CS 1428	4
Electives (see gen. req. 1, 3, 4 & 7)	3	ENG Literature (see gen. req. 2)	3
PFW one course	1	Electives (see gen. req. 1, 3, 4 & 7)	3
Total	15	Total	16
Junior Year – 1st Semester	Hours	Junior Year – 2nd Semester	Hours
MATH 3377	3	MATH 3373	3
MATH 3380	3	MATH Advanced Elective (see gen. req. 6)	3
Minor (see gen. req. 1 & 7)	3	Minor (see gen. req. 1 & 7)	3
POSI 2310	3	POSI 2320	3
Electives (see gen. req. 1, 3, 4 & 7)	3	Electives (see gen. req. 1, 3, 4 & 7)	3
Total	15	Total	15
Senior Year – 1st Semester	Hours	Senior Year – 2nd Semester	Hours
MATH 4330	3	MATH 4307	3
Minor (see gen. req. 1 & 7)	3	MATH 4315	3
Electives (see gen. req. 1, 3, 4 & 7)	3-4	Minor (see gen. req. 1 & 7)	3
Fourth English course (see gen. req. 1, 2 & 6)	3	Electives (see gen. req. 1, 3 & 7)	4
PFW one course	1		
Total	13-14	Total	13

**Bachelor of Science
Major in Mathematics
(with Teacher Certification)**

Minimum required: 120 semester hours

General Requirements:

1. A minimum of 9 writing intensive hours and a total of 36 advanced hours are required to graduate. An advanced course is one that is numbered above 3000 and below 5000.
2. See the University College section of this catalog for general education core curriculum requirements.
3. If two years of the same language were taken in high school, then no additional language hours will be required for the degree. In the absence of such high school language, two semesters of the same modern language must be taken at the college level.
4. Even though MATH 2471 is the first required mathematics course, some students will need to take courses numbered below 2471. Credit examinations in MATH 1315, 2417 and 2471 are available. Electives should be chosen in consultation with the academic advisor.
5. At least 32 hours are required in mathematics and must include MATH 2471, 2472, 3330, 3380, 4307, 3305, 3315, 3377, 4304, and 4311.
6. The fourth English course may be sophomore level English Literature or ENG 3303 Technical Writing.
7. A minor in Secondary Education is required.

Freshman Year – 1st Semester	Hours	Freshman Year – 2nd Semester	Hours
US 1100	1	MATH 2472	4
ENG 1310	3	CS 1428	4
HIST 1310	3	ENG 1320	3
MATH 2471	4	HIST 1320	3
Social Science Component (see gen. req. 2)	3	PHIL 1305	3
Total	14	Total	17
Sophomore Year – 1st Semester	Hours	Sophomore Year – 2nd Semester	Hours
MATH 3330	3	MATH 3305	3
MATH 3315	3	MATH 3377	3
Natural Science Component (see gen. req. 2)	3-4	COMM 1310	3
Electives (see gen. req. 1, 3 & 4)	4-5	Electives (see gen. req. 1, 3 & 4)	3
PFW one course	1	Natural Science Component (see gen. req. 2)	4
Total	15	Total	16
Sophomore Year – Summer I	Hours	Sophomore Year – Summer II	Hours
POSI 2310	3	POSI 2320	3
ENG Literature (see gen. req. 2)	3	Total	3
Total	6		
Junior Year – 1st Semester	Hours	Junior Year – 2nd Semester	Hours
MATH 3380	3	MATH 4307	3
MATH 4311	3	MATH 4304	3
CI 4332	3	CI 3325	3
Electives (see gen. req. 1, 3 & 4)	3	Electives (see gen. req. 1, 3 & 4)	3
ART, DAN, MU, or TH 2313	3	Fourth English course (see gen. req. 6)	3
		PFW one course	1
Total	15	Total	16
Senior Year – 1st Semester	Hours	Senior Year – 2nd Semester	Hours
CI 4370	3	EDST 4681	6
CI 4343	3		
RDG 3323	3		
Electives (see gen. req. 1, 3 & 4)	3		
Total	12	Total	6

Minor in Mathematics

A minor in Mathematics requires at least 17 hours, including MATH 2471, 2472 and at least three courses above the 3000 and below the 5000 level other than MATH 3315, 4302, 4304, 4311, and 4382.

Courses in Mathematics (MATH)

1300 Pre-College Algebra. (1-3) A course to remediate and review basic academic skills in mathematics, including number concepts, computation, elementary algebra, geometry and mathematical reasoning. MATH 1300 will not constitute a part of the hours required for a bachelor's degree.

1311 Basic Mathematics. (1-3) A preparatory course for college algebra. Topics include linear equations and inequalities, rational expressions, exponents and radicals, quadratics and word problems. This course is designed for students who have graduated from high school with no more than the minimum mathematics requirements or for students who have been away from mathematics for a number of years. Prerequisite: MATH 1300 with a grade of "CR", Mathematics ACT score of at least 15 (SAT 320 or SAT re-centered 400), or a mathematics placement score of at least 14. MATH 1311 will not constitute a part of the hours required for a baccalaureate degree.

1315 (MATH 1314) College Algebra. (3-0) A course covering linear and quadratic equations, inequalities, word problems, functions, logarithms, systems of equations and other college algebra topics as time permits. Prerequisite: Mathematics ACT score of at least 21 (SAT 435 or SAT re-centered 480), a mathematics placement score of at least 26, or MATH 1311 with a grade of "C" or higher or "CR".

1316 A Survey of Contemporary Mathematics. (3-0) A study of the uses of mathematics in society today. Emphasis is on concepts rather than technical details. May not be used as a prerequisite for any other mathematics course. Prerequisite: Mathematics ACT score of at least 21 (SAT 435 or SAT re-centered 480), a mathematics placement score of at least 26, or MATH 1311 with a grade of "C" or higher or "CR".

1317 (MATH 1316) Plane Trigonometry. (3-0) A course covering trigonometric functions, right triangles, radian measure, graphs of trigonometric functions, trigonometric identities, including multiple and half-angle identities, inverse trigonometric functions, trigonometric equations, oblique triangles, and complex numbers. Prerequisite: MATH 1315 with a grade of "C" or higher.

1319 (MATH 1324) Mathematics for Business and Economics I. (3-0) Topics from college algebra and finite mathematics which apply to business and economics including applications of equations and inequalities, simple and compound interest and annuities. Prerequisite: Mathematics ACT score of at least 21 (SAT 435 or SAT re-centered 480), a mathematics placement score of at least 26, or MATH 1311 with a grade of "C" or higher or "CR".

1329 (MATH 1325) Mathematics for Business and Economics II. (3-0) Topics from finite mathematics and elementary differential calculus which apply to business and economics. Prerequisite: MATH 1315 or 1319 with a grade of "C" or higher.

2311 (MATH 1350) Principles of Mathematics I. (3-0) Logical deductive reasoning, number theory, a rational development of the real numbers with the associated number structures and algorithms for the fundamental operations, including historical, philosophical and cultural significance. Prerequisite: MATH 1315 with a grade of "C" or higher.

2312 (MATH 1351) Informal Geometry. (3-0) Geometric measuring, Euclidean Geometry, and topics associated with informal geometry, including historical, philosophical, and cultural significance. Prerequisite: MATH 2311 with a grade of "C" or higher.

2321 (MATH 2313) Calculus for Life Sciences I. (3-0) This course is designed to serve the needs of students in the life sciences. Topics will include: graphs, derivatives, exponents and logarithms, scientific notation, sequences, summation, and applications. Prerequisite: Mathematics ACT score of at least 24 (SAT 500 or SAT re-centered 520) or MATH 1315 with a grade of “C” or higher.

2328 (MATH 2342) Elementary Statistics. (3-0) Algebra-based introduction to descriptive statistics, random sampling, design of experiments, probability and the Central Limit Theorem. Inferential statistics topics include the foundational concepts for confidence intervals and hypothesis testing for simple experiments. Prerequisite: MATH 1315 with a grade of “C” or higher.

2331 Calculus for Life Science II. (3-0) Extension of MATH 2321. Topics will include: trigonometric functions, probability, integral calculus, differential equations, and applications. Prerequisite: MATH 2321 with a grade of “C” or higher.

2358 (MATH 2305) Discrete Mathematics I. (3-0) A study of discrete mathematical structures that are commonly encountered in computing hardware and software. Prerequisite: MATH 1315 with a grade of “C” or higher.

2417 (MATH 2412) Pre-Calculus Mathematics. (3-2) A survey of functions, trigonometry and analytic geometry to prepare students for calculus. Prerequisite: Mathematics ACT score of at least 24 (SAT 500 or SAT re-centered 520) or MATH 1315 with a grade of “C” or higher.

2471 (MATH 2413) Calculus I. (3-2) A first course in differential and integral calculus which stresses limits as well as the applications of calculus to the problems of science. Prerequisite: Mathematics ACT score of at least 26 (SAT 540 or SAT re-centered 560) or MATH 2363 or 2417 with a grade of “C” or higher.

2472 (MATH 2414) Calculus II. (3-2) A continuation of differential and integral calculus including methods of integration, sequences and series, and introduction to partial derivatives. Prerequisite: MATH 2471 with a grade of “C” or higher.

3305 Introduction to Probability and Statistics. (3-0) Basic probability models, generating functions and conditional probability, also discrete and continuous, univariate and bivariate distributions of random variables. Concepts of estimation, tests of hypothesis and statistical inference. Prerequisite: MATH 2472 with a grade of “C” or higher.

3315 Modern Geometry. (3-0) Modern geometry with an emphasis on the triangle, circle, plane and Euclidian geometry, an historical aspects will be integrated into the course. May not be applied toward a minor in mathematics. Prerequisites: MATH 2321 or 2471 with a grade of “C” or higher.

3323 Differential Equations. (3-0) A course covering solutions to the more common types of ordinary differential equations, especially those of first and second order, with emphasis on geometrical and physical interpretations. Prerequisite: MATH 2472 with a grade of “C” or higher.

3325 Number Systems. (3-0) Algebraic construction of the natural numbers. Covers the basic vocabulary and proof techniques of abstract algebra, and the structural properties of the natural numbers, integers, rational, real and complex number systems. Prerequisite or Co-requisite: MATH 2471.

3330 Introduction to Advanced Mathematics. (3-0) An introduction to the theory of sets, relations, functions, finite and infinite sets, and other selected topics. Algebraic structure and topological properties of Euclidean Space, and an introduction to metric spaces. Prerequisite: MATH 2471 with a grade of “C” or higher.

3348 Deterministic Operations Research. (3-0) This course provides a broad view of deterministic operations research techniques. Topics include dynamic programming, linear and integer programming, deterministic inventory models, and sequencing problems. Prerequisite: MATH 1315 with a grade of “C” or higher.

3373 Calculus III. (3-0) A course covering sequences and series, vectors, functions of several variables, partial derivatives, multiple integrals, line and surface integrals, and applications. Prerequisite: MATH 2472 with a grade of “C” or higher.

3375 Engineering Mechanics. (3-0) A course covering statics, using a vector approach to mechanics. The course is designed to satisfy the requirements of engineering Colleges. Prerequisite: PHYS 1430. Prerequisite or Co-requisite: MATH 2472.

3377 Linear Algebra. (3-0) An introductory course in linear algebra covering vector spaces, linear transformation, matrices, systems of linear equations, and inner product spaces. Prerequisite: MATH 2472 with a grade of “C” or higher.

3380 Analysis I. (3-0) A course covering the introduction to the theory of real functions. Topics include limits, continuity and derivatives and associated topics. Prerequisite: MATH 3330 with a grade of “C” or higher.

3398 Discrete Mathematics II. (3-0) A continuation of discrete Mathematics I. Prerequisite: MATH 2358 with a grade of “C” or higher.

4302 Principles of Mathematics II. (3-0) Algebraic reasoning and probability with selected topics from quantitative reasoning, measurement, statistics, and geometry are integrated with middle school pedagogical practices such as inquiry learning and use of technology. Appropriate correlated lessons, writing components, and culturally responsive teaching are incorporated. Prerequisite: MATH 2312 with a grade of “C” or higher.

4304 Math Understandings. (3-0) Basic concepts underlying algebra, geometry, trigonometry, and calculus taught from an advanced standpoint, including historical, philosophical, and cultural significance. May not be applied toward a minor in mathematics. Must be taken before student teaching. Prerequisite: MATH 3315 and 2331 or 2472 with grades of “C” or higher.

4305 Probability and Statistics. (3-0) A course covering sample spaces, probability of events, binomial and multinomial distributions, random variables, normal approximations, statistical inference, and applications. Prerequisite: MATH 3305 with a grade of “C” or higher.

4306 Fourier Series and Boundary Value Problems. (3-0) Advanced solution methods for differential equations; partial differential equations; series approximations, Fourier series; boundary value problems typical of scientific applications. Prerequisite: MATH 3323 with a grade of “C” or higher.

4307 Modern Algebra. (3-0) A course covering elementary set theory, structures, functions, and concepts of modern algebra. Prerequisites: MATH 3330 with a grade of “C” or higher and MATH 3325 or 3377 with a grade of “C” or higher.

(WI) **4311 Introduction to the History of Mathematics.** (3-0) A survey of the development of major mathematical topics, including geometry, algebra, calculus, and advanced mathematics. Philosophical and cultural aspects will be integrated with the structure, theorems, and applications of mathematics. May not be applied toward a minor in mathematics. Prerequisite: MATH 3315 with a grade of “C” or higher and MATH 2331 or 2472 with a grade of “C” or higher.

4315 Analysis II. (3-0) A continuation of MATH 3380. Topics include integration, series and sequences of functions and associated topics. Prerequisite: MATH 3380 with a grade of “C” or higher.

4330 General Topology. (3-0) Topics include introductory treatment of convergence, continuity, compactness, connectedness and fixed points in topological spaces with special emphasis on metric spaces. Prerequisite: MATH 3330 or 3380 with a grade of “C” or higher.

4336 Studies in Applied Mathematics. (3-0) Selected topics including Laplace transforms, complex variables, advanced calculus for applications, calculus of variations, integral equations, intermediate differential equations, vector analysis, etc. May be repeated once for credit with a different topic. Prerequisite: Consent of instructor.

(WI) **4382 The Literature and Modern History of Mathematics and Its Applications.**

(3-0) This course will focus on mathematical articles in recent journals. The articles will be re-written so that the proofs and comments are more easily understood by the casual reader. This embellishment of journal articles will take place in class with the class participating, in groups for outside work and as individual assignments. May not be applied toward a minor in mathematics. Prerequisites: A grade of "C" or higher in two of these three: MATH 3380, 4307, or 4330.