

**Degree Description**

Marketable Skills

1. Develop mathematical reasoning and problem-solving ability by applying a systematic, methodical approach to solve problems, including the ability to choose and apply the correct mathematical theories and techniques to solve practical problems in business, engineering, science and other disciplines.
2. Develop complex problem-solving and critical thinking skills by applying logic to structures and processes and draw conclusions from available information to evaluate options and implement solutions.
3. Analyze structure and organization of information, visually analyze relationships between parts and whole, examine data for relevance and accuracy, organize data into a usable form, analyze data to identify trends, patterns, or relationships among variables, and develop and test hypotheses through various data analyses.
4. Use computers to program, create functions, process information and display data.
5. Develop communication skills by clearly presenting technical information.

<b>Semester I</b>	<b>Hours</b>
<a href="#">MATH 2413 Calculus I</a>	4 hours
<a href="#">Elective</a> <sup>1</sup>	4 hours
<a href="#">ENGL 1301 Composition I</a>	3 hours
<a href="#">HIST 1301 United States History I</a>	3 hours
<a href="#">PSYC 1100 Learning Framework</a>	1 hours
	<b>15 hours</b>

<b>Semester II</b>	<b>Hours</b>
<a href="#">MATH 2414 Calculus II</a>	4 hours
<a href="#">Elective</a> <sup>2</sup>	4 hours
<a href="#">COSC 1336 Programming Fundamentals I</a>	3 hours
<a href="#">SPCH 1315 Public Speaking</a>	3 hours
<a href="#">HIST 1302 United States History II</a>	3 hours
	<b>17 hours</b>

<b>Semester III</b>	<b>Hours</b>
<a href="#">MATH 2415 Calculus III</a>	4 hours
<a href="#">MATH 2318 Linear Algebra</a>	3 hours
<a href="#">GOVT 2305 Federal Government</a>	3 hours
<a href="#">PSYC 2301 General Psychology</a> <i>or</i> <a href="#">SOCI 1301 Introduction to Sociology</a>	3 hours
<a href="#">ECON 2301 Principles of Macroeconomics</a>	3 hours
	<b>16 hours</b>

<b>Semester IV</b>	<b>Hours</b>
<a href="#">MATH 2320 Differential Equations</a>	3 hours
<a href="#">GOVT 2306 Texas Government</a>	3 hours
<a href="#">PHIL 1301 Introduction to Philosophy</a> <i>or</i> <a href="#">Elective</a> <sup>3</sup>	3 hours
<a href="#">MATH 1342 Elementary Statistical Methods</a>	3 hours
	<b>12 hours</b>

**Total hours: 60 hours**

- 1 Science course for majors of Math/Science.
- 2 Second science course for majors of Math/Science in chosen sequence.
- 3 Literature course.

# Course Descriptions

## MATH 2413 Calculus I

Limits and continuity; the Fundamental Theorem of Calculus; definition of the derivative of a function and techniques of differentiation; applications of the derivative to maximizing or minimizing a function; the chain rule, mean value theorem, and rate of change problems; curve sketching; definite and indefinite integration of algebraic, trigonometric, and transcendental functions, with an application to calculation of areas. Graphing calculator required. Prerequisite: MATH 2412 with a minimum grade of C, or both MATH 1314 and MATH 1316 with minimum grades of C, or passing score on non-credit equivalency exam for MATH 2412, or consent of division chair. Semester Hours 4 (4 lec)

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## ENGL 1301 Composition I

Intensive study of and practice in writing processes, from invention and researching to drafting, revising, and editing, both individually and collaboratively. Emphasis is on effective rhetorical choices, including audience, purpose, arrangement, and style. Focus is on writing the academic essay as a vehicle for learning, communication, and critical analysis. Prerequisite: TSI complete in Reading and Writing or the equivalent. Semester Hours 3 (3 lec)

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## HIST 1301 United States History I

A survey of the social, political, economic, cultural, and intellectual history of the United States from the pre-Columbian era to the Civil War/Reconstruction period. United States History I includes the study of pre-Columbian, colonial, revolutionary, early national, slavery and sectionalism, and the Civil War/Reconstruction eras. Themes that may be addressed in United States History I include: American settlement and diversity, American culture, religion, civil and human rights, technological change, economic change, immigration and migration, and creation of the federal government. NOTE: Must have passed the reading portion of the TSI Assessment or have credit for INRW 0402. Semester Hours 3 (3 lec)

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## PSYC 1100 Learning Framework

A study of the 1) research and theory in the psychology of learning, cognition, and motivation, 2) factors that impact learning, and 3) application of learning strategies. Theoretical models of strategic learning, cognition, and motivation serve as the conceptual basis for the introduction of college-level student academic strategies. Students use assessment instruments (e.g., learning inventories) to help them identify their own strengths and weaknesses as strategic learners. Students are ultimately expected to integrate and apply the learning skills discussed across their own academic programs and become effective and efficient learners. Students developing these skills should be able to continually draw from the theoretical models they have learned. (Cross-listed as EDUC 1100.) Semester Hour 1 (1 lec)

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## MATH 2414 Calculus II

Differentiation and integration of transcendental functions; parametric equations and polar coordinates; techniques of integration; sequences and series; improper integrals. Graphing calculator required. Prerequisite: MATH 2413 with a grade of C or better or consent of division chair. Semester Hours 4 (4 lec)

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## COSC 1336 Programming Fundamentals I

Introduces the fundamental concepts of structured programming and provides a comprehensive introduction to programming for computer science and technology majors. Topics include software development methodology, data types, control structures, functions, arrays, and the mechanics of running, testing and debugging. This course assumes computer literacy. Semester Hours 3 (3 lec)

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## SPCH 1315 Public Speaking

Application of communication theory and practice to the public speaking context, with emphasis on audience analysis, speaker delivery, ethics of communication, cultural diversity, and speech organizational techniques to develop students' speaking abilities, as well as ability to effectively evaluate oral presentations. Semester Hours 3 (3 lec)

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## HIST 1302 United States History II

A survey of the social, political, economic, cultural, and intellectual history of the United States from the Civil War/Reconstruction era to the present. United States History II examines industrialization, immigration, world wars, the Great Depression, Cold War and post-Cold War eras. Themes that may be addressed in United States History II include: American culture, religion, civil and human rights, technological change, economic change, immigration and migration, urbanization and suburbanization, the expansion of the federal government, and the study of U.S. foreign policy. NOTE: Must have passed the reading portion of the TSI Assessment or have credit for INRW 0402. Semester Hours 3 (3 lec)

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## MATH 2415 Calculus III

Advanced topics in calculus, including vectors and vector-valued functions, partial differentiation, Lagrange multipliers, multiple integrals, and Jacobians; application of the line integral, including Green's Theorem, the Divergence Theorem, and Stokes' Theorem. Graphing calculator required. Prerequisite: MATH 2414 with a grade of C or better or consent of division chair. Semester Hours 4 (4 lec)

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## MATH 2318 Linear Algebra

Introduces and provides models for application of the concepts of vector algebra. Topics include finite dimensional vector spaces and their geometric significance; representing and solving systems of linear equations using multiple methods, including Gaussian elimination and matrix inversion; matrices; determinants; linear transformations; quadratic forms; eigenvalues and eigenvector; and applications in science and engineering. Graphing calculator required. Prerequisite or corequisite: MATH 2414 or consent of division chair. Semester Hours 3 (3 lec)

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## GOVT 2305 Federal Government

Origin and development of the U.S. Constitution; structure and powers of the national government including the legislative, executive, and judicial branches; federalism; political participation; the national election process; public policy; civil liberties; and civil rights. NOTE: Must have passed the reading portion of the TSI Assessment or have credit for INRW 0402. Semester Hours 3 (3 lec)

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## PSYC 2301 General Psychology

General Psychology is a survey of the major psychological topics, theories and approaches to the scientific study of behavior and mental processes. NOTE: Must have passed the reading portion of the TSI Assessment or have credit for INRW 0402. Semester Hours 3 (3 lec)

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## SOCI 1301 Introduction to Sociology

The scientific study of human society, including ways in which groups, social institutions, and individuals affect each other. Causes of social stability and social change are explored through the application of various theoretical perspectives, key concepts, and related research methods of sociology. Analysis of social issues in their institutional context may include topics such as social stratification, gender, race/ethnicity, and deviance. Semester Hours 3 (3 lec)

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## ECON 2301 Principles of Macroeconomics

An analysis of the economy as a whole including measurement and determination of aggregate demand and aggregate supply, national income, inflation, and unemployment. Other topics include international trade, economic growth, business cycles, fiscal policy and monetary policy. Prerequisite: Must have passed the TSI Assessment or be concurrently enrolled in READ 0302. Semester Hours 3 (3 lec)

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## MATH 2320 Differential Equations

Ordinary differential equations, including linear equations, systems of equations, equations with variable coefficients, existence and uniqueness of solutions, series solutions, singular points, transform methods, and boundary value problems; application of differential equations to real-world problems. Graphing calculator required. Prerequisite or corequisite: MATH 2415 or consent of division chair. Semester Hours 3 (3 lec)

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**GOVT 2306 Texas Government**

Origin and development of the Texas constitution, structure and powers of state and local government, federalism and inter-governmental relations, political participation, the election process, public policy, and the political culture of Texas. NOTE: Must have passed the reading portion of the TSI Assessment or have credit for INRW 0402. Semester Hours 3 (3 lec)

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**PHIL 1301 Introduction to Philosophy**

A study of major issues in philosophy and/or the work of major philosophical figures in philosophy. Topics in philosophy may include theories of reality, theories of knowledge, theories of value, and their practical applications. Semester Hours 3 (3 lec)

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**MATH 1342 Elementary Statistical Methods**

Collection, analysis, presentation and interpretation of data, and probability. Analysis includes descriptive statistics, correlation and regression, confidence intervals and hypothesis testing. Use of appropriate technology is recommended. Graphing calculator required. Prerequisite: TSI math complete or MATH 0308 or completion of college-level math course or consent of division chair. Semester Hours 3 (3 lec)

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