

**Degree Description**

This program prepares students for employment and advancement as Computer Applications specialists and information systems managers. Emphasis is on operation of the following applications: advanced word processing, electronic spreadsheets, database and digital publishing.

<b>Semester I</b>	<b>Hours</b>
<a href="#">POFT 1393 Special Topics: Introduction to Keyboarding</a> <sup>1,2</sup> <i>or</i> <a href="#">POFT 2303 Speed and Accuracy Building</a>	3 hours
<a href="#">SOCI 1301 Introduction to Sociology</a> <i>or</i> <a href="#">PSYC 2301 General Psychology</a>	3 hours
<a href="#">PHIL 2306 Introduction to Ethics</a>	3 hours
<a href="#">POFT 1301 Business English</a>	3 hours
<a href="#">POFT 1309 Administrative Office Procedures I</a> <sup>5</sup>	3 hours
	<b>15 hours</b>
<b>Semester II</b>	<b>Hours</b>
<a href="#">Mathematics (college-level)</a> <i>or</i> <a href="#">Natural Sciences elective</a> <sup>5</sup>	3 hours
<a href="#">POFT 2312 Business Correspondence &amp; Communication</a> <sup>6</sup>	3 hours
<a href="#">ITSW 1301 Introduction to Word Processing</a> <sup>2</sup>	3 hours
<a href="#">POFT 1321 Business Math</a>	3 hours
<a href="#">ARTC 1313 Digital Publishing I</a> <sup>2,6</sup>	3 hours
	<b>15 hours</b>
<b>Semester III</b>	<b>Hours</b>
<a href="#">POFI 2340 Advanced Word Processing</a> <sup>5</sup>	3 hours
<a href="#">ARTC 1302 Digital Imaging I</a>	3 hours
<a href="#">POFT 2301 Intermediate Keyboarding</a>	3 hours
<a href="#">POFT 2386 Internship-Administrative Assistant/Sec</a> <sup>4,5</sup>	3 hours
<a href="#">GOVT 2305 Federal Government</a> <i>or</i> <a href="#">GOVT 2306 Texas Government</a> <i>or</i> <a href="#">ECON 2301 Principles of Macroeconomics</a>	3 hours
	<b>15 hours</b>
<b>Semester IV</b>	<b>Hours</b>
<a href="#">Communications elective</a> <sup>7</sup>	3 hours
<a href="#">ITSC 1309 Integrated Software Applications I</a>	3 hours
<a href="#">BMGT 1325 Office Management</a>	3 hours
<a href="#">POFT 2333 Advanced Keyboarding</a> <sup>3</sup>	3 hours
<a href="#">POFT 2387 Internship-Administrative Assistant/Sec</a> <sup>4,6</sup>	3 hours
	<b>15 hours</b>

**Total hours: 60 hours**

- <sup>1</sup> May be waived if the student has taken a keyboarding course (touch method) or if the student can keyboard at least 30 words per minute. Keyboarding test is required.
- <sup>2</sup> May be eligible for articulation through the statewide ATC program. Please check with your high school counselor for more details.
- <sup>3</sup> This is a Capstone course, which brings together skills and knowledge learned in other classes and applies them in decision-making situations and in completing job tasks. Check for prerequisites.
- <sup>4</sup> Must meet Guidelines for Internships and have approval of the program director to enroll in this course.
- <sup>5</sup> Offered only in the fall semester.
- <sup>6</sup> Offered only in the spring semester.
- <sup>7</sup> SPCH 1311, 1315, 1318, 1321

## Electives/General Education Courses

### Communications

<a href="#">ENGL 1301 Composition I</a>	3 hours
<a href="#">ENGL 2311 Technical &amp; Business Writing</a>	3 hours
<a href="#">COMM 1307 Introduction to Mass Communication</a>	3 hours
<a href="#">SPCH 1311 Introduction to Speech Communication</a>	3 hours
<a href="#">SPCH 1315 Public Speaking</a>	3 hours
<a href="#">SPCH 1321 Business &amp; Professional Communication</a>	3 hours

### Math

<a href="#">MATH 1314 College Algebra</a>	3 hours
<a href="#">MATH 1316 Plane Trigonometry</a>	3 hours
<a href="#">MATH 1324 Mathematics for Business &amp; Social Sciences</a>	3 hours
<a href="#">MATH 1325 Calculus for Business &amp; Social Sciences</a>	3 hours
<a href="#">MATH 1332 Contemporary Mathematics (Quantitative Reasoning)</a>	3 hours
<a href="#">MATH 1342 Elementary Statistical Methods</a>	3 hours
<a href="#">MATH 1350 Mathematics for Teachers I (Fundamentals of Mathematics I)</a>	3 hours
<a href="#">MATH 1351 Mathematics for Teachers II (Fundamentals of Mathematics II)</a>	3 hours
<a href="#">MATH 1442 Elementary Statistical Methods</a>	4 hours
<a href="#">MATH 2305 Discrete Mathematics</a>	3 hours
<a href="#">MATH 2318 Linear Algebra</a>	3 hours
<a href="#">MATH 2320 Differential Equations</a>	3 hours
<a href="#">MATH 2412 Pre-Calculus Mathematics</a>	4 hours
<a href="#">MATH 2413 Calculus I</a>	4 hours
<a href="#">MATH 2414 Calculus II</a>	4 hours
<a href="#">MATH 2415 Calculus III</a>	4 hours

### Natural Sciences

<a href="#">BIOL 1406 Biology for Science Majors I</a>	4 hours
<a href="#">BIOL 1407 Biology for Science Majors II</a>	4 hours
<a href="#">BIOL 1408 Biology for Non-Science Majors I</a>	4 hours
<a href="#">BIOL 1411 General Botany</a>	4 hours
<a href="#">BIOL 1413 General Zoology</a>	4 hours
<a href="#">BIOL 2401 Anatomy &amp; Physiology I</a>	4 hours
<a href="#">BIOL 2402 Anatomy &amp; Physiology II</a>	4 hours
<a href="#">BIOL 2404 Anatomy &amp; Physiology (specialized)</a>	4 hours
<a href="#">BIOL 2420 Microbiology for Non-Science Majors</a>	4 hours
<a href="#">CHEM 1405 Introductory Chemistry I</a>	4 hours
<a href="#">CHEM 1411 General Chemistry I</a>	4 hours
<a href="#">CHEM 1412 General Chemistry II</a>	4 hours
<a href="#">ENVR 1101 Environmental Science I (lab)</a>	1 hours
<a href="#">ENVR 1301 Environmental Science I (lecture)</a>	3 hours
<a href="#">ENVR 1102 Environmental Science II (lab)</a>	1 hours
<a href="#">ENVR 1302 Environmental Science II - Lecture</a>	3 hours
<a href="#">ENVR 1401 Environmental Science I (lecture + lab)</a>	4 hours
<a href="#">ENVR 1402 Environmental Science II</a>	4 hours
<a href="#">GEOL 1101 Earth Sciences I for Non-Science Majors (lab)</a>	1 hours
<a href="#">GEOL 1301 Earth Sciences I for Non-Science Majors (lecture)</a>	3 hours
<a href="#">GEOL 1401 Earth Sciences I for Non-Sciences Majors (lecture + lab)</a>	4 hours
<a href="#">GEOL 1403 Physical Geology (lecture + lab)</a>	4 hours
<a href="#">GEOL 1404 Historical Geology (lecture + lab)</a>	4 hours
<a href="#">PHYS 1401 College Physics I</a>	4 hours
<a href="#">PHYS 1402 College Physics II</a>	4 hours
<a href="#">PHYS 1403 Stars and Galaxies</a>	4 hours
<a href="#">PHYS 1404 Solar System</a>	4 hours
<a href="#">PHYS 1405 Elementary Physics I</a>	4 hours
<a href="#">PHYS 1407 Elementary Physics II</a>	4 hours
<a href="#">PHYS 2425 University Physics I</a>	4 hours
<a href="#">PHYS 2426 University Physics II</a>	4 hours

## Course Descriptions

### POFT 1393 Special Topics: Introduction to Keyboarding

Address topics recently identified current events, skills, knowledges, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student. Develops skill in keyboarding techniques with emphasis on alphabet, number, and symbol keys by touch and the development of acceptable speed and accuracy. Skills can be applied to computers and other equipment with keyboards. Emphasizes proper keyboarding technique. Semester Hours 3 (3 lec)

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### POFT 2303 Speed and Accuracy Building

Review, correct, and improve keyboarding techniques for the purpose of increasing speed and improving accuracy. This course is designed to be repeated multiple times to improve student proficiency. Prerequisite: POFT 1393. 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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### 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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### PHIL 2306 Introduction to Ethics

The systematic evaluation of classical and/or contemporary ethical theories concerning the good life, human conduct in society, morals, and standards of value. Semester Hours 3 (3 lec)

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### POFT 1301 Business English

Introduces the practical application of basic language usage skills with emphasis on fundamentals of writing and editing for business. Students will apply the basic rules of grammar, spelling, capitalization, number usage, and punctuation; utilize terminology applicable to technical and business writing; develop proofreading and editing skills; and teaches how to write effective sentences and paragraphs for business applications. Semester Hours 3 (3 lec)

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### POFT 1309 Administrative Office Procedures I

Studies current office procedures, duties, and responsibilities applicable to an office environment including telephone skills, time management, travel and meeting arrangements, mail processing, human relations and interview skills are covered. Offered only in fall semester. Semester Hours 3 (3 lec)

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### POFT 2312 Business Correspondence & Communication

Presents the development of writing skills and presentation skills to produce effective business documents. Offered only in spring semester. Prerequisite: POFT 1301 with a grade of C or better. Semester Hours 3 (3 lec)

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### ITSW 1301 Introduction to Word Processing

Presents an overview of the production of documents, tables, and graphics. Students will identify word processing terminology and concepts, create technical documents, format and edit documents, use simple tools and utilities, and print documents. Presents pagination, merging and storage of documents. Prerequisite: POFT 1393 with a grade of C or better or a keyboarding skill of 30 words a minute using touch method. Semester Hours 3 (2 lec/2 lab)

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### POFT 1321 Business Math

Instructs the fundamentals of business mathematics including analytical and problem-solving skills for critical thinking in business applications. Applies problem solving skills utilizing electronic calculators. Enables the student to use mathematical approaches in computing percents and their applications in business discounts, interest, taxes, payroll, markups, consumer and business credit investments, and other business applications. Semester Hours 3 (3 lec)

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### ARTC 1313 Digital Publishing I

Introduces the fundamentals of using digital layout as a primary publishing tool and the basic concepts and terminology associated with typography and page layout. Students learn to apply fundamentals of page layout, define typographic terminology and specifications, import text and graphics into page layout programs, and the course discusses file formats and file management. Offered only in spring semester. Prerequisite: ITSW 1301 with a grade of C or better. Semester Hours 3 (2 lec/2 lab)

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### POFI 2340 Advanced Word Processing

Presents advanced techniques in merging, macros, graphics, and desktop publishing. Includes extensive formatting for technical documents. Emphasis is on business applications. Students will design and create macros, use advanced formatting features, import data, and use graphic and special functions to enhance documents. Emphasizes advanced printing techniques. Offered only in fall semester. Prerequisite: ITSW 1301 with a grade of C or better or consent of the program director. Semester Hours 3 (2 lec/2 lab)

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### ARTC 1302 Digital Imaging I

Introduces raster image editing and/or image creation software: scanning, resolution, file formats, output devices, color systems, and image-acquisitions. Semester Hours 3 (2 lec/2 lab)

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### POFT 2301 Intermediate Keyboarding

Presents a continuation of keyboarding skills emphasizing acceptable speed and accuracy levels and formatting documents. Emphasis on proofreading, editing, following instructions, and keying documents from various copy. Formatting basic documents, such as letters, reports, tables and business forms. End-of-Course Competency Standard: Keyboard 50 words a minute with 5 or fewer errors. Prerequisites: POFT 1393 and ITSW 1301 with a grade of C or better and keyboarding skill of 30 words a minute using touch method. Semester Hours 3 (2 lec/3 lab)

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### POFT 2386 Internship-Administrative Assistant/Sec

Establishes a work-based learning experience that enables the student to apply specialized occupational theory, skills and concepts. A learning plan is developed by the college and the employer. This may be a paid or unpaid experience. Course covers interpersonal and job-related skills. Prerequisites: POFT 1309, ITSW 1301, POFI 2340 and POFT 2301 with a minimum grade of C. An approved work station and consent of program director. Semester Hours 3 (1 lec/15 lab)

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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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### 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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## **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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## **ITSC 1309 Integrated Software Applications I**

Introduces business productivity software suites using word processing, spreadsheets, databases, and/or presentation software. Semester Hours 3 (2 lec/2 lab)

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## **BMGT 1325 Office Management**

Presents systems, procedures, and practices related to organizing and planning office work, controlling employees' performance, and exercising leadership skills. Offered only in spring semester. Prerequisite: POFT 1301, POFT 1309, ITSW 1301, or POFT 2301 with a grade of C or better. Semester Hours 3 (3 lec)

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## **POFT 2333 Advanced Keyboarding**

Continues keyboarding skills in advanced document formatting, emphasizing speed, accuracy, and decision-making. Studies advanced concepts in a variety of office-simulated correspondence activities with emphasis on organization, prioritizing, decision-making, composition, placement, accuracy, and speed development. Students will apply mailability standards; produce alphabetic, alphanumeric, and numeric material; enhance proofreading and editing skills; and implement decision-making skills. Utilizes word processing software to create mailable copy. End-of-Course Competency Standard: Keyboard 60 WPM with 5 or fewer errors. Prerequisites: ITSW 1301, POFT 1309 or POFT 2301 with a grade of C or better and keyboard 50 words a minute using touch method. Semester Hours 3 (2 lec/3 lab)

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## **POFT 2387 Internship-Administrative Assistant/Sec**

Establishes a work-based learning experience that enables the student to apply specialized occupational theory, skills and concepts. A learning plan is developed by the college and the employer. This may be a paid or unpaid experience. Course covers ergonomics and interpersonal and job-related skills. Prerequisites: POFT 1309, ITSW 1301, POFT 2340 and POFT 2301 with a minimum grade of C. An approved workstation and consent of program director. Semester Hours 3 (1 lec/15 lab)

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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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## **ENGL 2311 Technical & Business Writing**

Intensive study of and practice in professional settings. Focus on the types of documents necessary to make decisions and take action on the job, such as proposals, reports, instructions, policies and procedures, e-mail messages, letters, and descriptions of products and services. Practice of individual and collaborative processes involved in the creation of ethical and efficient documents. Prerequisite: Passing score on writing portion of TSI Assessment or credit for ENGL 0301. Semester Hours 3 (3 lec)

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## **COMM 1307 Introduction to Mass Communication**

Survey of basic content and structural elements of mass media and their functions and influences on society. Semester Hours 3 (3 lec)

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## **SPCH 1311 Introduction to Speech Communication**

Introduces basic human communication principles and theories embedded in a variety of contexts, including interpersonal, small group, and public speaking. 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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## **SPCH 1321 Business & Professional Communication**

Study and application of communication within the business and professional context. Special emphasis will be given to communication competencies in presentations, dyads, teams, and technologically mediated formats. Semester Hours 3 (3 lec)

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## **MATH 1314 College Algebra**

In-depth study and applications of polynomial, rational, radical, exponential and logarithmic functions, and systems of equations using matrices. Additional topics such as sequences, series, probability, and conics may be included. Graphing calculator required. Recommended Prerequisite: TSI complete. Prerequisite: MATH 0311 or consent of division chair. Semester Hours 3 (3 lec)

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## **MATH 1316 Plane Trigonometry**

In-depth study and applications of trigonometry including definitions, identities, inverse functions, solutions of equations, graphing, and solving triangles. Additional topics such as vectors, polar coordinates and parametric equations may be included. Graphing calculator required. Prerequisite: MATH 1314 with a minimum grade of C, or passing score on non-credit equivalency exam for MATH 1314, or consent of division chair. Semester Hours 3 (3 lec)

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## **MATH 1324 Mathematics for Business & Social Sciences**

The application of common algebraic functions, including polynomial, exponential, logarithmic and rational, to problems in business, economics and the social sciences are addressed. The applications include mathematics of finance, including simple and compound interest and annuities; systems of linear equations; matrices, linear programming; and probability, including expected value. Prerequisite: MATH 0311 or consent of division chair. Semester Hours 3 (3 lec)

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## **MATH 1325 Calculus for Business & Social Sciences**

This course is the basic study of limits and continuity, differentiation, optimization and graphing, and integration of elementary functions, with emphasis on applications in business, economics and social sciences. This course is not a substitute for MATH 2413, Calculus I. Prerequisite: MATH 1324 or equivalent or consent of division chair. Semester Hours 3 (3 lec)

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## **MATH 1332 Contemporary Mathematics (Quantitative Reasoning)**

Intended for Non STEM (Science, Technology, Engineering, and Mathematics) majors. Topics include introductory treatments of sets and logic, financial mathematics, probability and statistics with appropriate applications. Number sense, proportional reasoning, estimation, technology, and communication should be embedded throughout the course. Additional topics may be covered. Graphing calculator required. Prerequisite: TSI math complete or MATH 0308 or consent of division chair. 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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### **MATH 1350 Mathematics for Teachers I (Fundamentals of Mathematics I)**

This course is intended to build or reinforce a foundation in fundamental mathematics concepts and skills. It includes the conceptual development of the following: sets, functions, numeration systems, number theory, and properties of the various number systems with an emphasis on problem solving and critical thinking. Prerequisite: MATH 1314/1414 College Algebra or the equivalent or consent of division chair. Semester Hours 3 (3 lec)

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### **MATH 1351 Mathematics for Teachers II (Fundamentals of Mathematics II)**

This course is intended to build or reinforce a foundation in fundamental mathematics concepts and skills. It includes the concepts of geometry, measurement, probability, and statistics with an emphasis on problem solving and critical thinking. Prerequisite: MATH 1314/1414 College Algebra Semester Hours 3 (3 lec)

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### **MATH 1442 Elementary Statistical Methods**

Collection, analysis, presentation and interpretation of data, and probability. Analysis includes descriptive statistics, correlation and regression, confidence intervals and hypothesis testing. The course will include application problems and projects using real world data. Use of appropriate technology is recommended. Prerequisites: MATH 1442 or consent of the division chair. Semester Hours 4 (3 lec/2 lab)

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### **MATH 2305 Discrete Mathematics**

A course designed to prepare math, computer science, and engineering majors for a background in abstraction, notation, and critical thinking for the mathematics most directly related to computer science. Topics include: logic, relations, functions, basic set theory, countability and counting arguments, proof techniques, mathematical induction, combinatorics, discrete probability, recursion, sequence and recurrence, elementary number theory, graph theory, and mathematical proof techniques. Prerequisite: MATH 2413 with a grade of C or better. Semester Hours 3 (3 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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### **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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### **MATH 2412 Pre-Calculus Mathematics**

In-depth combined study of algebra, trigonometry, and other topics for calculus readiness. Prerequisite: MATH 1314 with a minimum grade of C, or passing score on non-credit equivalency exam for MATH 1314, or consent of division chair. Semester Hours 4 (4 lec)

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### **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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### **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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### **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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### **BIOL 1406 Biology for Science Majors I**

Fundamental principles of living organisms will be studied, including physical and chemical properties of life, organization, function, evolutionary adaptation, and classification. Concepts of cytology, reproduction, genetics, and scientific reasoning are included. NOTE: Must have passed the reading and writing portion of the TSI Assessment or have credit for INRW 0402. Semester Hours 4 (3 lec/3 lab)

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### **BIOL 1407 Biology for Science Majors II**

The diversity and classification of life will be studied, including animals, plants, protists, fungi, and prokaryotes. Special emphasis will be given to anatomy, physiology, ecology, and evolution of plants and animals. Prerequisite: BIOL 1406 with a minimum grade of C. Semester Hours 4 (3 lec/3 lab)

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### **BIOL 1408 Biology for Non-Science Majors I**

Provides a survey of biological principles with an emphasis on humans, including chemistry of life, cells, structure, function, and reproduction. Semester Hours 4 (3 lec/3 lab)

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### **BIOL 1411 General Botany**

Fundamental biological concepts relevant to plant physiology, life cycle, growth and development, structure and function, and cellular and molecular metabolism. Includes the role of plants in the environment, evolution, and phylogeny of major plant groups, algae, and fungi. This course is intended for science majors. Semester Hours 4 (3 lec/3 lab)

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### **BIOL 1413 General Zoology**

Fundamental biological concepts relevant to animals, including systematics, evolution, structure and function, cellular and molecular metabolism, reproduction, development, diversity, phylogeny, and ecology. This course is intended for science majors. Semester Hours 4 (3 lec/3 lab)

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### **BIOL 2401 Anatomy & Physiology I**

Anatomy and Physiology I is the first part of a two-course sequence. It is a study of the structure and function of the human body including cells, tissues and organs of the following systems: integumentary, skeletal, muscular, and nervous and special senses. Emphasis is on interrelationships among systems and regulation of physiological functions involved in maintaining homeostasis. NOTE: Must have passed the reading and writing portion of the TSI Assessment or have credit for INRW 0402. Semester Hours 4 (3 lec/3 lab)

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### **BIOL 2402 Anatomy & Physiology II**

Anatomy and Physiology II is the second part of a two-course sequence. It is a study of the structure and function of the human body including the following systems: endocrine, cardiovascular, immune, lymphatic, respiratory, digestive (including nutrition), urinary (including fluid and electrolyte balance), and reproductive (including human development and genetics). Emphasis is on interrelationships among systems and regulation of physiological functions involved in maintaining homeostasis. Prerequisite: BIOL 2401 with a grade of C or better. Semester Hours 4(3 lec/3 lab)

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## **BIOL 2404 Anatomy & Physiology (specialized)**

Study of the structure and function of human anatomy, including the neuroendocrine, integumentary, musculoskeletal, digestive, urinary, reproductive, respiratory, and circulatory systems. Content may be either integrated or specialized. Semester Hours 4 (3 lec/3 lab)

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## **BIOL 2420 Microbiology for Non-Science Majors**

This course covers basic microbiology and immunology and is primarily directed at pre-nursing, pre-allied health, and non-science majors. It provides an introduction to historical concepts of the nature of microorganisms, microbial diversity, the importance of microorganisms and acellular agents in the biosphere, and their roles in human and animal diseases. Major topics include bacterial structure as well as growth, physiology, genetics, and biochemistry of microorganisms. Emphasis is on medical microbiology, infectious diseases, and public health. Prerequisite: BIOL 1406, 1408, 1409, 2401 or 2404 with a grade of C or better. Semester Hours 4 (3 lec/3 lab)

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## **CHEM 1405 Introductory Chemistry I**

Survey course introducing chemistry. Topics may include inorganic, organic, biochemistry, food/physiological chemistry, and environmental/consumer chemistry. Designed for allied health students and for students who are not science majors. Semester Hours 4 (3 lec/3 lab)

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## **CHEM 1411 General Chemistry I**

Fundamental principles of chemistry for majors in the sciences, health sciences, and engineering; topics include measurements, fundamental properties of matter, states of matter, chemical reactions, chemical stoichiometry, periodicity of elemental properties, atomic structure, chemical bonding, molecular structure, solutions, properties of gases, and an introduction to thermodynamics and descriptive chemistry. Includes basic laboratory experiments supporting theoretical principles presented in CHEM 1411, as well as an introduction of the scientific method, experimental design, data collection and analysis, and preparation of laboratory reports. Prerequisite: MATH 1314 with a minimum grade of C, passing score on non-credit equivalency exam for MATH 1314, or consent of division chair. High school chemistry is strongly recommended. Semester Hours 4 (3 lec/3 lab)

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## **CHEM 1412 General Chemistry II**

Chemical equilibrium, phase diagrams and spectrometry, acid-base concepts, thermodynamics, kinetics, electrochemistry, nuclear chemistry, an introduction to organic chemistry and descriptive inorganic chemistry. Includes basic laboratory experiments supporting theoretical principles presented in CHEM 1412, as well as an introduction of the scientific method, experimental design, chemical instrumentation, data collection and analysis, and preparation of laboratory reports. Prerequisite: CHEM 1411 with a grade of C or better. Semester Hours 4 (3 lec/4 lab)

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## **ENVR 1101 Environmental Science I (lab)**

This laboratory-based course accompanies ENVR 1301 Environmental Science (lecture). Activities will cover methods used to collect and analyze environmental data. Prerequisite: Credit for or concurrent enrollment in ENVR 1301. Semester Hour 1 (3 lab)

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## **ENVR 1301 Environmental Science I (lecture)**

A survey of the forces, including humans, that shape our physical and biologic environment, and how they affect life on Earth. Introduction to the science and policy of global and regional environmental issues, including pollution, climate change, and sustainability of land, water, and energy resources. Semester Hours 3 (3 lec)

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## **ENVR 1102 Environmental Science II (lab)**

General interest course requiring a minimum of previous science background and relating scientific knowledge to problems involving energy and the environment. Lab exercises relate scientific knowledge to problems involving energy and the environment. Includes research projects related to the historical development of current environmental practices and concerns. May include other research projects dealing with current or potential environmental concerns. Prerequisite: Credit for or concurrent enrollment in ENVR 1302. Semester Hour 1 (3 lab)

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## **ENVR 1302 Environmental Science II - Lecture**

General interest course requiring a minimum of previous science background and relating scientific knowledge to problems involving energy and the environment. Semester Hours 3 (3 lec)

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## **ENVR 1401 Environmental Science I (lecture + lab)**

A survey of the forces, including humans, that shape our physical and biologic environment, and how they affect life on Earth. Introduction to the science and policy of global and regional environmental issues, including pollution, climate change, and sustainability of land, water, and energy resources. The laboratory activities will cover methods used to collect and analyze environmental data. Semester Hours 4 (3 lec/3 lab)

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## **ENVR 1402 Environmental Science II**

General interest course requiring a minimum of previous science background and relating scientific knowledge to problems involving energy and the environment. Lab exercises relate scientific knowledge to problems involving energy and the environment. Includes research projects related to the historical development of current environmental practices and concerns. May include other research projects dealing with current or potential environmental concerns. Semester Hours 4 (3 lec/3 lab)

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## **GEOL 1101 Earth Sciences I for Non-Science Majors (lab)**

This laboratory-based course accompanies GEOL 1301 Earth Sciences I. Activities will cover methods used to collect and analyze data in geology, meteorology, oceanography and astronomy. Prerequisite: GEOL 1301. Semester Hours 1 (3 lab)

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## **GEOL 1301 Earth Sciences I for Non-Science Majors (lecture)**

Survey of geology, meteorology, oceanography and astronomy. Semester Hours 3 (3 lec)

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## **GEOL 1401 Earth Sciences I for Non-Sciences Majors (lecture + lab)**

Survey of geology, meteorology, oceanography, and astronomy. The lab activities will cover methods used to collect and analyze data in geology, meteorology, oceanography and astronomy. Semester Hours 4 (3 lec/3 lab)

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## **GEOL 1403 Physical Geology (lecture + lab)**

Introduction to the study of the materials and processes that have modified and shaped the surface and interior of Earth over time. These processes are described by theories based on experimental data and geologic data gathered from field observations. Laboratory activities will cover methods used to collect and analyze earth science data. Semester Hours 4 (3 lec/3 lab)

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## **GEOL 1404 Historical Geology (lecture + lab)**

A comprehensive survey of the history of life and major events in the physical development of Earth as interpreted from rocks and fossils. Laboratory activities will introduce methods used by scientists to interpret the history of life and major events in the physical development of earth from rocks and fossils. Prerequisite: GEOL 1303 or 1403. Semester Hours 4 (3 lec/3 lab)

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## **PHYS 1401 College Physics I**

Fundamental principles of physics, using algebra and trigonometry; the principles and applications of classical mechanics and thermodynamics, including harmonic motion, mechanical waves and sound, physical systems, Newton's Laws of Motion, and gravitation and other fundamental forces; with emphasis on problem solving. Prerequisite: MATH 1316, 2412 or 2413 with a grade of C or better. Semester Hours 4 (3 lec/3 lab)

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**PHYS 1402 College Physics II**

Fundamental principles of physics, using algebra and trigonometry; the principles and applications of electricity and magnetism, including circuits, electrostatics, electromagnetism, waves, sound, light, optics, and modern physics topics; with emphasis on problem solving. Prerequisite: PHYS 1401. Semester Hours 4 (3 lec/3 lab)

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**PHYS 1403 Stars and Galaxies**

Study of stars, galaxies, and the universe outside our solar system. Semester Hours 4 (3 lec/3 lab)

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**PHYS 1404 Solar System**

Study of the sun and its solar system, including its origin. Semester Hours 4 (3 lec/3 lab)

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**PHYS 1405 Elementary Physics I**

Conceptual level survey of topics in physics intended for liberal arts and other non-science majors. Semester Hours 4 (3 lec/3 lab)

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**PHYS 1407 Elementary Physics II**

Conceptual level survey of topics in physics intended for liberal arts and other non-science majors. Semester Hours 4 (3 lec/3 lab)

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**PHYS 2425 University Physics I**

Fundamental principles of physics using calculus for science, computer science, and engineering majors; the principles and applications of classical mechanics, including harmonic motion, physical systems and thermodynamics; and emphasis on problem solving. Prerequisite: MATH 2413 with a grade of C or better. Semester Hours 4 (3 lec/3 lab)

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**PHYS 2426 University Physics II**

Principles of physics using calculus for science, computer science, and engineering majors, involving the principles of electricity and magnetism, including circuits, electromagnetism, waves, sound, light, and optics. Prerequisites: PHYS 2425 and MATH 2414 with a grade of C or better. Semester Hours 4 (3 lec/3 lab)

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