

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

Course Code	Course Title	Credits	Course Description
ACCT 1060	Principles of Financial Accounting	3	This course introduces fundamental principles and concepts of financial accounting, providing students with a comprehensive understanding of the financial reporting process. Topics covered include the accounting cycle, preparation of financial statements, and analysis of financial information. Students will develop the skills necessary to analyze, interpret, and communicate financial information to support decision-making.
ACCT 2034	Financial Accounting Analysis Conspectus	3	This course introduces the basic understanding of accounting requirements, concepts and principles of financial accounting. Students will learn how to prepare financial reports, evaluate managing financial information records, interpret financial information for economic decisions, accrual accounting principles, financial statement preparation and analysis, assets and liabilities measurement. Students will gain the knowledge and skills necessary to prepare, present, and analyze financial information. In analyzing case studies and practices, students fully appreciate the pervasive impact of accounting as both a technical and a social practice in the real world.
ACCT 2050	Introduction to Managerial Accounting	3	Managerial accounting is a foundational course designed to provide students with an understanding of the principles and techniques used in managerial decision-making and performance evaluation. The course focuses on the use of accounting information for planning, controlling, and decision-making within organizations. Topics covered include cost behavior, cost-volume-profit analysis, budgeting, variance analysis, performance measurement, and relevant costing.
ACCT 3700	Taxes and Business Decisions	3	This course explores the intricate relationship between tax policies and business decision-making. Students will gain a comprehensive understanding of how taxes impact various business operations and strategies. The course covers key areas, including corporate taxation, international tax issues, tax planning, and the ethical considerations of tax decisions. Through a combination of theoretical frameworks and practical applications, students will learn to navigate and optimize tax-related business decisions in a global economy.
ARTH 1060	The History of Art II	3	This is an immersive and comprehensive exploration of the history of art, architecture, and intellectual thought from a global perspective, spanning the Early Renaissance to the close of the nineteenth century. This course offers students an in-depth understanding of the evolution of artistic expression, the social and cultural contexts that shaped it, and the interplay between art and broader human history. Through the course, students will embark on a captivating journey through pivotal moments in art and architecture.
ARTH 1109	Foundations of Drawing	3	This course is designed to introduce students to the essential skills and techniques in drawing through observation. It emphasizes the development of fundamental technical, perceptual, and conceptual skills using common drawing media. Students will learn how to approach the world visually, translate what they observe into drawings, and understand how various drawing methods can aid in creating effective pictorial compositions. The focus is on honing skills required for accurate and expressive representations while understanding how to organize visual elements in a coherent composition.
ARTH 1160	History of Jazz	3	This course provides a general survey of the history of jazz from its beginnings to the present. Students will explore the historical, theoretical, and critical dimensions of jazz, coupled with hands-on experience in the creative process. The curriculum emphasizes a study of the stylistic and historical components of jazz, including an analysis of influential jazz composers and performers. The course places these elements within the broader context of cultural and artistic movements in the world.
ARTH 1300	Foundation of 3D Design	3	Foundations of 3D Design introduces students to the principles, processes, and practices of three-dimensional design. Through hands-on projects and critical discussions, students explore form, space, material, structure, and meaning. Emphasis is placed on experimentation, problem-solving, and the development of visual and spatial thinking skills. The course encourages students to bridge conceptual ideas with physical making, preparing them for advanced work in art, design, architecture, and related fields.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

ARTH 2143	Eighteenth-Century European Art	3	Eighteenth-century European art embodies a period of profound cultural, social, and political transformation. Through close examination of painting, sculpture, architecture, and decorative arts, this course explores the aesthetic developments of the century, from the splendor of Rococo to the intellectual rigor of Neoclassicism. Students will analyze how art was created, the conditions of artistic production, and the shifting roles of artists within religious, political, and aristocratic patronage systems. Topics include artistic techniques and materials, the circulation of objects and ideas, and the intersection of art with Enlightenment thought, colonialism, and emerging modernity.
ARTH 2233	The History of Animation	3	The course covers the history of animation from its earliest forms to the present day, exploring various animation techniques, significant animators, and the cultural context in which animation has developed. It also examines the interplay between animation and related disciplines, such as narrative filmmaking, experimental cinema, comic art, and other visual arts. By learning this course, students should have a solid foundation in the history of animation, an appreciation for the diversity of animation styles and techniques.
ARTH 2610	Critical Theories of Contemporary Art	3	This course examines contemporary art through major critical and theoretical frameworks that have shaped artistic practice, interpretation, and institutional contexts since the mid-twentieth century. Moving beyond stylistic analysis, the course emphasizes debates around modernism and postmodernism, power, identity, globalization, capitalism, and technology. Students will engage with key texts by art historians, critics, and theorists while analyzing artworks, exhibitions, and institutions to understand how contemporary art both reflects and contests social, political, and cultural conditions.
ARTH 3065	2D Animation Production	3	This course immerses students in the creation of 2D digital animations, focusing on the development of original concepts and visual storytelling. Students will gain practical experience in design, animation techniques, and the integration of sound and motion. Emphasis is placed on building technical proficiency with animation software and applying creative processes to produce polished, narrative-driven projects. Throughout the course, students will work on individual animations, receiving regular feedback to refine their skills and conceptual development. The course concludes with a final portfolio of completed animations.
ARTH 3261	Asian Art and Architecture	3	This course provides a comprehensive exploration of the art and architecture of Asia, tracing its development from ancient civilizations to the modern era. Students will study both monumental structures and portable art objects, with a focus on a wide array of media such as painting, ceramics, textiles, and photography. In addition to architectural landmarks, the course emphasizes how different artistic traditions within Asia have interacted with one another and with global influences. By examining the diversity and evolution of these forms, students will gain a deeper understanding of the dynamic and interconnected cultural exchanges that shape Asian art, challenging traditional notions of what constitutes "Asian art."
ARTH 3701	Music History	3	This course explores the rich tapestry of European music from the Middle Ages to the present. Delve into the evolution of musical styles, key composers, and the cultural contexts that shaped the sounds of these eras. This course offers a fascinating journey through the evolution of musical styles, composers, and cultural influences that have shaped Western music over several centuries.
ASTR 1035	Stars and Galaxies	3	This course introduces students to fundamental ideas in modern astronomy, focusing on how stars generate energy, how stellar systems evolve, and how large-scale cosmic structures develop over time. Students examine current scientific explanations for the origin, organization, and long-term evolution of the Universe, including stars, planets, and galaxies. Emphasis is placed on how observational evidence and theoretical models work together to build scientific understanding beyond everyday experience. It satisfies a Natural Sciences core requirement and prepares students for further study in astronomy or related fields.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

BIOL 1014	Introduction to Insect Biology	4	This course aims to introduce students to basic insect biology, evolution, and comparative taxonomy. Insects impact society through their role as pests in agricultural, medical, and urban sectors, as well as their beneficial roles and biological control in ecosystems. We will also cover how certain insects, such as fruit flies, serve as excellent models for scientific research. Additionally, students will explore the incredible biodiversity represented by insects and their application in fundamental biological principles and scientific processes. Through this course, students will gain a deeper understanding of the insect world and establish a solid foundation for future learning and research.
BIOL 1128	Human Biology	3	This course provides an in-depth exploration of the fundamental mechanisms that govern human life. Emphasizing the relationship between structure and function, it examines how molecular and cellular processes underlie the organization and operation of human systems. Students will investigate genetic expression, biochemical pathways, and physiological regulation to understand how the human body maintains homeostasis and responds to environmental and internal changes. The course also applies biological principles to contemporary health issues, disease mechanisms, biotechnology, and bioethical debates. Through lecture, discussion, and laboratory exercises, students develop an integrated understanding of the human organism and its biological foundations.
BIOL 1244	Exploration to General Biology I	4	This course provides an introduction to the fundamental principles of biology, emphasizing the structure and function of living organisms, cellular processes, genetics, evolution, and ecology. Students will explore the molecular and chemical basis of life, the organization of cells, metabolic pathways, and the mechanisms of inheritance and natural selection. The course integrates scientific inquiry, experimental design, and data analysis to develop a foundational understanding of biological systems. This course is designed for students pursuing life sciences and related fields, preparing them for advanced biological studies.
BIOL 2010	Introduction to Genetics	4	This course provides an introduction to the fundamental principles of genetics, exploring both classical and molecular genetics. Topics covered include Mendelian genetics, chromosome mapping, the genetic code, DNA repair and mutations, the genetics of cancer, DNA technology, and epigenetics. The course will include both lecture and laboratory components, allowing students to apply theoretical knowledge through hands-on experiments and data analysis.
BIOL 3250	Developmental Biology and Physiology	4	This course comprehensively explores the principles of development and comparative physiology. It enables students to deeply study the intricate processes of organism growth, development, and the physiological mechanisms maintaining life, fostering a holistic understanding.
BIOL 3302	Molecular Genetics and Evolution	4	This course is designed to provide students with an exploration of the chromosomal and molecular basis of gene transmission and function. It covers strategies for constructing genetic and physical maps of genes and genomes, as well as methods for isolating specific genes. The course also examines regulatory mechanisms for gene expression in both prokaryotic and eukaryotic organisms through various examples. Additionally, it introduces key concepts in genetic analysis, including principles of heredity, mutation, and recombination. Students will gain hands-on experience through laboratory exercises, reinforcing their understanding of theoretical concepts. By integrating lectures, discussions, and practical applications, the course aims to equip students with a comprehensive understanding of molecular genetics. Students are expected to have a foundational background in biology to fully engage with and apply the concepts discussed in the course.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

BUSI 1002	Introduction to Business	3	A foundational understanding of business is essential for professionals in the creative industries. This course introduces students to the principles and practices that shape modern business operations, with emphasis on entrepreneurship, management, finance, marketing, and global dynamics. Students explore how businesses function within economic, social, and technological contexts while examining ethical and sustainable approaches to decision-making. Through case studies and real-world applications, the course connects core business concepts — such as accounting, human resources, intellectual property, and branding — to creative and cultural enterprises.
BUSI 1900	Introduction to Business Law	3	Introduction to Business Law is designed to provide students with a foundational understanding of the legal principles and concepts that govern business activities. Through the exploration of various legal topics, including contracts, torts, agency, business entities, and intellectual property, students will develop essential skills in legal reasoning, analysis, and application within the context of business operations. The course emphasizes the practical implications of legal principles for decision-making and risk management in a business setting.
BUSI 2212	Professional Business Writing	3	This comprehensive course is designed to equip students with the essential skills needed to communicate effectively within the dynamic and diverse environments of organizations, spanning corporations, government agencies, and non-profit organizations. The course focuses on developing students' proficiency in written communication, a critical aspect of professional success in various career paths that demand substantial interaction within and outside organizations.
BUSI 3037	International Business	3	This course examines the global forces that shape international business activity and influence how nations, institutions, and markets interact. Students explore the social and economic effects of globalization, considering how geography, culture, governance, and resource distribution affect participation in the world economy. Emphasis is placed on understanding disparities in development and the varying impacts of global integration, including issues such as human rights, labor conditions, access to education, and trade policy. The course provides a broad analytical foundation for evaluating opportunities and challenges in the global business environment.
BUSI 3132	Foundations of Management Information Systems	3	This course provides students with an integrated understanding of management information systems (MIS) and the practical application of Microsoft Excel and Access to solve real-world business problems. Emphasizing the role of technology in organizational management and strategy, the course explores how data is collected, stored, analyzed, and transformed into actionable insights. Through hands-on exercises and projects using Excel and Access, students will learn to design, implement, and manage data-driven business solutions. The course also prepares students with the skills and knowledge necessary to pursue Microsoft Office Specialist (MOS) certifications in Excel and Access.
BUSI 3220	Business, Government and Society	3	It focuses on how economic, political, and social factors shape the business environment and international trade policies. The course emphasizes the grand scale of management and responsibility, where decisions have far-reaching effects on both business and society. This course also focuses on policies that affect millions of people and often have implications for every firm doing business globally.
BUSI 4750	Advanced Business Research	3	This course examines the principles and practices of applied business research with a focus on business, finance, and economics decision-making. It introduces students to the complete research process, from identifying managerial problems and formulating research objectives to designing research projects, collecting data, conducting statistical analysis, and communicating actionable recommendations. Through applied exercises, data analysis labs, and a comprehensive research project, the course develops students' ability to evaluate evidence critically and support managerial decisions using data-driven insights.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

CHEM 1721	General Chemistry I	4	General Chemistry I is an introductory course that provides students with a foundational understanding of the principles and theories of chemistry. Topics covered include atomic structure, chemical bonding, stoichiometry, kinetic molecular description of the states of matter. Emphasis will be placed on developing problem-solving skills and critical thinking in the context of chemical phenomena. Laboratory experiments and demonstrations will complement theoretical concepts to enhance understanding.
CHEM 1722	General Chemistry II	4	General Chemistry II is a continuation of General Chemistry I, focusing on advanced topics in chemistry, including chemical equilibrium, thermodynamics, kinetics, electrochemistry, and descriptive inorganic chemistry. The course aims to deepen students' understanding of chemical principles and their applications in various fields of science and technology. Laboratory experiments and problem-solving exercises will reinforce theoretical concepts.
CHEM 2310	Organic Chemistry I	4	Organic Chemistry I serves as an introduction to the foundational principles of organic chemistry. The course focuses on the structures, properties, and chemical reactivity of carbon atoms in different hybridization states, particularly in alkanes (including cycloalkanes), alkenes, and alkynes. Additionally, various aspects of isomerism in organic compounds and reaction mechanisms (substitution, elimination, and addition) will be covered with an emphasis on electron flow.
CHEM 2320	Organic Chemistry II	4	Organic Chemistry II is the continuation of Organic Chemistry I, focusing on advanced topics in organic chemistry. The course delves into the structure and reactivity of organometallic compounds, radicals, aldehydes, ketones, carboxylic acids and their derivatives, enolates, aromatic systems, amines, heterocyclic compounds, and modern methods and techniques for inorganic structure elucidation.
CHEM 3210	Inorganic Chemistry I	4	Inorganic Chemistry I introduces the fundamental principles governing the structure, bonding, reactivity, and periodic trends of inorganic substances. Emphasis is placed on atomic and molecular structure, symmetry, bonding models, acids – bases and redox chemistry, and the systematic chemistry of the main-group elements. Experimental techniques and nomenclature are also introduced to prepare students for advanced inorganic topics.
CHEM 3220	Inorganic Chemistry II	4	Inorganic Chemistry II builds upon the principles established in Inorganic Chemistry I, focusing on transition metal chemistry, coordination compounds, organometallic chemistry, reaction mechanisms, catalysis, f-block elements, materials chemistry, nanotechnology, and bioinorganic systems. The course emphasizes structure–reactivity relationships and real-world applications.
COMM 1030	Research Methods in Communication	3	Research methods in communication is a fundamental course that covers the basic theories and practices of conducting research in the field of communication. Students will learn about different research designs and data collection methods commonly used in communication studies, such as surveys, experiments, content analysis, and interviews. In addition, this course will introduce the foundational concepts and essential stages of conducting research projects in communication studies. Students will learn the key principles of defining research subjects, developing hypotheses, and choosing appropriate methodologies for their research projects. Upon completion of the course, students will have a solid understanding of the research process in communication studies, and will be able to apply their knowledge and skills to a variety of research projects.
COMM 1100	Introduction to Media Studies	3	Introduction to Media Studies is designed to provide students with a comprehensive understanding of the role, function, and impact of media in contemporary society. The course explores various forms of media, including print, broadcast, digital, and social media, and analyzes their influence on culture, politics, economics, and everyday life. Through theoretical frameworks, case studies, and hands-on projects, students will develop critical thinking skills and media literacy essential for navigating the complex media landscape.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

COMM 1800	Introduction to Visual Communication Design	3	This course provides a comprehensive introduction to the principles, theories, and practices of visual communication. This course explains basic visual elements, principles of design, photography, visual storytelling, tools and techniques in visual communication. Students will explore how visual elements convey meaning, influence perception, and shape messages in various contexts.
COMM 2019	Youth Media Practices and Social Life	3	Youth Media Practices and Social Life examines how young people engage with media as part of their everyday social worlds. From blogging, radio-making, and social media participation to television viewing and platform-based cultural production, youth media practices function as key sites of communication, social interaction, activism, identity formation, and entertainment. These practices—whether private and routine or public and purposeful—offer critical insights into the ways media shape contemporary social life. Drawing on interdisciplinary youth studies and digital media scholarship, the course introduces key concepts, theoretical frameworks, and research methodologies for understanding youth, media, and society. Students explore how media practices intersect with power, inequality, celebrity culture, media literacy, and social justice, and how young people navigate media as audiences, users, producers, and cultural workers. Through international case studies and empirical research, the course situates youth media practices within everyday contexts as well as broader media industries and social structures.
COMM 3051	Fundamental Media Writing	3	Fundamental Media Writing is a labor-intensive, practice-oriented course that introduces students to the core principles and skills of professional media writing across platforms. Emphasizing clarity, accuracy, audience awareness, and ethical responsibility, the course trains students to write effective content for newspapers, broadcast media, public relations, and digital journalism. Students learn how to gather information, evaluate sources, structure news stories, and adapt writing styles to different media formats while meeting professional standards and deadlines. Through frequent writing assignments and revisions, students develop foundational competencies essential for further study and work in journalism, media, and communication fields.
COMM 3430	Digital Games and Society	3	Digital games have become a powerful and influential medium that extends far beyond entertainment. This course examines the complex relationship between games and society, exploring how games shape—and are shaped by—culture, psychology, identity, and technology. Students will critically engage with research and debates surrounding both the positive and negative impacts of gaming on individuals and communities.
COMM 3703	Nonverbal Communication	3	This course explores the integral role of nonverbal communication within the broader human communication system. It examines the various types of nonverbal cues—such as facial expressions, gestures, and posture—that are key to conveying emotions, regulating interactions, and facilitating social coordination. The course emphasizes the functions these cues serve, including emotional expression, relationship management, deception, and interaction dynamics. Additionally, students will investigate how nonverbal communication works alongside verbal language in both everyday and cross-cultural contexts.
COMP 1111	Programming for Data Science	3	Embark on a comprehensive journey into the realm of programming and data science with this introductory course. Delve into Python, a powerful language ideal for beginners, as you explore core concepts like data types, control flows, and functions. Extend your skills into data analysis, utilizing packages such as Pandas and Matplotlib to visualize and interpret data effectively. By the end, you'll possess a solid foundation to approach and solve real-world problems using computational methods.
COMP 1305	Computer Programming in Python	3	This course will use Python as our primary programming language and compare it to the structures in other high-level programs. It surveys fundamental concepts in computer programming and data science, including data types, functions, modules, classes, and methods. Additionally, it goes deeper into the testing and debugging of a program. Students are required to write and run basic programs.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

COMP 1700	Digital Design	3	This course will delve into a wide range of topics that will equip students with the skills and knowledge necessary to excel in the field of digital design. In this course, advanced concepts such as interactive design, motion graphics, and responsive web design will be introduced. And this course contains several innovative techniques, such as design thinking, storytelling, gamification, VR/AR, as well. In this course, students will gain a comprehensive understanding and practical skills in digital design, preparing them for the evolving design landscape.
COMP 2036	Object Oriented Programming	3	This course serves as an introduction to the fundamentals of programming using the Java programming language. Students will learn the basics of algorithmic thinking, problem-solving, and the principles of object-oriented programming (OOP). The course will cover essential programming concepts, syntax, and techniques, empowering students to write well-structured and efficient Java code. Students will gain practical experience applying their programming knowledge to real-world scenarios.
COMP 2073	Digital System	3	This course covers the principles of digital design, including Boolean algebra, logic gates, sequential and combinational circuits, and memory systems. Students will learn to design and analyze digital systems using Verilog, and explore advanced topics like FPGAs, ASICs, and programmable logic devices. Hands-on practice and real-world applications will help students gain a comprehensive understanding of digital circuit design.
COMP 2112	Data Structures and Algorithms	3	In this course, students engage with advanced programming by exploring the synergy between data structures and programming language features. The course emphasizes the design of large-scale software systems, focusing on object-oriented programming, data abstraction, polymorphism, and higher-order functions. Through a blend of theory and practical applications, students gain proficiency in crafting flexible, efficient, and scalable code structures. The course empowers participants to navigate complex programming challenges and contribute effectively to the development of sophisticated software systems.
COMP 2580	Introductory C++ Programming for Engineers	3	This course is designed to equip students with the essential programming skills needed to tackle engineering problems through a procedural-oriented approach in the C++ programming language. C++ is known for its efficiency, flexibility, and wide-ranging applications, making it a vital tool in various engineering disciplines. And the course emphasizes numerical algorithms, which are crucial for solving complex engineering challenges.
COMP 3113	Applied Data Science	3	Applied Data Science explores the full lifecycle of real-world data science projects, from problem framing through data collection and modeling to interpretation and communication of results. The course emphasizes how data science principles, methods, and tools are applied across industries to generate actionable insights and solve data-driven challenges. Students gain hands-on experience through individual and team projects that mirror professional data science work, with a focus on practical applications, ethical considerations, and effective communication of results.
COMP 3120	Operating Systems	3	This course provides a comprehensive introduction to the fundamental concepts, theories, and design principles of operating systems. Topics covered include operating system structures, process management, memory management, synchronization, deadlocks, file systems, CPU scheduling, and virtual memory. Students will explore both theoretical underpinnings and practical implementations of operating systems, as well as concepts related to protection and security, distributed systems, and real-time operating systems. By the end of the course, students will have a solid understanding of how operating systems function, manage hardware resources, and ensure system stability and security in a multi-user environment.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

COMP 3125	Software Engineering	3	This course provides an in-depth exploration of both object-oriented and traditional software engineering methodologies, building upon the foundational analysis and design concepts previously introduced. It encompasses a comprehensive study of the entire software development lifecycle, from requirements gathering and system design to implementation, testing, and maintenance. The curriculum places significant emphasis on object-oriented principles and the application of the Unified Modeling Language (UML) to model and document software systems. Key topics include the fundamentals of software engineering, such as requirements engineering, software design patterns, system architecture, and quality assurance. The course also covers essential aspects of project management, including planning, scheduling, and risk assessment, to equip students with practical skills for real-world software development projects. Through a combination of lectures, hands-on projects, and case studies, students will gain a thorough understanding of modern software engineering practices and the ability to apply them in diverse development environments.
COMP 3350	Computer Systems Integration	3	This course provides an in-depth exploration of the fundamental components that constitute computer systems, starting from the foundational level of digital logic and hardware gates and extending to the complexities of compilers, programming languages, and software applications. The primary objective of this course is to offer students a comprehensive understanding of the hierarchical structure of computer systems and to demonstrate how the implementation of straightforward interfaces can facilitate the creation of sophisticated and robust computing solutions.
COMP 3410	Computer Organization	3	This course introduces the principles of computer organization and the hardware and software interface. Students will learn the fundamental abstractions of computer systems, instruction set architectures, data path and control design, memory hierarchy, and parallel processing. Emphasis is placed on both theory and practice, with assignments in performance analysis, assembly programming, simulation, and processor design.
COMP 3960	Systems Programming	4	This course provides a comprehensive introduction to systems-level programming in the C language, emphasizing both fundamental and advanced programming concepts in a Unix environment. Students begin by mastering C syntax, data types, control structures, and formatted input/output. Through hands-on computer labs, they progressively learn about arrays, functions, pointers, strings, and preprocessor directives. The course transitions into the design and organization of larger programs using structures, unions, and enumerations, and explores advanced pointer techniques, low-level memory manipulation, and program modularization. Students will also gain familiarity with the Unix system interface, standard C libraries, and best practices for program design and debugging. Throughout the course, emphasis is placed on understanding how C programs are built and executed, writing efficient and maintainable code, and using system-level features for performance and reliability. Regular lab sessions reinforce learning and provide practical experience in building, testing, and troubleshooting C programs in a professional development environment.
COMP 4012	Computer Networking	3	This course provides a comprehensive introduction to computer networking concepts, architectures, protocols, and technologies. Students will explore both theoretical foundations and practical implementations spanning from physical transmission to security and application-layer services. The course follows a layered approach aligned with major reference models such as OSI and TCP/IP.
COMP 4100	Programming Language Fundamentals	3	This course offers an overview of general features of programming languages and explanation of basic methods of language implementation. Design and programming of particular parts of compilers are supported by elements of the theory of grammars and automata. Students will learn programming language syntax, parsing, semantics, and type systems, and apply these concepts using languages like Scheme, ML, or Haskell. The course covers control flow, data abstraction, polymorphism, concurrency, and optimization techniques to prepare students for building efficient, maintainable software. By the end of the course, students will be able to design and implement advanced programs while understanding the underlying principles that guide programming language design and execution.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

COMP 4230	Introduction to Algorithms	3	This course provides a rigorous introduction to algorithms and data structures, focusing on algorithm design, analysis, and implementation. Students will learn to analyze algorithm efficiency using asymptotic notation, solve recurrence relations, and apply algorithmic paradigms such as divide-and-conquer, greedy methods, dynamic programming, and randomized algorithms. Core data structures and graph algorithms are studied in depth, along with advanced topics including NP-completeness, linear programming, string matching, and computational geometry.
COMP 4255	Pattern Recognition and Machine Learning	4	This course delves into the fundamental principles of pattern recognition and machine learning, offering a comprehensive exploration of both theoretical concepts and practical applications. Students will delve into supervised and unsupervised learning techniques, gaining insights into regression, classification, and clustering algorithms. Through rigorous mathematical analysis and hands-on implementation, students will develop a solid understanding of algorithmic mechanisms and their implications in real-world scenarios. Additionally, the course covers advanced topics, including ensemble methods, deep learning architectures, and Bayesian inference, empowering students to tackle complex data analysis tasks with confidence. Combining theoretical knowledge with practical skills through projects and assignments, students will be adept at using machine learning techniques to extract meaningful patterns and insights from diverse data sets, with a focus on application in R.
COMP 4350	Big Data Analytics	3	This course provides a comprehensive introduction to the foundations, programming models, algorithms, and systems that enable scalable analytics on massive datasets. Students will study the characteristics of Big Data, including volume, velocity, variety, and high dimensionality, and examine how modern cyber infrastructures and distributed computing platforms support large-scale data processing. Through theoretical study, hands-on programming, and case studies, students will learn to design, implement, and evaluate end-to-end scalable analytics pipelines.
COMP 4452	Parallel Programming	3	This course provides a comprehensive introduction to the principles, models, and practice of parallel programming. Students study parallel machine architectures, programming models, and algorithmic strategies for exploiting concurrency in modern computing systems. Emphasis is placed on performance analysis, scalability, and efficiency of parallel algorithms, as well as practical programming using widely adopted paradigms for shared-memory and distributed-memory systems. Core parallel algorithms—including matrix operations, sorting, and scientific computations—are examined both theoretically and through hands-on programming assignments. The course prepares students to design, implement, and evaluate parallel programs on multicore processors, clusters, and networks of workstations.
COMP 4760	Distributed Systems	4	This course introduces the fundamental concepts, design principles, and technologies underlying distributed systems. It will explore the abstractions and implementation techniques behind the construction of distributed systems. Key topics include distributed systems principles, communication, naming, synchronization, fault tolerance, security, consistency and replication, distributed file systems, Internet and web protocols, and scalability.
COMP 4802	Database Management Systems	4	This course provides a comprehensive exploration of database management systems (DBMS), emphasizing the principles, design, implementation, and administration of modern database systems. Students will gain an understanding of the core components of a DBMS, including data models, query languages, transaction management, and storage structures. The course also covers advanced topics such as distributed and parallel databases, object-oriented and XML-based databases, as well as emerging applications in data analytics and data warehousing. By the end of the course, students will be equipped with both theoretical knowledge and practical skills to design, implement, and manage robust database solutions for real-world applications.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

ECON 1010	Principles of Economics	3	This course provides an introduction to the fundamental concepts and analytical tools of economics. Students will explore how individuals, firms, and governments make decisions under conditions of scarcity, and how these decisions interact in markets to determine prices, production, and income distribution. The course covers both microeconomics (behavior of consumers and firms) and macroeconomics (aggregate economic performance, inflation, unemployment, and economic growth).
ECON 1060	Introduction to Microeconomics	3	This course is designed to provide students with a foundational understanding of economic principles at the individual and firm level. The course covers topics such as supply and demand, consumer behavior, production, costs, market structures, and the role of government in the economy. Through a combination of lectures, readings, discussions, and practical exercises, students will develop the analytical tools needed to comprehend and analyze microeconomic concepts and real-world economic issues.
ECON 1080	Introduction to Macroeconomics	3	This course provides students with a comprehensive understanding of the principles, concepts, and analytical tools that govern the study of the broader economic system. Topics cover the components of aggregate demand, national income determination and multiplier theory, business cycles and more. Through a blend of theoretical exploration, real-world applications, and critical thinking exercises, this course offers a solid introduction to the macroeconomic factors that shape national economies and impact global markets.
ECON 2044	Microeconomic Theory I	3	A concentration on microeconomic theory. Modules contain theory of consumer choice; elements of production and cost. Price and output determination in competitive markets will be discussed in the topics. This course serves as a crucial foundation for further studies in economics and related fields. Students will gain insights into the microeconomic forces that shape the behavior of consumers, firms, and markets.
ECON 2048	Money and Banking	3	The course is designed to provide students with an overview of the field of money and banking and its significance in the economy. It explores the intricate relationship between money, financial markets, and the macroeconomy. Main topics include money, interest rates, the stock market, banking industry, financial markets, financial regulation and monetary policy in the economy, etc. At the end of the course, students will understand better the role of money and the financial market in our economy.
ECON 2104	Intermediate Microeconomics I	3	This course offers an in-depth analysis of key concepts and models used to understand the behavior of consumers, firms, and markets. This course will explore core areas of microeconomic theory, including economic methodology, consumer theory, the theory of the firm, competitive markets, and efficiency. Emphasis will be placed on understanding how these theories apply to real-world economic policies and decision-making processes. Students will gain insight into how microeconomic principles influence public policy decisions, focusing on how market structures and behavior shape economic outcomes and the role of government intervention.
ECON 2119	Economics of Innovation	3	Innovation drives long-run economic growth by transforming ideas into productive technologies, products, and processes. This course applies microeconomic theory to understand how incentives, institutions, and market structures shape the creation and diffusion of innovation. Using tools from industrial organization, public economics, and contract theory, students will examine how firms identify and close productivity gaps, how governments design policies that stimulate inventive activity, and how intellectual property rights and research incentives influence the innovation ecosystem. Emphasis is placed on models of cumulative innovation, the economics of intellectual property, optimal prize and subsidy design, and the strategic behavior of firms in innovative industries.
ECON 2134	Probability and Statistics for Economists	3	This course introduces the fundamental statistics concepts. Probability and statistical concepts play an important role in economic analysis and applications. The emphasis is on using statistical methods to make economic decisions. Key topics include descriptive statistics, random variables and probability, point and interval estimation, sampling distributions, hypothesis testing. Students will learn the principles of collecting, organizing, and summarizing economic data.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

ECON 3120	Industrial Organization	3	This course provides an introductory exploration of strategic behaviors exhibited by firms operating within imperfectly competitive markets. Topics covered encompass various aspects such as market concentration, mergers, entry deterrence, product differentiation, advertising, and regulation. Additionally, the course delves into the theory of industrial organization, emphasizing the analysis of strategic interactions among market participants in scenarios with limited competition. Drawing upon principles from Microeconomics and Game Theory, students will examine the behavior of profit-maximizing firms, exploring market structures and competitive strategies. The curriculum includes a comprehensive review of firm theory, analysis of monopolistic conduct, and game theoretic methods to study oligopolistic behavior across different competitive environments. Real-world applications are integrated throughout the course, providing insights into industry performance and regulatory considerations.
ECON 3340	Behavioral Psychology and Economics	3	Combining insights from psychology on human behavior, this course is intended to allow students to become familiar with the behavioral approach to economics and to political decision making. Students will gain in-depth understanding of the major aspects of economic behavior under certainty and uncertainty. Topics include heuristics and biases, prospect theory, bounded rationality, intertemporal choice, deviations from the standard classical models, and social preferences.
ECON 3350	Regional and Urban Economics	3	Urbanization drives economic growth, but unfolds differently across developed and developing countries. This course explores the forces behind rapid urbanization, the role of migration, and the structure of formal and informal labor markets. It examines agglomeration economies, housing markets, infrastructure, and the economic trajectories of cities driven by high-value commodities versus manufacturing and services. Students will analyze urban transportation, governance, and environmental challenges while assessing the impact of urbanization on poverty, inequality, and upward mobility. Through theoretical models and case studies, the course provides insights into sustainable urban development and regional economic strategies.
ECON 3621	International Trade	3	This course introduces the theories, policies, and institutions that shape international trade. It examines why nations trade, what they trade, and the consequences of trade for economic growth, income distribution, and welfare. The course also explores trade policy instruments, the role of international trade organizations, current global trade issues, and debates surrounding globalization, inequality, and sustainable development.
ECON 3700	Labour Economics	3	The main objective of the course is to foster a comprehensive understanding of the theoretical and empirical foundations of the labour market. This course uses many examples drawn from state-of-the-art studies in labor economics literature. The topics include labour supply, labour demand, labour market, union, wage structure, compensating differentials, and Phillips curve.
ECON 4115	International Finance	3	ECON 4115 provides students with engaging, balanced coverage of the key concepts and practical applications of International Finance. Topics covered include balance of payments, exchange rates, economic policies, International Monetary System, financial globalization and International financial institutions. Core theoretical principles will be complemented by a series of application chapters that confront policy questions using the latest empirical work, data, and policy debates.
ECON 4600	Advanced Labour Economics	4	This course offers a broad examination of labour economics concerns, delving deeper into fundamental labour supply and demand models. This course delves deeper into the study of labour markets, human capital, wage determination, labour market policies, and labour market dynamics. It is designed to provide students with a comprehensive understanding of the economic factors influencing labour markets, employment patterns, and wage disparities.
ENGL 1130	Introduction to Native American Literature	3	This course analyzes Native American history, written works and oral traditions. Students will read chronicles and commentaries on published texts, narratives, oratorical and prophetic tribal epics. Students will become deeply familiar with the rich tradition and wide variety of literature by Native American peoples — learning a bit about indigenous cultures, histories, identities, thought, issues, concerns, and strategies over time, and in an ever-changing world.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

ENGL 1140	College Writing	3	The College Writing is designed to introduce students to various writing genres and help them develop effective communication skills through written expression. The course will focus on the writing process, emphasizing key aspects of academic writing and expository prose. Students will engage in both creative and analytical writing tasks, developing their abilities in crafting clear, coherent, and well-organized texts. Topics covered will include sentence-level issues, paragraph structure, rhetorical strategies, organization, style, and form. By the end of the course, students will be equipped with the skills needed to write effectively in academic and professional settings.
ENGL 1251	Rhetoric and Composition	3	This course introduces students to rhetorical concepts, teaching them to apply these principles in crafting diverse genres of writing tailored to specific rhetorical contexts. Through iterative revision, students refine their drafts, editing their work to achieve polished texts, and engage in reflective analysis of their writing process. Additionally, students practice reading complex texts and utilizing information technologies.
ENGL 1500	Selected Topics in Literature	3	This course is designed to enhance students' critical reading skills and cultivate their abilities in coherent discourse through the exploration of selected topics in literature and composition. Emphasizing the proper use and acknowledgment of sources, students will engage in discussions and complete written assignments based on readings from various genres. The course aims to develop analytical thinking, writing proficiency, and a deeper appreciation for literature.
ENGL 2010	Contemporary Literature and Culture	3	Contemporary Literature and Culture is an interdisciplinary course that critically examines modern literary works in the context of contemporary cultural, social, and political landscapes. Through the exploration of various themes such as gender, race, environment, capitalism, politics, ethnic literature, cross-cultural literary relations, and emerging literary trends, students will gain insights into the complexities of contemporary society as reflected in literature. The course emphasizes close reading, analysis, and interpretation of texts, as well as discussions on the intersections between literature and culture.
ENGL 2120	Introduction to Literature	3	This course is focused on building your reading, writing, and research skills through the study of fiction, poetry, and drama. Students will learn to interpret and discuss literary texts, develop arguments, and practice clear, effective composition across analytical and creative forms.
ENGL 2144	Special Topics in Creative Writing	3	This course explores creative writing through advanced and experimental forms of expression in poetry, short fiction, creative nonfiction, and hybrid genres, moving beyond conventional narrative models as students study innovative structures, cross-genre works, and texts that resist easy classification; central to the course is The Writing Mind—the cultivation of attention, perception, and imaginative awareness as the foundation of creative practice, and students will examine how writers see, think, and transform lived experience into precise, vibrant, and alive language, with readings reflecting diverse global traditions and situating creative writing within broader cultural, historical, and interdisciplinary artistic contexts, including visual art, performance, and graphic narrative, while the course emphasizes the generation of new writing through exploratory prompts rather than the polishing of existing work, and through reading, discussion, writing experiments, workshops, and revision.
ENGL 3050	Advanced Writing Workshop	3	This course provides advanced instruction and practice in writing processes, rhetorical strategies, and stylistic techniques. Students will explore how writing functions in academic, professional, and public contexts and examine how writers adapt texts to specific audiences, purposes, and rhetorical situations. Through intensive reading, writing, peer review, and revision, students will strengthen their analytical, rhetorical, and stylistic skills. The course also emphasizes collaboration, research-based writing, and reflection on literacy development, while offering opportunities to practice multiple non-fiction genres, including narrative, analysis, explanation, critique, and argument.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

FILM 2100	Introduction to Film Studies	3	This course provides an introduction to the study of film, focusing on the fundamental techniques, vocabulary, and methods of film analysis. Students will explore the aesthetics, forms, styles, and techniques of cinema, learning how to critically engage with film as both an art form and a cultural text. Key areas of study include narrative structure, mise-en-scène, cinematography, editing, sound, and genre theory, along with an examination of influential filmmakers and film movements. Through screenings, discussions, and written assignments, students will develop analytical skills and a deeper understanding of how films convey meaning.
FILM 3015	Cinema and National Identity	3	This course explores the intricate relationship between cinema and national identity, examining how films both reflect and shape the ideologies, values, and culture of a nation. Using theoretical frameworks of identity, nationhood, and globalization, students will critically assess how national cinemas represent the collective memory, struggles, and aspirations of specific countries or cultural groups. The course will engage with key topics such as colonialism, diaspora, and transnationalism, as well as the impact of global media flows on national film industries. By studying the thematic and stylistic trends in films from various countries, students will gain a deeper understanding of the ways in which cinema participates in the formation of national consciousness.
FINC 3702	Advanced Corporate Finance	3	This course provides an in-depth examination of the theoretical and practical aspects of corporate finance. Building on fundamental financial concepts, it explores advanced topics in capital structure, financing decisions, and corporate governance, focusing on real-world applications. Students will analyze financial strategies through case studies, financial modeling, and current research to understand how corporations manage risk, value assets, and maximize shareholder wealth in an ever-changing market environment.
GEOG 3521	Physical Climatology	3	This course explores the dynamics of the climate system, focusing on the interactions between the atmosphere, oceans, cryosphere, and land surfaces. It covers key concepts like the carbon cycle, the greenhouse effect, natural climate variability, and climate sensitivity to external factors. Students will investigate both historical climate phenomena and human-induced climate change. Emphasis is placed on understanding physical principles and applying climate models to assess past, present, and future climate trends.
GNDS 2500	Intersections of Race, Class, Gender and Sexuality	3	This course provides an introduction to how race, gender, sexuality, and class have been intertwined and coexisted over time to produce and reproduce social inequalities. It explores the key concepts, theories, and historical experiences that form the basis of scholarly work in comparative race, gender, sexuality, and class studies. The creation, transmission, interpretation, and institutionalization of racial, gender, sexual, and class identities are examined through a human rights framework.
JAPN 3011	Intermediate Japanese I	3	This course is designed to build upon the foundational knowledge of the Japanese language acquired in the beginner level. In this intermediate-level course, students will delve deeper into the complexities of Japanese grammar, vocabulary, and culture to develop a more comprehensive understanding of the language. Lower intermediate grammar, additional kanji scripts, and oral communication skills will be emphasized in the course.
LAWS 2812	Introductory Legal System	3	This course serves as an essential foundation for students seeking a comprehensive understanding of the legal system. It provides an in-depth exploration of the legal system and its intersection with public policy issues, with a particular emphasis on understanding the profound impact of the legal environment on decision-making within the realm of management. Students will gain a comprehensive understanding of legal principles, ethical considerations, and international dimensions that significantly shape managerial choices and organizational behavior.
LING 1000	Elementary Latin I	3	Elementary Latin I is an introductory course designed to develop foundational skills in Latin grammar, vocabulary, and reading comprehension. Students will learn basic Latin morphology and syntax while gaining exposure to Roman culture, history, and mythology through adapted and authentic Latin texts. Emphasis is placed on reading comprehension, translation, and understanding the structure of an inflected language.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

MARK 4312	Event Management and Marketing	3	This course aims to equip students with foundational knowledge and practical skills in the planning, marketing, and management of events across a variety of contexts. It examines the growing importance of events as strategic tools for achieving marketing and corporate objectives, as well as broader socio-cultural, economic, and political goals. Students will learn to conceptualize, plan, market, organize, and evaluate events through a systematic and integrated approach. The course emphasizes stakeholder management, strategic marketing, operational coordination, and risk control, while also exploring current developments and emerging trends in the global and regional events industry.
MATH 1100	Precalculus	3	This course prepares students for success in Calculus by developing a strong foundation in algebraic, graphical, and trigonometric concepts. Students learn to analyze functions, solve equations, model real-world problems, and apply mathematical reasoning. Topics include functions and graphs, polynomial and rational functions, exponential and logarithmic functions, trigonometry, analytic geometry, sequences, probability, and an introduction to limits and derivatives.
MATH 1526	Introduction to Calculus I	4	Calculus I introduces the fundamental concepts of differential and integral calculus. Students will develop an understanding of functions, limits, derivatives, and integrals, along with practical techniques and applications. This course provides the foundation for further study in mathematics, science, and engineering.
MATH 1535	Calculus with Analytic Geometry I	3	An introductory course in calculus and analytic geometry that focuses on the core concepts and applications of single-variable calculus. It develops a strong foundation in differential and integral calculus, with an emphasis on understanding the geometric interpretation of these concepts. Topics include functions, limits, derivatives, L'Hopital's Rule, antiderivatives, and definite integrals. Students will learn to solve a variety of problems using calculus, including optimization, related rates, and modeling real-world phenomena.
MATH 1536	Calculus with Analytic Geometry II	3	This is a mathematics course that builds upon the concepts introduced in Calculus I. The course covers integral techniques, ordinary differential equations, conic sections, polar coordinates, vectors, two- and three-dimensional analytic geometry, infinite series, sequences and series, Taylor series, numerical solutions of differential equations using Euler's method, and the convergence of improper integrals. This course aims to provide students with a deeper understanding of calculus and its applications in various mathematical and scientific disciplines.
MATH 2015	Introduction to Calculus II	3	MATH 2015 is the second course in the calculus sequence. It builds upon the concepts covered in MATH 1526 (Calculus I) and delves deeper into integration techniques, applications of integrals, sequences, series, and more. The course aims to develop students' understanding of calculus and its applications in various fields.
MATH 2016	Introduction to Mathematical Methods	3	Mathematical Methods is an introductory course designed to equip students with fundamental mathematical tools necessary for advanced studies in various fields such as physics, engineering, economics, and computer science. The course covers topics including calculus, linear algebra, differential equations, and probability theory. Through lectures, problem-solving sessions, and practical applications, students will develop proficiency in mathematical techniques essential for modeling, analysis, and problem-solving in diverse disciplines.
MATH 2160	Intermediate Algebra	3	This course provides a comprehensive review of algebraic concepts essential for further study in mathematics and related disciplines. Emphasis is placed on developing algebraic reasoning, symbolic manipulation, problem-solving skills, and the application of algebra to real-world contexts. Topics include linear equations and inequalities, graphs and mathematical modeling, systems of equations, functions, quadratic equations, polynomials and exponents, factoring techniques, and rational expressions.
MATH 2245	Multivariable Calculus	3	This course extends the principles of calculus from single-variable functions to functions with multiple variables. Topics include vectors, vector-valued functions, Green's Theorem, Stokes' Theorem, and Gauss' Theorem, multivariable functions, partial derivatives, multiple integrals, line integrals, surface integrals, vector fields, and their applications. Additionally, students will explore applications in physics, engineering, and other fields.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

MATH 2423	Probability	3	This course offers an overview of probability theory and its applications in various scientific fields. The course covers the mathematical treatment of random events occurring in natural, physical, and social sciences. Topics include mathematical probability axioms, combinatorial analysis, binomial distribution, conditional probability and independence, Poisson distribution, normal distribution, random variables, probability distributions, moments, sampling distributions, expectations, and limit theorems.
MATH 2455	Introduction to Biostatistics	3	This course introduces probability and statistical analysis with applications in biostatistics, focusing on biological, health, and environmental sciences. Students will explore key probability distributions, hypothesis testing, regression, and using computational tools for data analysis. The purpose of the course is to introduce students to foundational concepts within the field, foster a statistical perspective for interpreting health-related data, and develop essential critical evaluation skills to assess the credibility of research evidence.
MATH 2500	One Variable Calculus II	3	One Variable Calculus provides students with a comprehensive understanding of calculus concepts and techniques that are essential for various STEM disciplines, including engineering, economics, physical and biological sciences, statistics, and data science. The course covers topics such as calculus of elementary transcendental functions, techniques of integration, indeterminate forms, Taylor's formula, and infinite series. Through lectures, problem-solving sessions, and practical exercises, students will develop proficiency in calculus applications and problem-solving strategies. An honors version of the course is available for students seeking additional challenges and advanced learning opportunities.
MATH 2825	Introduction to Complex Analysis	3	This course provides a comprehensive introduction to complex variable theory and its applications to current engineering problems. It deals with complex numbers, analytic functions, integration, Laurent series, residue calculus and conformal mappings. The course also covers one or more applications of the theory are reviewed.
MATH 2851	Foundations of Stochastic Processes	3	This course provides a foundational understanding of stochastic processes, focusing on key concepts such as Markov chains, random walks, martingales, Galton-Watson trees, branching processes, Poisson processes, point processes, birth and death processes, queuing theory, stationary processes, as well as simulation and inference for stochastic models. Through theoretical study and practical applications, students will develop the necessary tools to analyze and model random phenomena in various fields, including mathematics, statistics, engineering, and finance.
MATH 3010	Regression Analysis	3	Regression Analysis estimates relationships between independent variables and a dependent variable. This course is intended to introduce the basic ideals and models of regression analysis, including its interpretation and implementation in the statistical software package. Topics of simple linear regression, multiple linear regression, least-squares estimation, hypothesis testing, transformations, generalized and weighted least squares, multicollinearity, variable selection and model building, nonlinear regression models will be included.
MATH 3020	Experimental Design and Analysis	4	This course offers a step-by-step guide to the experimental planning process and the ensuing analysis of normally distributed data. We will not only examine the topics of sample size, crossed treatment factors, blocking factors, factorial experiments, nested models, and split-plot design, but also discuss responsesurface methodology, fractional factorial experiments, random effects and variance components, and computer experiments.
MATH 3100	Applied Linear Algebra	3	Applied Linear Algebra is a course that focuses on the practical applications of linear algebra. The course builds upon the foundational concepts of linear algebra and explores their real-world relevance and problem-solving techniques. Students will learn the knowledge related to the topics of vector spaces, linear equations, eigenvalue problems, orthogonality, least squares, symmetric matrices, and quadratic forms, etc. By the end of the course, students are expected to gain the ability to apply linear algebraic methods and tools to analyze and solve problems in real life.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

MATH 3371	Numerical Methods Analysis	3	Numerical methods play a crucial role in solving complex mathematical problems that often arise in engineering, science, and various fields. The course provides students with a comprehensive introduction to the fundamental numerical techniques used to approximate and solve mathematical problems. Topics include interpolation and polynomial approximation, numerical differentiation and integration, numerical methods of differential equations, error analysis, the number of conditions for a linear system, linear and nonlinear systems. By the end of the course, students will develop the skills necessary to apply numerical methods effectively. MATLAB software will be used in this course.
MATH 3420	Modern Abstract Algebra	3	This course delves into the study of groups, rings, and fields, which are fundamental algebraic structures, and investigates their properties, operations, and applications. It offers a deep understanding of algebraic concepts beyond elementary algebra. Students will develop a solid understanding of algebraic systems and their applications in diverse mathematical contexts. Course topics include groups, group homomorphisms, cyclic groups, cosets, Lagrange's theorem, normal subgroups, introduction to rings, ring homomorphisms, and more.
MATH 3500	Applied Machine Learning	3	This course introduces students to a wide range of machine learning techniques and tools used in data analysis, predictive modeling, and pattern recognition. The course covers a comprehensive range of topics, such as multivariate linear and multiple regressions, k-nearest neighbors and bootstrap. And it also introduces some typical Statistical Learning methods, including naive Bayes, cross-validation, tree-based methods, and so on. Through a combination of theoretical concepts and practical applications, students will gain a solid foundation in machine learning methods.
MATH 3520	Discrete Mathematics With Applications	3	The course is structured to serve as an introduction to the realm of discrete mathematics, aiming to familiarize students with prevalent concepts and methodologies within this field. Its purpose is to acquaint students with fundamental ideas and methods from discrete mathematics that hold broad applicability. Topics included in this course will cover logic and proof, set theory, algorithms, functions, sequences, number theory, cryptography, mathematical induction, counting methods, graph theory applications, combinations, discrete probability, the inclusion/exclusion rule, relations, etc. Students will develop problem-solving skills and mathematical reasoning abilities.
MATH 4100	Functional Analysis	3	This course introduces the fundamental structures and theorems of functional analysis and their applications to operator theory, distribution theory, and partial differential equations. Topics include topological vector spaces, normed and Banach spaces, duality, Banach algebras, spectral theory, distributions, and semigroups of operators. The course emphasizes both theoretical development and applications to analysis, PDEs, and mathematical physics.
MATH 4200	Fundamentals of Partial Differential Equations	3	This course serves as an essential introduction to the world of Partial Differential Equations (PDEs). PDEs are mathematical tools used to describe and analyze complex physical and scientific phenomena, from heat diffusion to quantum mechanics. This course covers the fundamental principles, techniques, and applications of PDEs, such as maximum principles for elliptic equations and classical solution of the Laplace equation, Green's functions and variational methods, providing students with the knowledge and skills to understand and work with these equations effectively.
MATH 4525	Survey Sampling	3	This course focuses on the principles and techniques of sampling methods for survey research. It provides a thorough introduction to sampling methods, including simple random sampling, systematic sampling, stratified sampling, and cluster sampling. The course also covers advanced topics such as estimation techniques for domain totals/means, ratio estimation, post-stratification, and treatment of missing data. Additionally, students will gain hands-on experience in analyzing survey data using statistical software packages.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

MATH 4650	Mathematics of Data Science	4	This course introduces the mathematical foundations and computational tools used in modern data science. Students learn Python programming, data cleaning and visualization, regression models, classification, resampling, model selection, tree-based methods, SVMs, deep learning basics, unsupervised learning, and multiple testing. Emphasis is placed on mathematical intuition, hands-on implementation, and interpretation of results. Labs provide structured real-world practice.
MATH 4701	Deterministic Optimization Models in Operations Research	4	This course provides a rigorous introduction to deterministic optimization models in operations research, emphasizing the mathematical formulation, analysis, and algorithmic solution of optimization problems that arise in management, engineering, logistics, and public policy. Topics include linear programming formulation, simplex method, degeneracy, and geometric interpretation through convex polyhedra; duality and sensitivity analysis; special linear programming models for transportation, assignment, and network flow problems; integer programming and branch-and-bound; and dynamic programming for multistage decision making. Through these frameworks, students learn to translate real-world decision situations into formal mathematical models and apply deterministic optimization techniques to obtain and interpret optimal solutions.
MECH 1115	Introduction to Engineering	4	This survey course introduces students to fundamental engineering concepts they will encounter in engineering programs. Through hands-on problem-solving and project-based learning, students explore various engineering topics, including mechanisms, strength of materials and structures, automation, and kinematics. The course integrates mathematical, scientific, and technological principles to develop critical thinking, problem-solving, and teamwork skills essential for engineering.
MGMT 2401	Organizational Behavior	3	This course examines the behavioral and psychological aspects of individuals and groups within organizations. It explores how human behavior impacts organizational performance, and how managers can create environments that foster productivity, innovation, and employee well-being. Topics include leadership, effective management skills, motivation, communication, team dynamics, organizational culture, and change management. This course enables students to develop analytical, diagnostic, ethical and personal skills for addressing human interactions in complex organizations with a varied and diverse workforce.
MGMT 2450	Leading Human Resources for Talent Growth	3	Tailored for leaders and managers, this specialized course provides an in-depth exploration of human resources and talent leadership. Delving into essential HR functions, the curriculum places a distinct focus on organizational practices rooted in values. The intention is to equip participants with a nuanced understanding of leading-edge strategies in human resources and talent management, catering to the specific needs and challenges faced by individuals in leadership roles.
MGMT 3210	Applied Strategic Management	3	This course delves into the fundamental concepts, theories, and practices of strategic management and offers a holistic view of how organizations can achieve sustainable competitive advantage in a rapidly evolving business environment. Through lectures, case studies, and practical projects, students will learn how to analyze industry structures, evaluate a firm's competitive position, and develop strategic plans that enhance organizational performance and sustainability.
MGMT 3701	Operations Management	3	This is a comprehensive course designed to provide students with a deep understanding of the concepts, principles, problems, and practices involved in designing, managing, and improving operations in manufacturing and service organizations. The course covers a wide range of topics, including operations strategy, project management, quality management, supply chain management, inventory management, and business analytics modules.
MGMT 4110	Investment and Portfolio Management	3	This course examines the principles, theories, and practices of modern portfolio management. Students will explore asset classes, investment instruments, market operations, and quantitative models for risk and return. Emphasis is placed on portfolio construction, performance evaluation, and risk management strategies across both domestic and international markets. The course combines theoretical foundations with empirical evidence and real-world applications.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

MUSC 1900	American Popular Music	3	This course examines the evolution of American popular music, exploring its role in reflecting and shaping American culture, identity, and politics. Students will engage in critical discussions of genres such as blues, jazz, country, musical theater, rock, and hip-hop, analyzing their significance as both artistic expressions and historical texts. The course will highlight the ways in which music has served as a marker of cultural identity, political protest, and social change across various time periods in American history.
MUSC 2800	Music, Peace, and Social Change	3	This course explores the ways music and musicians affect social change and peace. It combines interdisciplinary study, engagement with artists and activists, research on historical and contemporary case studies, and the creation of original music-and-peace projects. Students will deepen their understanding of conflict and reconciliation while practicing music as a vehicle for empathy, dialogue, and community.
PHIL 1100	Introduction to Philosophy	3	This course introduces students to philosophical inquiry, facilitating a thorough examination of essential questions that have influenced human thought across history. By critically analyzing fundamental philosophical themes, students will cultivate a profound comprehension of reality, the boundaries and origins of knowledge, the notion of God, and the quest for meaning in human life.
PHIL 2520	Social Philosophy	4	This course explores how society is structured and how power operates within it. We will explore how social structures, institutions, and ideologies shape identity, power, freedom, and justice. Topics include how gender and race affect social standing, how class influences political and economic life, and how major philosophical traditions—liberalism, critical social theory, and postmodernism—analyze, justify, or challenge existing social institutions.
PHYS 1401	Physics for Life Sciences I	4	The primary goal of this course is the presentation of selected principles and topics in physics with applications to the life sciences. Main topics will involve mechanics, work, energy and power, linear momentum and impulse, angular momentum, rotational motion, heat and the first law of thermodynamics. Students in this course are required to have basic knowledge of calculus and analytical methods.
PHYS 2301	Circuit Theory and Electronics	4	Analysis of circuit variables and elements, including resistive networks, operational amplifiers, and transient responses of RL, RC, and RLC circuits. Investigation of linear and nonlinear circuit behavior, element I-V characteristics, AC power computations, and balanced three-phase systems. Application of Laplace and Fourier transforms in circuit analysis to facilitate frequency-domain interpretations. A laboratory component integrates theoretical principles with practical circuit design and experimentation.
PHYS 2537	Introduction to Electromagnetism	4	This course provides students with a solid foundation in the principles and concepts of electromagnetism. The course begins with an exploration of vector analysis, covering orthogonal coordinate systems and the calculus of field quantities. Students will learn about length, surface, and volume integrals, as well as the del operator, gradient of a scalar, divergence theorem, Stoke's theorem, and Laplacian. The course further examines the classification of vector fields and delves into electrostatic fields, including key concepts such as electric potential, capacitance, current, and current density. Additionally, magnetostatic fields, including inductance, will be explored.
PSYC 1040	Foundations of Psychology	3	This course provides an overview of the foundational concepts, theories, and methods in psychology. Topics covered include the history of psychology, research methods, biological bases of behavior, nervous system, sensation and perception, language, and thought, learning, memory, motivation, emotion, personality, psychological disorders, and therapy.
PSYC 2040	Introductory Psychology	3	This introductory course offers a comprehensive exploration of the fascinating field of psychology, providing students with a foundational understanding of the mind, behavior, and the scientific principles that underlie psychological research. Through a combination of lectures, readings, discussions, and practical exercises, students will embark on a journey to unravel the complexities of human thought and behavior.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

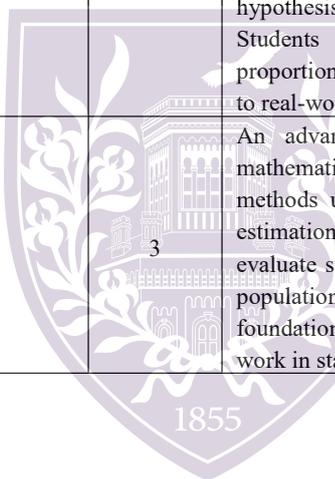
PSYC 2050	Introduction to Child Development	3	This course delves into the multifaceted exploration of child development, integrating foundational theories and cutting-edge research in developmental psychology. It provides a comprehensive examination of various domains, including learning, cognition, perception, personality, and social development in infancy and childhood. Through a blend of theoretical frameworks and empirical studies, students will gain a nuanced understanding of the intricate processes that shape the growth and maturation of children.
PSYC 3225	Quantitative Research in Psychology	3	In-depth study of quantitative research in psychology. Modules include frequency distributions, measures of central tendency and variability, normal curve and more. The course equips students with the essential knowledge and skills required to conduct empirical research using quantitative methodologies in the field of psychology. Students will master the intricacies of designing, implementing, and analyzing quantitative research projects.
PSYC 3252	Introduction to Cognition	3	This course explores the fundamental theories, research, and applications related to cognitive development from infancy through adulthood. Topics include perception, attention, memory, language acquisition, problem-solving, executive function, and the influence of culture and environment on cognitive growth. Emphasis is placed on contemporary research findings and their practical implications for education, parenting, and cognitive enhancement strategies.
PSYC 3800	Forensic Psychology	3	Forensic Psychology explores the intersection of psychology and the legal system. This course examines how psychological theories and research are applied in criminal investigations, jury decision-making, police interrogations, eyewitness testimony, and the assessment of offenders. Topics include investigative psychology, the psychology of false confessions and false memories, the role of forensic psychologists in the courtroom, risk assessment, and criminal profiling. The course also addresses contemporary issues such as wrongful convictions and the ethical challenges of forensic practice. Students will gain an in-depth understanding of psychological principles in the justice system and develop critical thinking skills applicable to real-world forensic cases.
PSYC 4600	Human Sexuality	3	Human sexuality is a multifaceted and interdisciplinary field that examines the biological, psychological, cultural, and social dimensions of sexual behavior and identity. The course explores human sexual development, gender identity, sexual orientation, reproductive health, communication, and ethics. Drawing on perspectives from biology, psychology, sociology, and public health, students will engage critically with topics such as the sexual response cycle, contraception, sexually transmitted infections, sexual functioning, and the diversity of sexual experiences and expressions across cultures and throughout the lifespan.
SOCI 1060	Foundations of Sociology	3	Foundations of Sociology is a comprehensive course designed to provide students with a foundational understanding of the key concepts, theories, and methodologies within the field of sociology. The course aims to develop critical thinking skills and sociological imagination to analyze and interpret social phenomena, structures, and processes. By examining various social institutions, social interaction, and social change, students will gain insights into the complexities of human behavior and social relations.
SOCI 4815	Social Work Practice With Families	3	Focusing on the family as a dynamic and interconnected system, this course explores theories, practices, and intervention strategies relevant to social work with diverse family structures. It examines family roles, rules, relationships, communication patterns, and the influence of cultural, economic, and psychosocial factors on family functioning. Students will learn to assess family systems and apply evidence-based approaches to support families in managing life challenges, mental health issues, intergenerational conflict, and transitions such as divorce or migration. Emphasis is placed on ethical, culturally sensitive, and strengths-based social work practice with families across the life course.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

STAT 1100	Introduction to Statistics	3	This course is an introduction to statistics, focusing on fundamental concepts and techniques for analyzing and interpreting data. Topics covered include descriptive statistics, probability, probability distributions, statistical inferences, and various statistical analyses. Emphasis will be placed on applying statistical concepts to real-world problems and developing critical thinking skills.
STAT 1200	Introductory Probability and Statistics	3	This course serves as a foundational exploration of Probability and Statistics, equipping students with essential tools to understand and analyze uncertainty in various real-world scenarios. The curriculum encompasses key concepts in conditional probability, independence, discrete and continuous random variables, mean and variance, descriptive statistics, and statistical inference.
STAT 2115	Analysis of Variance	3	This course provides students with a comprehensive understanding of the theory and application of analysis of variance (ANOVA) techniques in statistical analysis. With a specific focus on experimental design principles, it covers topics such as various ANOVA models, including one-way ANOVA, two-way ANOVA, and factorial ANOVA, multiple comparison methods, block design and more. Students will develop the analytical skills and critical thinking abilities necessary to apply experimental design and ANOVA techniques effectively in research and decision-making contexts.
STAT 2140	Applied Statistics Research	3	The applied statistics course provides students with the fundamental knowledge and practical skills needed to analyze and interpret data. The course introduces students to the practical application of statistical methods in various fields. Topics include residual analysis, contingency tables, analysis of variance, proportionality inference, goodness of fit, tests for normality, two-sample comparisons, regression and correlation, tests for linearity and outliers. Students will develop the ability to apply statistical techniques to solve problems, make predictions, and derive meaningful insights from data. The course provides a solid foundation for those pursuing further studies in statistics, data science, or related fields.
STAT 3055	Introduction to R for Data Science	3	This course introduces students to the fundamental concepts in data science, covering the entire data science workflow, various aspects of statistical and machine learning techniques. It explores the R programming language and R packages for data manipulation, visualization, and modeling. Through hands-on laboratory sessions, students will engage in practical exercises, turning raw data into meaningful insights, knowledge, and understanding, and effectively communicating analytical results using R, RStudio, and R Markdown.
STAT 3200	Statistical Methods for Data Science	3	The course provides an introduction to statistical methods commonly used in the experimental sciences for data analysis and inference. It covers fundamental techniques for analyzing data sets, including parameter estimation and inferential methods, encompassing graphical displays, summary statistics, probability concepts, sampling techniques, distributions, hypothesis testing, confidence intervals, t-tests, correlation, and simple linear regression. Through lectures, practical exercises, and assignments, students will develop a solid understanding of these statistical methods and their applications in scientific research.
STAT 3250	Nonparametric Statistical Methods	3	This course systematically introduces basic concepts and practical methods of nonparametric statistics. Topics will include confidence interval, Walsh averages, signed rank test (Wilcoxon), one-sample t-test, two-sample procedures, Medians Equal, Kolmogorov-Smirnov test, Kruskal - Wallis test, Spearman's rank, Chi-Square Test, and ranked set sampling. In this course, students are required to launch a final project and conclude a data report to demonstrate their proficiency in applying appropriate nonparametric methods.
STAT 3560	Statistical Computing	3	This course serves as an introduction to statistical computing utilizing the R programming language. The primary focus is on statistical programming, graphical representation, elementary Monte Carlo methods, simulation studies, and basic optimization techniques in R. Students will explore classic methods such as the bootstrap and delve into modern Bayesian inference. By the end of the course, students will have a comprehensive understanding of R and its capabilities, along with a basic proficiency in key computational methods in statistics, including optimization, numerical analysis, Markov Chain Monte Carlo (MCMC) techniques, and simulation methods.

International Credit Program at Elmira College
Spring 2026 Course Listing as of 3/12/2026

STAT 4011	Applied Statistical Models	3	This course introduces students to the theory and application of statistical and computational models for analyzing data and making informed decisions in business and finance. Students will learn how to summarize and visualize data, quantify uncertainty, perform statistical inference, and build predictive models for both continuous and categorical outcomes. Advanced topics include time series forecasting, Monte Carlo simulation, and optimization models for decision making.
STAT 4120	Data Mining and Statistical Learning	4	This course provides a comprehensive introduction to data mining and statistical learning methods for analyzing complex datasets. Students will learn foundational supervised and unsupervised learning techniques, model evaluation strategies, modern machine learning algorithms, and statistical inference tools. Emphasis is placed on both theoretical understanding and hands-on implementation using R. Topics include regression, classification, resampling methods, regularization, tree-based models, support vector machines, deep learning, survival analysis, clustering, and multiple testing.
STAT 4150	Statistical Inference and Modelling	3	This course serves as an introductory exploration into the fundamental principles and applications of statistics, designed to equip students with essential skills for analyzing and interpreting data. The course covers a range of core topics, including descriptive statistics, probability theory, and basic inferential statistics. A significant portion of the course is dedicated to inferential statistics, where students will be introduced to methods for making inferences about populations based on sample data. This includes hypothesis testing, confidence intervals, and the interpretation of p-values. Students will learn how to conduct hypothesis tests for means and proportions, understand Type I and Type II errors, and apply these concepts to real-world scenarios.
STAT 4202	Mathematical Statistics	3	An advanced course designed to provide a rigorous foundation in mathematical statistics. This course will delve into the core concepts and methods used in statistical inference, including point estimation, interval estimation, and hypothesis testing. Students will learn how to develop and evaluate statistical models, estimate parameters, and make inferences about populations based on sample data. The course emphasizes both theoretical foundations and practical applications, preparing students for further study or work in statistics, data science, and related fields.



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