Accounting

ACCT 220 Principles of Accounting I (3)
An introduction to the basic theory and techniques of contemporary financial accounting. The objective is to identify the fundamental principles of accounting, identify and analyze business transactions, prepare financial statements, and communicate this information to users with different needs. Topics include the accounting cycle, transactions, and the preparation of financial statements for single-owner business organizations that operate as service companies or merchandisers. Students may receive credit for only one of the following courses: ACCT 220 or BMGT 220.

ACCT 221 Principles of Accounting II (3)
Prerequisite: ACCT 220. Further study of contemporary accounting practices, with an emphasis on data analysis for financial and managerial accounting. The goal is to analyze business transactions, define the characteristics of business entities, explain the interdependency of financial statements, employ managerial accounting techniques, and communicate this information to users with unique needs. Financial accounting topics include liabilities, equities, investments, and business entities. Managerial accounting topics include job order and process costing, cost-volume-profit analysis, and budgets. Students may receive credit for only one of the following courses: ACCT 221 or BMGT 221.

ACCT 301 Accounting for Nonaccounting Managers (3)
(May not be applied toward a major in accounting.) A survey of accounting principles relevant to making business decisions based on financial information. The aim is to apply critical-thinking skills and ethical principles to accounting issues. Topics include internal controls, financial reporting, financial statements analysis, managerial accounting, and budgeting elements. Students may receive credit for only one of the following courses: ACCT 301, MGMT 301, or MGST 301.

ACCT 310 Intermediate Accounting I (3)
(Students should be cautious about enrolling in ACCT 310 or ACCT 311. These are professional courses requiring intensive study and analysis and are not to be undertaken casually. Students who have not taken ACCT 221 within the last two years may have difficulty.) Prerequisite: ACCT 221. A comprehensive analysis of financial accounting topics related to preparing financial statements for external reporting. The objective is to analyze complex business transactions and their impact on financial statements. Focus is on researching and analyzing emerging issues in accounting, business transactions, and financing. Students may receive credit for only one of the following courses: ACCT 310 or BMGT 310.

ACCT 311 Intermediate Accounting II (3)
(A continuation of ACCT 310. Students should be cautious about enrolling in ACCT 310 or ACCT 311. These are professional courses requiring intensive study and analysis and are not to be undertaken casually. Students who have not taken ACCT 310 within the last two years may have difficulty.) Prerequisite: ACCT 310. A comprehensive analysis of financial accounting topics, including preparation of financial statements and external reports. The aim is to analyze complex business transactions and their impact on financial statements. Focus is on researching and analyzing emerging issues in accounting, business transactions, and financing. Students may receive credit for only one of the following courses: ACCT 311 or BMGT 311.

ACCT 320 Fraud Detection and Deterrence (3)
Prerequisite: ACCT 220 or ACCT 301. A study of the principles behind and standards for examining, identifying, detecting, and deterring fraud. The objective is to differentiate types of fraud, assess organizational characteristics conducive to fraud, and develop a plan to detect and deter fraud. Topics include the fraud triangle, cash larceny, check tampering, skimming, register disbursement schemes, cash receipts schemes, billing schemes, payroll and expense reimbursement issues, asset misappropriations, corruption, accounting principles and fraud, fraudulent financial statements, whistleblowing, interviewing witnesses, and writing reports. Focus is on creating and communicating meaningful data visualizations for stakeholders.

ACCT 321 Cost Accounting Data Analytics (3)
Prerequisite: ACCT 221. A study of basic cost accounting concepts. The goal is to apply basic cost accounting concepts, use technology to prepare financial deliverables, evaluate business and financial data, and communicate financial information. Topics include ethics, corporate social responsibility, and the evaluation of business and financial data to make profit-maximizing decisions. Discussion also covers the role of accountants in decision-making; cost behavior; cost planning and control; and costing methods, such as standard costing, budgeting, and inventory valuation. Focus is on using data analytics and creating and communicating meaningful data visualizations for decision-making.

ACCT 323 Federal Income Tax I (3)
Prerequisite: ACCT 220 or FINC 321. A study of data and processes related to the preparation of federal income tax for individuals and other entities. The objective is to explain the legislative process, conduct tax research, evaluate tax implications, and complete an individual tax return. Topics include the legislative process, tax policy, research, and the evaluation of transactions and decisions for planning and compliance. Emphasis is on ethics and professional responsibilities.

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ACCT 326 Accounting Information Systems (3)

Prerequisite: ACCT 221. An introduction to accounting information systems (AIS) concepts. The objective is to evaluate how AIS tools are used to record, process, and analyze financial data; determine how best to integrate AIS tools and processes in a given organization; review and recommend controls to secure AIS applications and processes; and evaluate how technology can be used in AIS applications. Topics include transactional processing concepts and core AIS transactional cycles, basic control frameworks used to secure AIS applications and processes, strategies for implementing or upgrading AIS applications, information technology and accounting standards, and e-commerce and e-business. Students may receive credit for only one of the following courses: ACCT 326, BMGT 320, or BMGT 326.

ACCT 350 Federal Financial Management (3)

Prerequisite: ACCT 220 or ACCT 301. Analysis and discussion of issues relating to federal financial management. The objective is to apply knowledge of the federal process to accounting practice, administer federal grants and contracts, and research federal laws and regulations. Topics include the CFO Act, the federal budget, federal contracts and grants, data visualization presentations, and federal financial and information systems. Discussion also covers detection and deterrence of fraud, waste, and abuse.

ACCT 410 Accounting for Government and Not-for-Profit Organizations (3)

Prerequisite: ACCT 310. An introduction to the theory and practice of accounting as applied to governmental entities and not-for-profit organizations. The objective is to evaluate transactions, prepare and analyze financial statements, write financial briefings, prepare data visualization presentations, and apply accounting rules and procedures. Topics include the evaluation and preparation of reports required for governmental and not-for-profit entities. Students may receive credit for only one of the following courses: ACCT 410 or BMGT 410.

ACCT 411 Ethics and Professionalism in Accounting (3)

Prerequisite: ACCT 311. An examination of ethical behavior in organizations and for the accounting and auditing professions. The goal is to identify ethical dilemmas, research regulations, and apply problem-solving methodology to resolve unethical situations. Discussion covers the AICPA Code of Professional Conduct and the ethical codes and requirements of other standard-setting organizations. Corporate governance, sustainability, and legal and regulatory obligations are explored within an ethical framework, including philosophical models and ethical theories, as well as within environmental, social, and governance (ESG) criteria.

ACCT 417 Federal Income Tax II (3)

(Strongly recommended for students seeking careers as CPAs.) Prerequisites: ACCT 311 and ACCT 323. A continuing study of federal income taxation as applied to different business entities, including corporations, flow-through entities, estates, and trusts. The aim is to analyze tax planning and compliance issues; conduct tax research; and analyze, evaluate, and communicate tax implications and data. Discussion covers tax research, planning, procedure, compliance, ethics, and professional responsibility. Topics also include the tax implications of various entities' financial and business decisions and transactions. Students may receive credit for only one of the following courses: ACCT 417 or BMGT 417.

ACCT 422 Auditing Theory and Practice (3)

Prerequisite: ACCT 311. Recommended: ACCT 326. A study of the auditing profession, audit process, and other assurance and non-assurance services related to the CPA profession. The objective is to design an audit plan, apply audit procedures, evaluate audit findings, and assess the impact of standards and emerging issues. Topics include generally accepted auditing standards, tests of controls and substantive tests, statistical sampling, data analytics, report forms, and opinions. Various techniques are used to study auditing concepts and practices; these may include the use of problem sets, case studies, computer applications, and other materials. Students may receive credit for only one of the following courses: ACCT 422 or BMGT 422.

ACCT 424 Advanced Accounting (3)

Prerequisite: ACCT 311. A study of advanced accounting theory, applied to specialized topics and contemporary problems. The aim is to prepare, present, and explain financial statements in five sectors—consolidated, international, partnership, not-for-profit, and state and local governments—and analyze a firm's dissolution or reorganization. Emphasis is on consolidated statements and partnership accounting. Various techniques are used to study accounting theory and practice; these may include the use of data analytics, problem sets, case studies, computer applications, and other materials. Students may receive credit for only one of the following courses: ACCT 424 or BMGT 424.

ACCT 425 International Accounting (3)
Prerequisite: ACCT 311. A study of accounting in a multinational context covering historical developments and international financial reporting standards. The objective is to recognize the influence of politics and culture on the development of accounting systems, prepare financial statements according to international financial reporting standards, and analyze the financial statements of a multinational enterprise. Strategies to manage and hedge against foreign currency exposure are developed. Topics include sustainability, foreign exchange and taxation, intercompany transfer pricing, data analytics, and emerging issues in international accounting. Students may receive credit for only one of the following courses: ACCT 425 or ACCT 498A.

ACCT 436 Internal Auditing (3)
(Designed to align with the standards of the Institute of Internal Auditors and help prepare for the Certified Internal Auditor examination.) Prerequisite: ACCT 311. An exploration of the consultative role in the management of risk. The aim is to identify the standards that apply to internal auditors, audit processes, and procedures and to assess internal control deficiencies. Topics include internal auditing standards, scope, responsibilities, ethics, controls, techniques, and reporting practices. Data analytics and practice involve the use of software such as Excel, Power BI, Tableau, ACL, and IDEA. Students may receive credit for only one of the following courses: ACCT 436, ACCT 498E, or BMGT 498E.

ACCT 438 Fraud and Forensic Accounting (3)
Prerequisite: ACCT 311. An analysis and discussion of issues relating to fraud and forensic accounting. The objective is to identify the resources for detecting fraud, evaluate the conditions that encourage fraud, and design effective fraud detection and deterrence plans. Discussion covers the principles and standards for proactive and reactive investigation, as well as detection and control of fraud. Focus is on data analytics and creating and communicating meaningful data visualizations for stakeholders from the perspective of public, internal, and private accountants.

ACCT 440 Forensic and Investigative Accounting (3)
Prerequisite: ACCT 320 or ACCT 438. An analysis and discussion of issues relating to forensic and investigative accounting. The goal is to research and describe the use of forensic accounting evidence, identify the role of the forensic accountant, apply investigative and forensic accounting practices, and present forensic accounting evidence as an expert witness. Forensic and investigative methods, including the use of data analytics, auditing, and technology are demonstrated. Topics include criminal and civil litigation support, rules of evidence, and accreditation of expert witnesses.

ACCT 452 Federal Auditing (3)
Prerequisite: ACCT 221. An overview of the federal auditing life cycle. The objective is to plan, manage, and execute a federal audit; identify and evaluate the program and financial risks; and identify and recommend enhancements to operations and technology. Topics include federal audits; data visualization, communicating audit findings to stakeholders, providing advisory support, and evaluating program and financial risks; managing technology and increasing economy and efficiency; and minimizing fraud, waste, and abuse. Discussions also cover the auditing of grants and contracts.

ACCT 486A Workplace Learning in Accounting (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl)*. The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

ACCT 486B Workplace Learning in Accounting (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl)*. The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

African American Studies

AASP 201 Introduction to African American Studies (3)
(Fulfills the general education requirement in behavioral and social sciences.) An interdisciplinary study of significant aspects of African American history and culture, emphasizing the development of African American communities from the Middle Passage to the present. The objective is to conduct research, apply critical-thinking skills, and articulate diverse historical perspectives in the context of African American history and culture. Topics include definitions of African American identity, influences, and achievements within American culture, as well as issues confronting African Americans. Students may receive credit for only one of the following courses: AASP 100 or AASP 201.

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Anthropology

ANTH 101 Introduction to Biological Anthropology (3)
A survey of general patterns in the development of human culture, addressing the biological and morphological aspects of humans viewed in their cultural setting. The aim is to apply anthropological knowledge to understanding human origins and how human populations adapt to the environment. Discussion examines human evolution and adaptation, including biocultural patterns in humans and other primates. Students who complete both ANTH 101 and ANTH 102 may not receive credit for ANTH 340, BEHS 340, or BEHS 341.

ANTH 102 Introduction to Cultural Anthropology (3)
A survey of social and cultural principles inherent in ethnographic descriptions. The objective is to apply anthropological knowledge of human behavior to everyday situations and problems. Students who complete both ANTH 101 and ANTH 102 may not receive credit for ANTH 340, BEHS 340, or BEHS 341.

ANTH 298 Special Topics in Anthropology (1–3)
A presentation of anthropological perspectives on selected topics of broad general interest. May be repeated to a maximum of 6 credits when topics differ.

ANTH 345 World Prehistory and Archaeology (3)
An intermediate-level exploration of world prehistory and archaeology. The goal is to analyze the cultural, technological, and subsistence patterns of prehistoric humans and relate these patterns to contemporary human societies and populations. Discussion covers archaeological theories and methods; subsistence strategies; and the applications of archaeological knowledge to modern community, regional, and global issues.

ANTH 346 Anthropology of Language and Communication (3)
An intermediate-level anthropological study of language, communication, and culture. The aim is to understand language in a cultural context; assess how the concepts, approaches, and methods of linguistic anthropology explain communication in changing cultural environments; and recognize how language both shapes and is shaped by culture. Topics include the origin of human language, linguistic diversity, structural elements of verbal and nonverbal language, language as social action, research in anthropological linguistics, language and power hierarchies, gendered communications, and linguistic diversity in the contemporary world.

ANTH 350 Health, Illness, and Healing (3)
Recommended: ANTH 102. An overview of health, illness, and healing from a cross-cultural perspective. The objective is to apply the perspectives of medical anthropology to promote individual and public health in local, national, and global contexts. Topics include cultural and social influences on health and healing, the experience and meaning of illness, and current issues in public and global health.

ANTH 351 Anthropology in Forensic Investigations (3)
An overview of forensic anthropology, an applied field of anthropology that seeks to recover, identify, and evaluate human skeletal remains within a medicolegal context. The aim is to explore the processes and methods used by forensic anthropologists to identify a cause and manner of death and determine an approximate postmortem interval. Topics include the forensic context, the human skeletal system, methods of identification, cause and manner of death, assessment of trauma, and analysis of evidence to draw conclusions about a case.

ANTH 398 Intermediate Special Topics in Anthropology (1–3)
A presentation of anthropological perspectives on selected topics of broad general interest. May be repeated to a maximum of 6 credits when topics differ.

ANTH 417 Peoples and Cultures of East Asia (3)
An advanced anthropological study of the peoples and cultures of East Asia, focusing on China, Japan, and Korea. The aim is to apply anthropological theories and methods to the interpretation of contemporary East Asian cultures, relate family structure to individual choices and social interactions in East Asian cultures, and analyze how ethnic and national identities and regional differences affect regional and global interactions. Topics include urbanization, social values, social change, and the role of East Asia in the modern world.

Applied Technology

APTC 495 Applied Technology Capstone (3)
Prerequisites: 27 credits in major coursework. A project-based application of computing knowledge and skills to solve problems. Focus is on researching, planning, and implementing a computing-based solution to an approved business and disciplinary-based problem outside the primary area of technology or computing focus. Assignments include working in teams through the planning, analysis, design, implementation, testing, and documentation phases. A presentation of the applied solutions constitutes a final learning demonstration.

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Arabic

ARAB 111 Elementary Arabic I (3)
For online sections, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of Arabic; assumes no prior knowledge of Arabic. Students with prior experience with the Arabic language should take a placement test to assess appropriate level.) An introduction to spoken and written modern standard Arabic. The objective is to communicate in Arabic in some concrete, real-life situations, using culturally appropriate language and etiquette. Ample practice in Arabic pronunciation and the structures needed for everyday communication are provided.

ARAB 112 Elementary Arabic II (3)
For online sections, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of Arabic; assumes no prior knowledge of Arabic. Students with prior experience with the Arabic language should take a placement test to assess appropriate level.) Prerequisite: ARAB 111 or appropriate score on a placement test. An introduction to spoken and written modern standard Arabic. The objective is to communicate in Arabic in some concrete, real-life situations, using culturally appropriate language and etiquette. Ample practice in Arabic pronunciation and the structures needed for everyday communication are provided.

ARAB 114 Elementary Arabic III (3)
For online sections, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of Arabic.) Prerequisite: ARAB 112 or appropriate score on a placement test. Further development of skills in elementary spoken and written modern standard Arabic. The aim is to communicate in Arabic in a variety of real-life situations, using culturally appropriate language. Practice is provided in improving pronunciation and developing the oral and written skills used in everyday communication.

ARAB 115 Elementary Arabic IV (3)
For online sections, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of Arabic.) Prerequisite: ARAB 114 or appropriate score on a placement test. Further development of skills in elementary spoken and written modern standard Arabic. The objective is to interact effectively with native Arabic speakers in a variety of real-life situations, using culturally appropriate language. Practice in fine-tuning pronunciation and applying language skills to a range of contexts is provided.

ARAB 333 Middle Eastern Cultures (3)
(Conducted in English.) A project-driven and discussion-based study of Middle Eastern cultures. The aim is to demonstrate cultural competence by explaining and analyzing Middle Eastern cultures through a variety of perspectives. Topics include religion, cultural practices, history, geography, and societies of the Middle East. Students may receive credit for only one of the following courses: ARAB 333 or ARAB 334.

Art

ARTT 110 Introduction to Drawing (3)
A hands-on introduction to various drawing media and related techniques. The objective is to translate the three-dimensional world into two dimensions, communicate through a visual medium, and critique visual works of art. Projects are based on nature and still life.

ARTT 120 Design I: Arrangement and Color (3)
Prerequisite: GRCO 100. A project-driven study of the design elements of a composition as they relate to its overall expression. The aim is to apply elements and principles of design, including color theory, to create a variety of compositions that effectively communicate ideas and emotions.

ARTT 152 Basics of Photography (3)
(Access to a digital camera with manual settings required.) An introduction to basic photographic procedures with an emphasis on composing, taking, and editing photographs. Discussion covers the historical development of photography. Students may receive credit for only one of the following courses: ARTT 152 or PHOT 198.

ARTT 210 Intermediate Drawing (3)
Prerequisite: ARTT 110. A continuing examination of materials and techniques of drawing. The objective is to apply drawing techniques and visual principles to various subjects, communicate through drawing, and critique works of art. More advanced media, compositions, techniques, and subjects are explored. Students may receive credit for only one of the following courses: ARTS 210 or ARTT 210.

ARTT 320 Painting (3)
Prerequisite: ARTT 110. Practice in the basic tools and vocabulary of painting. The goal is to apply an understanding of compositional strategies, visual principles, and basic materials and techniques to produce paintings using oil/watercolor/acrylic paints.

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ARTT 428 Advanced Painting (3)
Prerequisite: ARTT 320. Creation of original compositions based on the figure, nature, and still life, as well as expressive painting. The goal is to paint in a variety of styles and techniques, work with more complex forms (including drapery, transparency, and reflections), and work in landscape and/or figure in space painting. Emphasis is on the development of personal directions. May be repeated to a maximum of 12 credits.

Art History

ARTH 204 Film and American Culture Studies (3)
An introductory study of the relationship between film and American culture. The objective is to improve one's ability to understand a film's message and to expand one's cultural awareness. Discussion covers the way one of our most popular media portrays American culture and influences our interpretation of cultural issues. Various films, filmmaking issues, and representative filmmakers' work are examined. Students may receive credit for only one of the following courses: ARTH 204, AMST 204, or HUMN 204.

ARTH 334 Understanding Movies (3)
(Formerly HUMN 334.) An analysis of one of the most important means of artistic expression of the 20th century. The goal is to acquire a deeper understanding of the aesthetic qualities of film by considering the stylistic elements of film as it has evolved throughout the century and weighing the special relationship between cinema and literature. Students may receive credit for only one of the following courses: ARTH 334, HUMN 334, or HUMN 498D.

ARTH 372 History of Western Art I (3)
(Formerly ARTH 370.) A survey of the development of the Western tradition of visual art in its various forms that examines and compares the expression of cultural and aesthetic values in different parts of the Western world from prehistory through the Middle Ages. The objective is to apply principles of visual literacy; describe, analyze, and contextualize content and elements of art; and differentiate historic periods and styles of art. Students may receive credit for only one of the following courses: ARTH 370 or ARTH 372.

ARTH 373 History of Western Art II (3)
(Formerly ARTH 371.) A survey of the development of visual art of the Western world in its various forms that examines and compares the expression of cultural and aesthetic values in Europe and the United States from 1300 to the present day. The aim is to apply principles of visual literacy; describe, analyze, and contextualize content and elements of art; and differentiate historic periods and styles of art. Students may receive credit for only one of the following courses: ARTH 371 or ARTH 373.

ARTH 375 History of Graphic Art (3)
Recommended: ARTH 204. A survey of the development of graphic design with an emphasis on the historical, technological, and sociological influences on the production of typography and the aesthetics of visual media. The aim is to recognize the philosophy of graphic arts, identify various movements within the field, and analyze the impact of graphic arts on society. Topics include major works and artists and cultural, social, and religious movements and their impact on graphic arts.

ARTH 478 History of Women in the Visual Arts (3)
A survey of the work, roles, and representations of women in the visual arts, from the 16th century to the present. The aim is to evaluate the role of women artists and assess the impact of gender on visual arts as a way to understand the complexity and diversity of human experience and culture. Emphasis is on women working in the tradition of Western art in painting, sculpture, the decorative arts, performance art, photography, and other media and on how gender affected their art and their careers.

Asian Studies

ASTD 135 Introduction to Japanese Language and Culture (3)
(Formerly JAPN 105. Not open to students with substantial prior experience with Japanese language or culture; assumes no prior knowledge of Japanese. Students with prior experience with the Japanese language should take a placement test to assess appropriate level.) A hands-on, project-based introduction to Japanese language and culture. The goal is to develop cultural competency and familiarity with the history, geography, and culture of Japan and to use basic language skills to function effectively and appropriately in everyday life in Japan. Students may receive credit for only one of the following courses: ASTD 135 or JAPN 105.

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ASTD 155 Introduction to Korean Language and Culture (3)
(Not open to students with substantial prior experience with Korean language or culture; assumes no prior knowledge of Korean. Students with prior experience with the Korean language should take a placement test to assess appropriate level.) A hands-on, project-based introduction to Korean language and culture. The goal is to develop cultural competence in personal interactions; demonstrate knowledge of the history, geography, and culture of Korea; and use basic language skills to function effectively and appropriately in everyday activities in Korea. Students may receive credit for only one of the following courses: ASTD 155 or KORN 105.

ASTD 284 Foundations of East Asian Civilization (3)
(Formerly HIST 284.) An interdisciplinary survey of the foundations of East Asian civilization from its beginnings to the 17th century. The goal is to analyze philosophical, religious, artistic, economic, and political aspects of the region's historical experience. Focus is on China, Korea, and Japan. Topics include East Asian belief systems (including Confucianism and Buddhism), the dynastic cycle, relations between steppe and agrarian societies, warrior and scholar-gentry cultures, technological change and economic development, and the role of class and gender in early East Asian society. Students may receive credit for only one of the following courses: ASTD 150, ASTD 284, or HIST 284.

ASTD 285 Introduction to Modern East Asia (3)
(Formerly HIST 285.) An interdisciplinary survey of East Asia from the late 17th century—beginning with Ming-Qing China, Tokugawa Japan, and Choson Korea—to the present. The objective is to trace how transformations on global, regional, and local levels led to the development of the modern nation-states of East Asia and to examine how those developments affected the culture of the areas. Topics include the rise of imperialism and colonialism; cross-cultural interactions; and issues of gender, class, and ethnicity in East Asian culture. Students may receive credit for only one of the following courses: ASTD 160, ASTD 285, or HIST 285.

ASTD 302 The Two Koreas: Problems and Prospects (3)
Prerequisite: Any writing course. Recommended: ASTD 284 or ASTD 285. A thematic study of the two Koreas from historical, social, and foreign policy perspectives. The objective is to examine scholarly viewpoints on key issues of Korean history and division; articulate key factors that shape U.S. and regional policy toward North Korea; distinguish between different sources of information on the two Koreas; and interpret regional developments based on knowledge of Korean issues. Topics include the "hermit kingdom" myth; liberation, division, and war; the economic "miracle"; North Korean leadership; South and North Korean foreign relations; North Korea as a nuclear threat; and prospects for a unified Korea. Focus is on developing a stronger understanding of the two Koreas for practical and professional application. Assignments require research, analysis, and a written policy or strategy recommendation.

ASTD 370 Interpreting Contemporary China (3)
Prerequisite: Any WRTG course. Recommended: ASTD 285. A thematic study of contemporary China from political, economic, social, and foreign policy perspectives. The objective is to identify decision-making authorities, interpret major influences on the Chinese economy, appraise the impact of grassroots social movements, and distinguish factors that drive China's foreign policy. Focus is on developing engagement strategies for various professional applications. Assignments require research, analysis, and a written policy or strategy recommendation (e.g., a policy paper or business strategy plan).

ASTD 398 Advanced Special Topics in Asian Studies (3)
An investigation of a special topic, problem, or issue of particular relevance to countries or peoples of the Pacific Rim or Indian Ocean. Typical investigations include historical or contemporary subjects focusing on cultural, economic, military, or political issues. Assignments include advanced reading and research.

ASTD 485 East Asian Studies Capstone
Prerequisite: Completion of at least 24 credits in the major, including ASTD 284 and ASTD 285. A project-based interdisciplinary study of East Asia that integrates knowledge gained through previous coursework and experience and builds on that conceptual foundation through integrative analysis, practical application, and critical thinking. Discussion covers emerging issues and current scholarship in East Asian studies.

Astronomy

ASTR 100 Introduction to Astronomy (3)
Prerequisite: MATH 105, STAT 200, or a higher MATH or STAT course. An examination of the major areas of astronomy. Topics include the solar system, stars and stellar evolution, and galaxies. Current topics in astronomy are also discussed. The objective is to use scientific and quantitative reasoning to make informed decisions about topics related to space science. Students may receive credit for only one of the following courses: ASTR 100, ASTR 101, ASTR 120, or GNSC 125.

Behavioral and Social Sciences

BEHS 103 Technology in Contemporary Society (3)
An interdisciplinary introduction to the role of technology in contemporary society. The aim is to apply principles and concepts from a variety of social science disciplines (e.g., anthropology, sociology, psychology, and gerontology) to explore the influence of technology on society and the effect of technological change on our social lives, including our interpersonal relationships, work, culture, and society. Topics include the way technology changes relationships, the cumulative advantages and disadvantages associated with technology, digital natives versus digital immigrants, the pace of technological change, changes to the nature of how people learn and think, and the meaning of technology in society.

BEHS 210 Introduction to Social Sciences (3)
Recommended: WRTG 112 or equivalent. An interdisciplinary introduction to the study of society. The objective is to use the combined perspectives of the different social science disciplines to better understand the nature of society. Topics include research methods, ethical considerations in research, and the relationships among the different social sciences. Discussion surveys a range of social sciences. An analysis of social phenomena that integrates insights from the social sciences is also presented. Students may receive credit for only one of the following courses: BEHS 201 or BEHS 210.

BEHS 220 Diversity Awareness (3)
An examination of the many dimensions of diversity within the framework of the social sciences. The aim is to learn how to interact and communicate effectively and appropriately within a diverse society. Emphasis is on using critical thinking to understand stereotypes, prejudice, and discrimination and how these phenomena affect society. Discussion explores how adopting a social science perspective on diversity can help to address problems in the workplace, community, culture, and society.

BEHS 250 Social Justice Movements (3)
An introductory study of movements for social justice from an interdisciplinary perspective. The objective is to use the theoretical approaches and concepts of the social sciences to explain the origin, development, evolution, and outcomes of movements both in the United States and around the world. Topics include individual and group motivations for engaging in social movements; the use of social media; and ways that movements affect culture, society, and government. Discussion explores justice in the areas of climate, race, and gender, among others.

BEHS 300 Research Methods in the Social Sciences (3)
Prerequisites: BEHS 210 and STAT 200. An introduction to the core concepts, research methods, and skills that apply to work in the social sciences. The goal is to begin the process of conducting social science research. Discussion covers the scientific method, as well as quantitative and qualitative research methods specific to the social science disciplines of psychology, sociology, anthropology, and gerontology. Topics also include reliability and validity of data, correlation versus causality, research ethics, institutional review boards, proposal writing, and the unique contribution of interdisciplinarity in social science research.

BEHS 320 Disability Studies (3)
An interdisciplinary study of disability issues that focuses on understanding and evaluating traditional and current interpretations of the meaning of disability. The goal is to interact and communicate effectively and appropriately in situations relevant to issues of disability. Topics include the construction of images of people with disabilities; attitudes and actions toward those with disabilities; approaches taken by major social institutions (e.g., law, education, religion, the arts) toward disability; distinctions between different models of disability; and current issues in disability studies.

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BEHS 343 Parenting Today (3)
An overview of critical issues in modern parenting in the United States and the world. The objective is to use an interdisciplinary perspective to apply research and theory in family development to practical decision-making, taking into account modern and historical trends such as gender roles, socioeconomic status, and single parenting and the impact of divorce on children. Discussion examines the role of race and ethnicity in parenting, LGBT parenting, and multigenerational and military families.

BEHS 364 Alcohol in U.S. Society (3)
An interdisciplinary examination of the use and abuse of the drug alcohol from the perspectives of psychology, physiology, sociology, medicine, counseling, law, and public health. The aim is to examine current research and trends in the treatment of alcohol abuse and dependence (including prevention, assessment, and intervention) and to explore the history, etiology, effects, and current treatment practices. The effects of alcohol throughout the lifespan are explored in relation to gender, families, race, age, the workplace, and public safety.

BEHS 380 End of Life: Issues and Perspectives (3)
(Formerly GERO 380.) An exploration of death, dying, and bereavement from social, cultural, psychological, biomedical, economic, and historical perspectives. The objective is to clarify one's personal perspective on death and dying, based on a better understanding of end-of-life planning issues, stages of death, and models of care for the dying. Topics include definitions of death, needs of the dying and their support systems, pain management, palliative and hospice care, end-of-life decision-making, cultural meanings and rituals, suicide, euthanasia, homicide, natural disaster, the economics of death and life-sustaining care, family conflict and coping, bereavement, and grieving. Students may earn credit for only one of the following courses: BEHS 380 or GERO 380.

BEHS 453 Domestic Violence (3)
An examination of the complex phenomenon of domestic violence from a multidisciplinary perspective that integrates individual, social, political, cultural/ethnic, economic, legal, and medical viewpoints. The aim is to evaluate research and theoretical models of domestic violence; assess institutional, community, and individual responses to domestic violence; and locate effective resources. Topics include neglect and the physical, emotional, and sexual abuse of children, partners, and the elderly. Discussion also covers response systems and mechanisms to prevent and treat violence. Students may receive credit for only one of the following courses: BEHS 453 or BEHS 454.

BEHS 486A Workplace Learning in Behavioral and Social Sciences (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

BEHS 486B Workplace Learning in Behavioral and Social Sciences (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

BEHS 495 Social Sciences Capstone (3)
Prerequisites: BEHS 300 and completion of all requirements for the social science major. A study of the social sciences that integrates perspectives from various disciplines in the field. The aim is to apply theoretical perspectives and empirical evidence to address complex contemporary social problems and become better consumers and purveyors of knowledge and research. Topics include ethical and professional issues inherent in working in the social sciences and the role of advocacy in promoting social change.

Biology

BIOL 101 Concepts of Biology (3)
(Not open to students majoring in biotechnology or laboratory management.) An introduction to the structure and function of living organisms. The objective is to use knowledge about biological principles and scientific reasoning to make informed decisions about the natural world. Topics include the chemical foundations of life, cell biology, genetics, evolution, ecosystems, and the interdependence of living organisms. Discussion also covers the importance of the scientific method to biological inquiry and the impact of biological knowledge and technology on human societies. Students may receive credit for only one of the following courses: BIOL 101 or BIOL 103.

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BIOL 102 Laboratory in Biology (1)

(Not open to students majoring in biotechnology or laboratory management. Fulfills the laboratory science requirement only with previous or concurrent credit for BIOL 101.) Prerequisite or corequisite: BIOL 101. A hands-on study of the structure and function of living organisms. The goal is to apply the scientific method and to use scientific and quantitative reasoning to make informed decisions about experimental results in the biological sciences. Laboratory exercises emphasize the scientific method and explore topics such as the chemical foundations of living organisms, cell structure and function, and the classification of organisms. Students may receive credit for only one of the following courses: BIOL 102 or BIOL 103.

BIOL 103 Introduction to Biology (4)

(Not open to students majoring in biotechnology or laboratory management or to students who have completed BIOL 101 or BIOL 102. Fulfills the laboratory science requirement.) An introduction to the structure and function of living organisms. The aim is to apply the scientific method and use scientific and quantitative reasoning to make informed decisions about experimental results in the biological sciences. Topics include the chemical foundations of life, cell biology, genetics, evolution, ecosystems, and the interdependence of living organisms. Discussion also covers the importance of the scientific method to biological inquiry and the impact of biological knowledge and technology on human societies. Laboratory activities emphasize the scientific method. Students may receive credit for only one of the following: BIOL 101–BIOL 102 or BIOL 103.

BIOL 105 Principles of Biology (4)

(For students majoring or minoring in science. Fulfills the laboratory science requirement.) An introduction to the basic principles of biology. The goal is to apply knowledge about biological principles, the scientific method, and quantitative reasoning to effectively communicate an understanding of biological topics and research. Topics include the scientific method and biological processes and functions, with a special emphasis on cellular and molecular biology.

BIOL 160 Human Biology (3)

(Science background not required.) A general introduction to human structure, functions, genetics, evolution, and ecology. The aim is to use scientific reasoning to make informed decisions about topics related to human biology. The human organism is examined from the basic cellular level and genetics, through organ systems, to interaction with the outside world. Discussion also covers pertinent health topics. Students may receive credit for only one of the following courses: BIOL 160 or GNSC 160.

BIOL 161 Laboratory in Human Biology (1)

(Fulfills the laboratory science requirement only with previous or concurrent credit for BIOL 160.) Prerequisite or corequisite: BIOL 160. A laboratory study that uses the human organism as an example to illustrate the concepts underlying the organization and interrelationships of all living organisms.

BIOL 164 Introduction to Human Anatomy and Physiology (3)

Prerequisite: BIOL 101, BIOL 103, or BIOL 160. An introduction to the anatomy and physiology of the human organism. Topics include basic concepts of physics and chemistry that are necessary for understanding biological functions and the structure and function of cells, tissues, and the major organ systems in the body. Students may receive credit for only one of the following courses: BIOL 164 or GNSC 161.

BIOL 181 Life in the Oceans (3)

An introductory study of the major groups of plants and animals in various marine environments, as well as their interactions with each other and the nonliving components of the ocean. The objective is to use scientific reasoning to make informed decisions about topics related to marine biology. Discussion covers the impact of human activity on life in the ocean and the potential uses and misuses of the ocean. Students may receive credit for only one of the following courses: BIOL 181 or ZOOL 181.

BIOL 220 Human Genetics (3)

An introduction to the role of genes in inheritance of traits and genetic diseases and disorders. The goal is to understand how genes affect physical appearance and behavior. Topics include Mendelian and non-Mendelian inheritance of human genetic diseases, human genetic variation, and mechanisms underlying human diseases. Students may receive credit for only one of the following courses: BIOL 220, BIOL 222, or BSCI 222.

BIOL 230 General Microbiology (4)

(For students majoring or minoring in a science. Fulfills the laboratory science requirement.) Prerequisite: BIOL 103 or other introductory biology course with laboratory. An investigation of fundamental concepts in morphology, physiology, genetics, immunology, ecology, and pathogenic microbiology. Applications of microbiology to medicine, the food industry, and biotechnology are considered. Student may receive credit for only one of the following courses: BIOL 230, BIOL 302, BIOL 331, BIOL 398G, BSCI 223, MICB 200, or MICB 388A.

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BIOL 301 Human Health and Disease (3)
(For students majoring in both science and nonscience disciplines.) A survey of the mechanisms of disease and their expression in major organ systems of the human body. The goal is to use scientific reasoning to make informed decisions about matters related to human biology and health. Topics include infections, cancer, heart disease, lung disease, diabetes, stroke, malnutrition, poisoning by environmental toxins, stress, inflammation, disorders of the immune system, and aging. Emphasis is on analysis of factors that cause disruption of healthy body functions, leading to disease, and on prevention of disease through control of risk factors and early detection. Students may receive credit for only one of the following courses: BIOL 301 or BIOL 398H.

BIOL 302 Bacteria, Viruses, and Health (3)
(For students majoring in both science and nonscience disciplines.) An introductory study of the basic structure, genetic and regulatory systems, and life cycles of bacteria and viruses and how they relate to health, infectious disease, and illness. The objective is to apply knowledge of cellular and molecular processes and communicate synthesized knowledge of microbial pathogenesis and disease prevention methods. Students may receive credit for only one of the following courses: BIOL 230, BIOL 302, BIOL 331, BIOL 398G, BSCI 223, MICB 200, or MICB 388A.

BIOL 304 The Biology of Cancer (3)
(For students majoring in both science and nonscience disciplines.) An overview of the biological basis of cancer. The goal is to apply knowledge of cancer biology to adopt appropriate lifestyle strategies and evaluate current treatments. The causes, development, and progression of cancer are considered at the level of cell structure and function. The roles of genes and proteins are also examined. Students may receive credit for only one of the following courses: BIOL 304 or GNSC 398C.

BIOL 307 The Biology of Aging (3)
(For students majoring in both science and nonscience disciplines.) An overview of the biological basis of aging. The goal is to apply knowledge of the aging process to influence personal lifestyle choices, public health policy, and economic decisions. Topics include typical changes that occur in cells, molecules, metabolism, and structure during the aging process. The development and progression of several diseases associated with aging (including cancer, neurodegenerative diseases such as Alzheimer's and Parkinson's diseases, osteoporosis, and loss of visual acuity and memory) are discussed with respect to the role of genes, proteins, and environmental influences. Students may receive credit for only one of the following courses: BIOL 307 or BIOL 398V.

BIOL 318 Biology and the Climate Crisis (3)
An examination of the causes and effects of climate change and its impact on people, the environment, and the ecosystems we all depend on. The goal is to connect food and water security, health, equity, and urban living conditions to the changing global climate and changes in temperatures, precipitation patterns, sea levels, and ocean chemistry. Discussion covers how ecological systems support a stable climate and how wild flora, fauna, and ecological communities are threatened by rapid anthropogenic climate change. Topics include biologically based solutions that protect human health and well-being, especially for vulnerable populations, as well as preserve and restore the ecosystem diversity and stability that assure long-term persistence of life on Earth.

BIOL 320 Forensic Biology (3)
Recommended: BIOL 101, BIOL 103, or BIOL 160. An introduction to the basic principles of biology as applied to the field of forensic science. The aim is to use scientific reasoning to draw conclusions and make decisions about forensic techniques, analyses, and results. Topics include the biological features and characteristics of evidentiary materials, as well as the basic principles of chemistry, cell biology, microbiology, and genetics that underlie forensic analyses.

BIOL 325 Inquiries in Biological Science (3)
Prerequisite: BIOL 105. An overview of biological principles and current trends in biological science. The goal is to apply knowledge of core biological principles, critically analyze current research, and use scientific reasoning to make evaluative decisions related to applications in the biological sciences. Topics include the scientific process, core biological concepts, careers in biology-related fields, and safety and health policies relevant to biological research.

BIOL 328 Bioethics (3)
Recommended: BIOL 101 and WRTG 112 or equivalent. An introduction to ethical decision-making related to human life and health. The aim is to form defensible positions and carefully crafted arguments based on well-supported evidence. Discussion covers reproductive issues, biological research, and healthcare. Emphasis is on scientific and philosophical thinking.

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BIOL 350 Molecular and Cellular Biology (3)

(For students majoring or minoring in a science.) Prerequisite: BIOL 325. A thorough examination of the basic structure and function of cells, with an emphasis on eukaryotic cell biology. The objective is to use knowledge of molecular biology to interpret results and draw conclusions about research findings and technological applications. Topics include cell-cycle growth and death; protein structure; DNA replication, repair, and recombination; gene expression; RNA processing; and molecular transport, traffic, and signaling. Discussion also covers the application of recombinant DNA, genetic engineering, and other current molecular biology technologies. Students may receive credit for only one of the following courses: BIOL 350 or BIOL 398S.

BIOL 357 Bioinformatics (3)

Prerequisite: BIOL 325 or another upper-level biology course. Recommended: IFSM 201 and MATH 105 (or a more advanced MATH or STAT course). An introduction to the use of computers in the analysis of nucleic acid and protein sequences and a study of the significance of these analyses. The goal is to develop an understanding of the software used in bioinformatics and learn how to address specific questions in biotechnology and research. Topics include genome analysis, evolutionary relationships, structure-function identification, protein pattern recognition, protein-protein interaction, and algorithms.

BIOL 362 Neurobiology (3)

Prerequisite: BIOL 101, BIOL 103, or BIOL 160. An in-depth discussion of the biology and development of the nervous system. The goal is to apply knowledge of neurobiological principles to advanced studies or careers and be more informed healthcare consumers. Topics include neuronal structure and function; communication at the synapse; membrane receptors and intra- and intercellular signaling systems; gross organization of the brain and spinal cord; the processing of sensory information; the programming of motor responses; research techniques; ethics; brain development; plasticity; and higher functions such as learning, memory, cognition, and speech.

BIOL 398 Special Topics in Biology (3)

A study of topics in biology of special interest to students and faculty. May be repeated to a maximum of 6 credits when topics differ.

BIOL 422 Epidemiology and Communicable Diseases (3)

Prerequisite: BIOL 230, BIOL 301, BIOL 302, or BIOL 398G. Recommended: WRTG 393. An investigation of factors contributing to the emergence of new infectious diseases and the resurgence of diseases once thought to have been controlled. The goal is to synthesize and apply knowledge of research methods, integrate epidemiological information, and communicate knowledge to scientific and nonscientific communities. Topics include socioeconomic and environmental factors that contribute to the inability to prevent or control malaria, tuberculosis, and AIDS. Disease symptoms, patterns of spread, and possible control measures are examined for new infectious diseases (such as Lyme disease and those caused by E. coli O157, the Ebola virus, hantaviruses, and cryptosporidia). Discussion also covers resurgent diseases such as anthrax, bubonic plague, dengue, influenza, and cholera. Students may receive credit for only one of the following courses: BIOL 422 or MICB 388E.

BIOL 486A Workplace Learning in Biology (3)

Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl*). The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

BIOL 486B Workplace Learning in Biology (6)

Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

BIOL 495 Life Sciences Capstone (3)

Prerequisite: BIOL 325. Recommended: A statistics course. An examination of current topics, trends, and applications in the life sciences. The aim is to be familiar with life science laboratory and industry environments, communicate scientific principles effectively, practice professional ethics, and demonstrate knowledge of safe laboratory operations. Topics include current research, ways to recognize future trends, strategies to solve current challenges, and creative solutions for developing products and services in the life sciences. Students may receive credit for only one of the following courses: BIOL 400 or BIOL 495.

Business and Management

BMGT 110 Introduction to Business and Management (3)
(For students with little or no business background. Recommended preparation for many other BMGT courses.) An introduction to the fundamental concepts of business management and leadership. The objective is to understand the interrelated dynamics of business, society, and the economy. Discussion covers business principles and practices in the context of everyday business events and human affairs and from a historical perspective.

BMGT 121A Solve Problems, Make Decisions (1)
An introduction to problem-solving and decision-making, focusing on the difference between them and the inherent bias we have in dealing with them. The aim is to differentiate problem-solving and decision-making, evaluate personal skill levels in solving problems, and develop a tailored approach toward solving complex problems and making complex decisions. Topics include common problem-solving methodologies and decision-making strategies and the individual skills needed to employ them effectively.

BMGT 121B Communication and Collaboration (1)
An in-depth evaluation and application of successful collaboration and communication skills. The aim is to identify successful personal communication practices and skills needed for successful collaboration with others in the workplace. Topics include individual specific verbal and active listening skills, methods for interpreting nonverbal emotional intelligence cues, and techniques for troubleshooting daily communication.

BMGT 160 Principles of Management (3)
(Formerly MGST 160.) An introductory study of the skills required to effectively and efficiently manage employees and workflow within an organization. Focus is on the role of a manager to plan, organize, and control the workload through the development of effective relationships with employees. Topics include the role and function of a manager, motivation strategies, verbal and nonverbal communication skills, employee diversity, problem-solving and decision-making skills, and the influence of external organizational forces on work performance. Students may receive credit for only one of the following courses: BMGT 160 or MGST 160.

BMGT 304 Managing E-Commerce in Organizations (3)
A hands-on, project-based introduction to the management of e-commerce organizations. The objective is to identify and demonstrate the unique skills needed to manage a sustainable e-commerce organization. Topics include e-commerce management principles, human resource management, information systems, knowledge management principles, e-marketing, virtual customer and supplier relations, and potential international legal issues. Assignments include project-based case studies that apply skills to modern workday problems.

BMGT 305 Knowledge Management (3)
A practical approach to knowledge management. The aim is to understand the value of knowledge management and the roles of knowledge workers and knowledge managers. Discussion covers how organizations capture, acquire, and share knowledge to maintain corporate memory and to develop collaborative energy. Topics include both formal and informal approaches to knowledge sharing and ways in which organizations use knowledge management techniques for competitive advantage. Students may receive credit for only one of the following courses: BMGT 305 or BMGT 388C.

BMGT 317 Methods of Decision-Making and Problem-Solving (3)
A practical examination of decision-making and problem-solving. The goal is to use a proven framework to generate potential solutions for effective decision-making and problem-solving. Discussion covers the cultural impact of decision-making, including stakeholders' expectations. Topics include root cause analysis, risks and uncertainty, potential solutions and alternatives, key performance indicators, psychological traps, and the steps to assure effectiveness before and after decision implementation. Students may receive credit for only one of the following courses: BMGT 317 or TMGT 310.

BMGT 330 Entrepreneurship and New Venture Planning (3)
Recommended: BMGT 364. An overview of entrepreneurship and planning new business ventures for aspiring entrepreneurs and managers. The objective is to create and present a high-quality business plan for a new venture using marketing research and financial analytical techniques. Topics include profiles of entrepreneurs; benefits, risks, and challenges; financial management; access to capital; and franchising. Students may receive credit for only one of the following courses: BMGT 330, FINC 310, MGMT 330, or SBUS 200.

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BMGT 335 Small Business Management (3)
Recommended: BMGT 317. A comprehensive review of the management principles underlying organizational development and growth and business life-cycle segments of emerging enterprises. The goal is to demonstrate an understanding of small business management in a global context, differentiate between micro- and macro-organizational structures, and identify the critical elements of business sustainability. Topics include entrepreneurship, financing/capitalization, innovation, and human resource and strategic planning. Core components of small business management are explored and evaluated through a multifaceted approach.

BMGT 339 Introduction to Federal Contracting (3)
An overview of the federal contracting process, including the requirements and techniques of federal contracting. The objective is to document needs in writing, develop evaluation criteria, and review and assess contractor performance. Activities include planning, evaluating award criteria, and assessing performance. Discussion also covers critical contract issues. Students may receive credit for only one of the following courses: BMGT 339, MGMT 220, or MGMT 339.

BMGT 364 Management and Organization Theory (3)
Recommended: BMGT 110. An examination of the four functions of management—planning, organizing, leading, and controlling—with emphasis on the application of management concepts and theories to achieve organizational goals. The aim is to develop strategies, goals, and objectives to enhance performance and sustainability. Topics include ethics, social responsibility, globalization, and change and innovation. Students may receive credit for only one of the following courses: BMGT 364, TEMN 202, TEMN 300, TMGT 301, or TMGT 302.

BMGT 365 Organizational Leadership (3)
Prerequisite: BMGT 110 or BMGT 364. An exploration of leadership as a critical skill for the 21st century, when change occurs rapidly and consistently. The objective is to use leadership theory and assessment tools to evaluate one's own leadership skills. Focus is on the leadership skills needed to develop committed and productive individuals and high-performing organizations. Topics include vision, values, culture, ethics, and the interaction between the organization and the external environment. Students may receive credit for only one of the following courses: BMGT 365, MGMT 300, MGST 310, or TEMN 310.

BMGT 380 Business Law I (3)
(Strongly recommended for students seeking careers as CPAs, lawyers, or managers.) A conceptual and functional analysis and application of legal principles and concepts relevant to the conduct and understanding of commercial business transactions in the domestic and global environments. The aim is to evaluate sources of law, legal process, procedures, and remedies and to analyze tort, criminal, and contractual rights, obligations, liabilities, and remedies in the business environment. Topics include the legal, ethical, and social environments of business; civil and criminal law; agency; types of business organizations; and contracts and sales agreements.

BMGT 381 Business Law II (3)
(Strongly recommended for students seeking careers as CPAs, lawyers, or managers.) Prerequisite: BMGT 380. Further conceptual and functional analysis and application of legal principles relevant to the conduct and understanding of commercial business transactions in the domestic and global environment. The aim is to evaluate sources of law, legal process, procedures, and remedies and to analyze tort, criminal, and contractual rights, obligations, liabilities, and remedies in the business environment. Topics include personal and real property, leases, antitrust, business insurance, accountants' liability, negotiable instruments, secured transactions, government regulation affecting consumer protection, environmental protection, debtor/creditor relationships, and bankruptcy and reorganization.

BMGT 392 Global Business (3)
Recommended: BMGT 110. An overview of key concepts and issues relevant to conducting business in the global environment. Emphasis is on applying fundamental knowledge of global business and analyzing and evaluating global business variables for informed decision-making. The objective is to analyze property rights, obligations, liabilities, and remedies; evaluate regulations in the business environment; and assess implications of transactions and negotiable instruments in the business environment. Topics include the nature and scope of global business; cultural, political, legal, and economic environments; marketing; trade; and foreign investments. Students may receive credit for only one of the following courses: BMGT 392, MGMT 305, or TMGT 390.

BMGT 398 Special Topics in Business and Management (1–3)
Intensive inquiry into special topics in business and management that reflect the changing needs and interests of students and faculty.

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BMGT 411 Process Improvement (3)
A hands-on, project-based introduction to process improvement. The objective is to assess the root cause of a problem; gain buy-in for the improvement; map the process; establish internal controls; and apply a variety of metrics to improve processes, test improvement solutions, and implement the process improvement. Emphasis is on process improvements that are cost-effective and add value to organizational missions. Topics include meeting customer expectations, flowcharting, selecting approaches to change management, acquiring resources, and sustaining improvements. Students may receive credit for only one of the following courses: BMGT 411 or TMGT 411.

BMGT 456 Managing Across Cultures and Borders (3)
Recommended: BMGT 110. An examination and analysis of international management across cultures and borders. The aim is to apply critical-thinking and analytical skills in global management settings. Focus is on the roles of business managers in today's complex global environment. Topics include cross-cultural strategic planning, multinational organizational structures, global leadership, cross-cultural communication, environmental factors, decision-making, and negotiations. Students may receive credit for only one of the following courses: BMGT 456 or BMGT 498R.

BMGT 464 Organizational Behavior (3)
Prerequisite: BMGT 364. A study of how the manager uses knowledge of people's behavior in the workplace to develop best practices to build relationships that foster a more efficient and effective organization. The aim is to examine organizations and the way people behave in an organizational setting to develop the types of skills that encourage the organization's best workplace behavior. Topics include motivation, emotional intelligence, employee and organizational diversity, engagement in job performance, job commitment, and workplace culture.

BMGT 465 Organizational Change Management (3)
Prerequisite: BMGT 364. An examination of the systematic process of organizational change management, including data collection, diagnosis, action planning, intervention, and evaluation. The goal is to increase the effectiveness of an organization to develop the potential of all individuals. Activities include identifying and diagnosing organizational problems or opportunities utilizing management skills that support organizational change. Students may receive credit for only one of the following courses: BMGT 465, MGMT 398K, MGMT 465, or TMGT 350.

BMGT 466 Global Public Management (3)
Recommended: BMGT 110. A comprehensive study of public management. The aim is to analyze, design, and evaluate solutions to public-sector problems, both domestic and global, based on an understanding of public-sector management concepts and the different types of organizations involved. Topics include development and implementation of public-sector projects and the finance, human resources, and marketing activities that support them. Discussion also covers public management in diverse regions of the world, as well as the purpose and management of intergovernmental organizations and nongovernmental organizations. Students may receive credit for only one of the following courses: BMGT 366, BMGT 466, or TMGT 305.

BMGT 484 Organizational Collaboration (3)
Prerequisite: BMGT 364. A theoretical and practical investigation into organizational collaboration. The aim is to define the purpose, types, and use of collaboration by managers in modern organizations and the skills managers require for successful collaborations. Topics include development of skills in team dynamics, factors that foster team cohesion and performance, individual and group virtual collaboration, and decision-making.

BMGT 485 Applied Management (3)
(Intended as the final, capstone course for management studies majors, to be taken in the last 15 credits, but appropriate for anyone who aspires to a management position.) Prerequisites: BMGT 317, BMGT 364, BMGT 464 (or BMGT 465), and BMGT 484. An integration and application of managerial skills used in successful organizations. The goal is to integrate previously learned management skills—including the four functions of management, applied decision-making, team building, organizational behavior, and organizational change—and to apply them to achieve individual and organizational excellence.

BMGT 486A Workplace Learning in Business and Management (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

BMGT 486B Workplace Learning in Business and Management (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

BMGT 487 Project Management I (3)
(The first course in the two-course series BMGT 487–488.) An introduction to the terminology, principles, concepts, and practices of project management. The goal is to demonstrate the skills required to manage a project through all project phases, such as scope, scheduling, and cost. Traditional, agile, and hybrid project management approaches are compared to present key considerations of each method. The importance of soft skills like communication and stakeholder engagement is also underscored. Students may receive credit for only one of the following courses: BMGT 487 or TMGT 430.

BMGT 488 Project Management II (3)
(The second course in the two-course series BMGT 487-488.) Prerequisite: BMGT 487. An examination of project management processes and applications beyond introductory principles and concepts. The goal is to manage a project through all phases of the project life cycle. Emphasis is on the practical applications of project management principles and processes in real-world situations. Projects depict real-world situations, such as information systems implementations; service business/e-commerce projects; and consulting projects that occur in research, information systems, manufacturing, and engineering firms. Students may receive credit for only one of the following courses: BMGT 488 or TMGT 430.

BMGT 495 Strategic Management (3)
(Access to spreadsheet, word processing, and presentation software required. Intended as a final, capstone course to be taken in a student's last 15 credits.) Prerequisites: BMGT 364, BMGT 365, FINC 330 (or BMGT 340), and MRKT 310. A study of strategic management that focuses on integrating management, marketing, finance/accounting, production/operations, services, research and development, and information systems functions to achieve organizational success. The aim is to apply integrative analysis, practical application, and critical thinking to the conceptual foundation gained through previous study and personal experience. Emphasis is on developing an organizational vision and mission, developing and implementing strategic plans, and evaluating outcomes. Students may receive credit for only one of the following courses: BMGT 495, HMGT 430, MGMT 495, or TMGT 380.

BMGT 496 Business Ethics (3)
A study of the relationship of business ethics and social responsibility in both domestic and global settings. The aim is to explore ethical and moral considerations of corporate conduct, social responsibilities, policies, and strategies. Emphasis is on the definition, scope, application, and analysis of ethical values as they relate to issues of public and organizational consequence and business decision-making in the domestic and global business environments.

Career Planning

CAPL 198A Effective Time Management (1)
A hands-on exploration of effective time management strategies. The objective is to develop a personal time management plan. Topics include procrastination, ways to use time productively, the myth of multitasking, and approaches to achieving a balance. Discussion includes personal tendencies for managing time and recognizing and planning for prioritizing one's tasks. Students may receive credit for only one of the following courses: CAPL 198A or MGST 198B.

CAPL 198B Career Transitions (1)
An exploration of career paths and skills. The goal is to assess one's prior education and experiences to determine possible career paths. Topics include the identification of skills gaps, strategies for preparing a résumé aligned with the career, and best practices for successful integration into the civilian workforce. Students may receive credit for only one of the following courses: CAPL 198B or MGST 198M.

CAPL 198C Interviewing Skills (1)
A comprehensive exploration of skills and strategies needed for successful interviews. The aim is to articulate personal skills, education, and experience as they relate to a target position. Topics include body language, nonverbal cues, and candidacy for various positions. Discussions explore previous interview experiences, strategies for success during interviews, and determining whether the position may be a good fit. Students may receive credit for only one of the following courses: CAPL 198C or MGST 198L.

CAPL 398A Career Planning Management (1)
A survey of strategies for managing career change. Focus is on examining, evaluating, and assessing individual skill sets; networking; and researching career and economic markets. The objective is to formulate a career path and develop the resources needed to enter that path. Topics include résumé and cover letter development, interviewing techniques, negotiation strategies, and tools for ongoing career planning.

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CAPL 495 General Studies Capstone (3)
The analysis and evaluation of knowledge and skills gained from previous study. A capstone project connects an area of study to a real-world scenario and includes the presentation of a portfolio linking one's experience with personal and professional goals.

Chemistry

CHEM 103 General Chemistry I (4)
(For students majoring or minoring in a science; not appropriate for nonscience students fulfilling general education requirements. Fulfills the laboratory science requirement.) Prerequisite: MATH 107 or MATH 115. A study of the nature and composition of matter. Elements, inorganic compounds, and chemical calculations are covered. Students may receive credit for only one of the following courses: CHEM 102, CHEM 103, CHEM 105, CHEM 107, or CHEM 121.

CHEM 113 General Chemistry II (4)
(For students majoring or minoring in a science; not appropriate for nonscience students fulfilling general education requirements. Fulfills the laboratory science requirement.) Prerequisite: CHEM 103 or CHEM 105. A study of kinetics; homogeneous, heterogeneous, and ionic equilibria; oxidation/reduction reactions; electrochemistry; and chemistry of the elements. Students may receive credit for only one of the following courses: CHEM 113 or CHEM 115.

CHEM 121 Chemistry in the Modern World (3)
(For students not majoring or minoring in science.) An exploration of chemistry as it relates to human life and the environment. The goal is to use a working knowledge of chemical principles, scientific reasoning, and quantitative reasoning to make informed decisions about health and safety matters. Discussion examines natural processes and human factors in the modern world using the principles of chemistry and the scientific method. Students may receive credit for only one of the following courses: CHEM 102, CHEM 103, CHEM 104, CHEM 105, CHEM 107, CHEM 121, CHEM 297, or GNSC 140.

CHEM 297 Environmental Chemistry (3)
Prerequisite(s): MATH 115 (or MATH 107 and MATH 108). An examination of the chemistry of environmental systems. The aim is to identify and evaluate fundamental principles of chemistry in relation to environmental systems. Discussion covers the nature of atoms, types of bonding, functional groups, chemical reactivity, and chemical interactions. Topics also include migration of chemicals through the environment, the role of basic chemistry in biogeochemical cycles, and human impact on biogeochemical cycles through the use of technology. Students may receive credit for only one of the following courses: CHEM 102, CHEM 103, CHEM 104, CHEM 105, CHEM 107, CHEM 121, CHEM 297, or GNSC 140.

Chinese

CHIN 111 Elementary Chinese I (3)
For online sections, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of Chinese; assumes no prior knowledge of Chinese. Students with prior experience with the Chinese language should take a placement test to assess appropriate level.) An introduction to spoken and written Mandarin Chinese. The objective is to communicate in Chinese in some concrete real-life situations using culturally appropriate language and etiquette, to read and write pinyin, and to begin to recognize and type Chinese characters. Practice is provided in Chinese pronunciation, tones, and structures needed for everyday communication.

CHIN 112 Elementary Chinese II (3)
(Not open to native speakers of Chinese.) Prerequisite: CHIN 111 or appropriate score on a placement test. A continued introduction to spoken and written Mandarin Chinese. The goal is to communicate in Chinese in concrete real-life situations using culturally appropriate language and etiquette and to recognize and type some frequently used Chinese characters. Practice is provided in improving pronunciation and developing the oral and written skills used in everyday communication.

CHIN 114 Elementary Chinese III (3)
For online sections, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of Chinese.) Prerequisite: CHIN 112 or appropriate score on a placement test. Further development of skills in elementary spoken and written Mandarin Chinese. The aim is to communicate in Chinese in a variety of real-life situations using culturally appropriate language, recognize and distinguish more commonly used Chinese characters, and read in context. Practice is provided in improving pronunciation and developing the oral and written skills used in everyday communication.

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CHIN 115 Elementary Chinese IV (3)
For online sections, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of Chinese.) Prerequisite: CHIN 114 or appropriate score on a placement test. Further development of skills in elementary spoken and written Mandarin Chinese. The aim is to interact effectively with native speakers of Chinese in a variety of real-life situations using culturally appropriate language and to recognize and distinguish more commonly used Chinese characters in context. Practice in fine-tuning pronunciation and applying language skills to a range of contexts is provided.

Communication Studies

COMM 200 Military Communication and Writing (3)
(Fulfills the general education requirement in communications.) A study of business communication management in a military context. The objective is to develop appropriate and effective communication products for military audiences and within military environments through the application of accepted business communication practices. Topics include communication theories; research methods; organization of information; formats; writing and editing strategies; and techniques for guiding subordinate communication, conducting interviews, and managing meetings. Assignments may include making speech presentations; instructing a class; conducting interviews; managing meetings; and writing and editing reports, letters, emails, proposals, and personnel evaluations.

COMM 202 Media and Society (3)
(Fulfills the general education requirement in communications but is not a writing course.) Prerequisite: WRTG 112 or equivalent. An overview of the complex components and relationships involved in today's media. The goal is to understand the technical, political, economic, cultural, and organizational influences on mediated messages. Topics include visual rhetoric, legal and ethical issues, social media, the transactional model, advertising, security, and privacy concerns.

COMM 207 Understanding Visual Communication (3)
A study of the creation and interpretation of visual language. The aim is to understand how images are used to effectively communicate ideas in a variety of channels, including news, advertising, and public relations. Topics include aesthetics, principles of composition, color systems, content awareness, and historical and cultural perspectives. Emphasis is on critical thinking and analysis of images from both theoretical and practical perspectives.

COMM 300 Communication Theory (3)
(Fulfills the general education requirement in communications but is not a writing course.) Prerequisite: WRTG 112 or equivalent. An introduction to communication theory. The objective is to apply communication theory and evaluate communication situations. The basic theories of human communication, mass communication, and new media and technology are explored. Focus is on the relationships among communication theory, research, and practice. Topics include intra- and interpersonal communication, public communication, mass media, and contemporary issues associated with mediated communication.

COMM 302 Mass Communication and Media Studies (3)
(Fulfills the general education requirement in communications but is not a writing course.) Prerequisite: WRTG 112, WRTG 101, or WRTG 101S. A survey of mass communication designed to enhance media literacy. The goal is to interpret, evaluate, and produce media messages. Topics include media industries and the impact of the media, as well as regulation, policy, and ethical issues. Emphasis is on critical thinking and analysis of vital aspects of pervasive elements of popular culture, such as news, advertising, children's entertainment, and a free press. Students may receive credit for only one of the following courses: COMM 302 or COMM 379A.

COMM 390 Writing for Managers (3)
(Fulfills the general education requirement in communications.) Prerequisite: WRTG 112, WRTG 101, or WRTG 101S. A practicum in the kinds of communication skills that managers need for the workplace. The goal is to develop persuasive managerial communication for organizational decision-making and action. Students may receive credit for only one of the following courses: COMM 390, HUMN 390, WRTG 390, or WRTG 490.

COMM 400 Mass Media Law (3)
(No previous study of law required. Fulfills the general education requirement in communications but is not a writing course.) Prerequisite: WRTG 112 or equivalent. Recommended: WRTG 391, WRTG 393, or WRTG 394. An examination of important legal issues that affect mass media and communications professionals. The objective is to analyze mass media law, its evolution, and its relationship with society, culture, and politics. Topics include copyright, intellectual property, fair use, defamation, privacy, freedom of information, freedom of speech, and freedom of the press, as well as issues raised by the growth of the internet. Discussion also covers ethics in mass media, digital technologies, and the creation of media content. Students may receive credit for only one of the following courses: COMM 400 or JOUR 400.

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COMM 459 Special Topics in Communication (1–3)
An exploration of special topics in communication. The objective is to attain specialized knowledge and skills in a particular area of communication, journalism, speech, or professional writing. Focus is on demonstrating new knowledge through an extended applied project. May be repeated to a maximum of 6 credits when topics differ.

COMM 480 Research Methods in Communication Studies (3)
Prerequisites: COMM 300 and COMM 302. A review of qualitative and quantitative research methods in communication studies. The objective is to define and explain research methods, concepts, and tools; apply research design, data collection, analysis, and reporting skills; and critically evaluate research in terms of rigor, relevance, and explanatory value. Practice is provided in finding, consuming, and analyzing research studies. Discussion covers the steps of the research process: articulating a question, developing a methodology, conducting a study, and reporting on findings.

COMM 486A Workplace Learning in Communication Studies (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl)*. The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

COMM 486B Workplace Learning in Communication Studies (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl)*. The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

COMM 492 Grant and Proposal Writing (3)
(Fulfills the general education requirement in communications.) Prerequisite: WRTG 112 or equivalent. An advanced study of technical writing, focusing on composing competitive proposals in response to Requests for Proposals (RFPs) and other funding solicitations from the federal government and community and private sources. The aim is to apply skills needed in the proposal development process; assess an RFP to determine evaluation and competitive criteria; and synthesize the required elements into a successful proposal. Discussion covers stages of the proposal-development process, including researching the funding agency for its mission, target populations, and problems of interest; assessing the RFP to determine evaluation criteria; and assembling the required elements of a successful proposal. Assignments include writing a grant request and working in teams to prepare a competitive business proposal. Students may receive credit for only one of the following courses: COMM 492, ENGL 489C, or WRTG 494.

COMM 495 Communication Studies Capstone (3)
Prerequisites: COMM 300, COMM 302, and at least 9 additional credits of upper-level COMM, SPCH, and/or JOUR courses. Recommended: COMM 390. A project-based capstone study of communication. The aim is to reflect on the knowledge and skills gained through previous coursework and experiences in the discipline.

Computer Information Technology

Courses in computer information technology (designated CMIT) have higher computing requirements than the minimum technical requirements stated on p. 26. They require an Intel Core i7 processor or higher, with speeds of 2GHz or faster, at least 6GB of available disk space, and at least 16GB RAM (32GB recommended). Display devices should have a resolution of 1920 X 1080 or better (PCs) or 1440 X 900 retina display (Mac).

CMIT 202 Fundamentals of Computer Troubleshooting (3)
(Designed to help prepare for the CompTIA A+ exams.) A thorough review of computer hardware and software, with emphasis on the application of current and appropriate computing safety and environmental practices. The goal is to evaluate, install, configure, maintain, and troubleshoot computer hardware components and operating systems.

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CMIT 265 Fundamentals of Networking (3)
(Designed to help prepare for the CompTIA Network+ certification exam.) Prerequisite: CMIT 202 or CMSC 115 (or CMIS 141). An introduction to networking technologies for local area networks, wide area networks, and wireless networks. The aim is to recognize the type of network design appropriate for a given scenario. Topics include the OSI (open system interconnection) model, security, and networking protocols. Students may receive credit for only one of the following courses: CMIT 265 or CMIT 265M.

CMIT 291 Introduction to Linux (3)
(Designed to help prepare for the Linux Professional Institute Certification 1 [LPIC-1] and the CompTIA Linux+ certification exams.) Prerequisite: CMIT 202 or CMIT 265. A study of the Linux operating system. The goal is to configure and manage processes, user interfaces, device files, print facilities, file systems, task automation, the boot-up/shutdown sequence, disk storage, network connectivity, system security, and users and groups. Students may receive credit for only one of the following courses: CMIT 291, CMIS 390, CMIT 391, or CMIS 398U.

CMIT 320 Network Security (3)
(Designed to help prepare for the CompTIA Security+ exam.) Prerequisite: CMIT 265 or CompTIA Network+ certification. A study of the fundamental concepts of computer security and its implementation. The aim is to assess and mitigate risk, evaluate and select appropriate technologies, and apply proper security safeguards.

CMIT 321 Ethical Hacking (3)
(Formerly CMIT 398E. Designed to help prepare for the EC-Council Certified Ethical Hacker certification.) Prerequisite: CMIT 320. Development of the structured knowledge base needed to discover vulnerabilities and recommend solutions for tightening network security and protecting data from potential attackers. Focus is on penetration-testing tools and techniques to protect computer networks. Students may receive credit for only one of the following courses: CMIT 321 or CMIT 398E.

CMIT 326 Cloud Technologies (3)
(Designed to help prepare for the CompTIA Cloud+ and AWS Certified Cloud Practitioner certification exams.) A hands-on study of basic cloud technologies. The aim is to apply the techniques and tools used in cloud environments, especially the AWS (Amazon Web Services) cloud. Topics include the global infrastructure of the cloud, deployment and operation in various cloud environments, high availability, scalability, elasticity, security, and troubleshooting. AWS, Microsoft Azure, and Google Cloud are compared.

CMIT 336 Fundamentals of Microsoft Azure (3)
(Designed to help prepare for Exam AZ-900: Microsoft Azure Fundamentals.) Prerequisite: CMIT 326. A hands-on study of Microsoft Azure services. The aim is to demonstrate mastery of cloud concepts; the core services used in Azure; pricing and support models used for Azure; and fundamentals of cloud security, privacy, compliance, and trust for Microsoft Azure. Topics include high availability, scalability, agility, fault tolerance, and disaster recovery in the Microsoft Azure environment.

CMIT 351 Switching, Routing, and Wireless Essentials (3)
(Designed to help prepare for the Cisco Certified Network Associate [CCNA] certification examination. Course completion earns a Cisco-issued digital badge on the Acclaim credentials platform.) Prerequisite: CMIT 265. A hands-on introduction to Cisco internetworking devices. Focus is on switching technologies and router operations that support small to medium business networks, including wireless local area networks (WLAN) and security concepts. The goal is to perform basic network configuration and troubleshooting; identify and mitigate LAN security threats; and configure and secure a basic WLAN. Students may receive credit for only one of the following courses: CAPP 498E, CMIT 350, CMIT 351, or CMIT 499D.

CMIT 352 Enterprise Networking, Security, and Automation (3)
(Designed to help prepare for the Cisco Certified Network Associate [CCNA] certification examination. Course completion earns a Cisco-issued digital badge on the Acclaim credentials platform.) Prerequisite: CMIT 351. A hands-on introduction to Cisco internetworking devices. Focus is on the architectures and considerations related to designing, securing, operating, and troubleshooting enterprise networks. Topics include wide area network (WAN) technologies and quality of service (QoS) mechanisms used for secure remote access, along with the introduction of software-defined networking, virtualization, and automation concepts that support the digitalization of networks. Students may receive credit for only one of the following courses: CAPP 498E, CMIT 350, CMIT 352, or CMIT 499D.

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CMIT 380 Managing Modern Microsoft Desktops (3)
(Designed to help prepare for the Microsoft 365 Certified: Modern Desktop Administrator Associate certification examination. Passing the MD-100 examination earns the Microsoft-issued MD-100 Windows 10 digital badge on the Acclaim credentials platform.) Prerequisites: CMIT 202 and CMIT 320. An introduction to installing, supporting, and configuring Windows 10 desktops in an organizational environment. The aim is to install, customize, and update the Windows 10 Operating Systems (OS), including managing storage, files, and devices, and secure data and the Windows 10 OS, as well as troubleshoot Windows 10. Students may receive credit for only one of the following courses: CMIT 370 or CMIT 380.

CMIT 382 Managing Microsoft 365 Identity (3)
(Designed to help prepare for the Microsoft 365 Certified: Enterprise Administrator Expert certification examination.) Prerequisite: CMIT 380. An introduction to Microsoft 365 identity and services. The aim is to demonstrate the ability to design and implement Microsoft 365 services, manage user identity and roles, manage access and authentication, and plan Microsoft 365 workloads and applications. Students may receive credit for only one of the following courses: CMIT 371 or CMIT 382.

CMIT 386 Penetration Testing and Cyber Red Teaming (3)
(Designed to help prepare for the CompTIA PenTest+ certification exam.) Prerequisite: CMIT 321. Recommended: CMIT 291, CMIT 391, or the CompTIA Linux+ or Linux Professional Institute LPIC-1 certifications. An introduction to the concepts and skills necessary to perform penetration testing and red teaming. The goal is to use penetration testing techniques focused on the Penetration Testing Execution Standard (PTES)—including preengagement interactions, intelligence gathering, threat modeling, vulnerability analysis, exploitation, postexploitation, and reporting—to perform a penetration test and present findings to management. Topics include overview of tools such as KALI Linux and the Metasploit Framework that can be used for penetration testing and strategies for red teaming.

CMIT 388 Red Hat Linux System Administration I (3)
(Designed to help prepare for the Red Hat Certified System Administrator [RHCSA] certification exam.) Prerequisite: CMIT 291 or CMIT 391. Development of the key foundational skills needed by an RHCSA-certified Red Hat Enterprise Linux system administrator. Focus is on the knowledge, skills, and abilities needed to become a Linux systems expert or Linux system administrator. Discussion covers advanced command line concepts and enterprise-level tools intended for cybersecurity professionals who need to perform essential Linux administration tasks, including installation, configuring networking connectivity, managing physical storage, automation/programmability, and performing security administration tasks.

CMIT 420 Managing Security on Modern Microsoft Desktops (3)
(Designed to help prepare for the Microsoft 365 Certified: Modern Desktop Administrator Associate certification examination.) Prerequisites: CMIT 320 and CMIT 382. An introduction to implementation of a Windows 10 operating system strategy using modern deployment methods and implementing an update strategy. Focus is on methods for deployment and management of apps and browser-based applications. Key concepts include security in modern management, including authentication, identity, access, and compliance policies. Topics such as Azure Active Directory, Azure Information Protection, and Windows Defender Advanced Threat Protection, as well as how to leverage these technologies to protect devices and data, are covered.

CMIT 421 Threat Management and Vulnerability Assessment (3)
(Designed to help prepare for the CompTIA Cybersecurity Analyst [CySA+] certification.) Prerequisite: CMIT 320. A study of the analysis of data in threat and vulnerability management. The goal is to properly utilize various cybersecurity tools and technologies. Discussion covers the analysis of threats and the impact on incident response, as well as the tools and equipment used in a forensic investigation. Various industry and government frameworks and regulatory compliance are highlighted.

CMIT 422 Managing Microsoft 365 Security (3)
(Designed to help prepare for the Microsoft 365 Certified: Enterprise Administrator Expert certification examination.) Prerequisites: CMIT 320 and CMIT 382. A study of the three key components of Microsoft 365 services: Microsoft 365 security management, Microsoft 365 compliance management, and Microsoft 365 device management. Examination covers threat vectors and data breaches facing today's organizations and key elements of compliance management, such as data governance, data archiving and retention, and data loss prevention. The aim is to gain knowledge in managing all aspects of device management, including comanagement, Windows Autopilot, Windows Analytics, and Mobile Device Management. Students may receive credit for only one of the following courses: CMIT 373 or CMIT 422.

CMIT 424 Digital Forensics Analysis and Application (3)
(Designed to help prepare for the Certified Computer Examiner [CCE] certification exam.) Prerequisites: CMIT 202 (or CompTIA A+ certification), CMIT 320 (or CompTIA Security+ certification), and CCJS 321. A project-driven study of the digital forensic evaluation process. The objective is to build forensic workstations, collect evidence, extract artifacts, identify unknown files, and reassemble evidence from network packet captures.

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CMIT 425 Advanced Information Systems Security (3)
(Designed to help prepare for the (ISC)^2 Certified Information System Security Professional [CISSP] certification exam.) Prerequisite: CMIT 320 or CompTIA Network+ and Security+ certifications. A comprehensive study of information systems security to enhance organizational security. The goal is to manage risks by identifying and mitigating them. Students may receive credit for only one of the following courses: CMIT 425 or CMIT 499S.

CMIT 426 Mastering the AWS Cloud (3)
(Designed to help prepare for the AWS Certified Solutions Architect–Associate exam.) Prerequisite: CMIT 326. A hands-on study of Amazon Web Services (AWS). The goal is to understand the computing, networking, storage, and database services in AWS; apply best practices in building secure and reliable applications in the AWS cloud environment; and identify the appropriate AWS service to meet an organization's technical requirements.

CMIT 436 Security in the Cloud (3)
(Designed to help prepare for the (ISC)^2 Certified Cloud Security Professional exam.) Prerequisite: CMIT 326. A hands-on study of cybersecurity and means for securing critical assets in cloud environments. The goal is to apply the principles of confidentiality, integrity, and availability (CIA) of digital resources in cloud environments.

CMIT 440 Mobile Forensics (3)
(Designed to help prepare for the IACIS Certified Mobile Device Examiner [ICMDE] certification exam.) Prerequisite: CMIT 424. A project-driven study of mobile devices from a forensic perspective. The aim is to implement various techniques to collect and analyze information from mobile devices used in forensic investigations.

CMIT 455 Implementing and Operating Cisco Enterprise Network Core Technologies (3)
(Designed to help prepare for the Cisco Certified Network Professional [CCNP] Implementing and Operating Cisco Enterprise Network Core Technologies [ENCOR] certification examination. Course completion earns a Cisco-issued digital badge on the Acclaim credentials platform.) Prerequisite: CMIT 350 or CMIT 352. A comprehensive study designed to broaden the architectural understanding and deepen the implementation skills required in today's enterprise networks. Discussion covers switching, routing, wireless, and related security topics, along with the technologies that support software-defined programmable networks. Students may receive credit for only one of the following courses: CMIT 451 or CMIT 455.

CMIT 456 Implementing Cisco Enterprise Advanced Routing and Services (3)
(Designed to help prepare for the Cisco Certified Network Professional [CCNP] Implementing Cisco Enterprise Advanced Routing and Services [ENARSI] certification examination. Course completion earns a Cisco-issued digital badge on the Acclaim credentials platform.) Prerequisite: CMIT 455. An in-depth study of the architectural understanding and implementation skills required in today's enterprise networks. The aim is to implement and troubleshoot advanced routing technologies and services, including Layer 3, VPN services, infrastructure security, infrastructure services, and infrastructure automation. Students may receive credit for only one of the following courses: CMIT 452 or CMIT 456.

CMIT 460 Network Forensics (3)
(Designed to help prepare for the Computer Security Incident Handler [CSIH] certification.) Prerequisites: CMIT 320 and CMIT 424. A project-driven study of networks from a foren-sics perspective. The goal is to implement various techniques that are used in forensic investigations in response to network intrusions to collect and analyze information from computer networks.

CMIT 486A Workplace Learning in Computer and Information Technology (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

CMIT 486B Workplace Learning in Computer Information Technology (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

CMIT 495 Cybersecurity Technology Capstone (3)
Prerequisite: Completion of at least 27 credits of CMIT coursework. A comprehensive project-driven study of network design and security, with an emphasis on the integration of knowledge, practical applications, and critical thinking. The objective is to implement a secure and scalable network to meet organizational needs. Topics include advanced concepts in network and security design.

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CMIT 499 Special Topics in Computer Networks and Security (1–5)
An inquiry into special topics in computer networks and security that reflect the changing field. May be repeated when topics differ.

Computer Science

Courses in computer science (except CMSC 150) have higher computing requirements than the minimum technical requirements stated on p. 26. They require an Intel Core i7 processor or higher, with speeds of 2GHz and at least 8GB RAM (16GB recommended).

CMSC 100 Social Networking and Cybersecurity Best Practices (3)
(Formerly CMIS 111.) A hands-on study of current social networking applications and approaches to protect against cyberattacks and enhance personal cybersecurity. The goal is to collaborate and interact through personal and professional social networking while developing and using computer security best practices. Discussion covers issues associated with the impact of social computing on individuals and society. Projects include creating and maintaining accounts on selected social networking sites. Students may receive credit for only one of the following courses: CMIS 111 or CMSC 100.

CMSC 105 Introduction to Problem-Solving and Algorithm Design (3)
(Formerly CMIS 102.) A study of techniques for finding solutions to problems through structured programming and step-wise refinement. The objective is to design programs using pseudocode and implement them in an appropriate programming language. Hands-on practice in debugging, testing, and documenting is provided. Topics include principles of programming, the logic of constructing a computer program, and the practical aspects of integrating program modules into a cohesive application. Algorithms are used to demonstrate programming as an approach to problem-solving. Students may receive credit for only one of the following courses: CMIS 102, CMIS 102A, CMSC 101, or CMSC 105.

CMSC 115 Introductory Programming (3)
(Formerly CMIS 141.) Prerequisite: CMSC 105 (or CMIS 102). A study of structured and object-oriented programming using the Java language. The goal is to design, implement, test, debug, and document Java programs, using appropriate development tools. Projects require the use of algorithms, simple data structures, and object-oriented concepts. Students may receive credit for only one of the following courses: CMIS 141, CMIS 141A, or CMSC 115.

CMSC 150 Introduction to Discrete Structures (3)
Prerequisite or corequisite: MATH 140. A survey of fundamental mathematical concepts relevant to computer science. The objective is to address problems in computer science. Proof techniques presented are those used for modeling and solving problems in computer science. Discussion covers functions, relations, infinite sets, and propositional logic. Topics also include graphs and trees, as well as selected applications. Students may receive credit for only one of the following courses: CMSC 150 or CMSC 250.

CMSC 215 Intermediate Programming (3)
(Formerly CMIS 242.) Prerequisite: CMSC 115 (or CMIS 141). Further study of the Java programming language. The objective is to design, implement, test, debug, and document Java programs, using appropriate development tools. Topics include object-oriented design, event-driven programming, exceptions, recursion, arrays, and data structures. Students may receive credit for only one of the following courses: CMIS 242 or CMSC 215.

CMSC 307 Artificial Intelligence Applications (3)
(No programming or math background required.) An interactive, hands-on study of current artificial intelligence (AI) applications spanning multiple disciplines and domains, including business, science, communications, and computing. The goal is to use data sets with AI and machine learning applications from leading cloud vendors, including Amazon and Microsoft. Projects and laboratory exercises demonstrate how AI can be used to solve problems across a wide variety of disciplines.

CMSC 310 Computer Systems and Architecture (3)
(Formerly CMIS 310.) Prerequisite: CMSC 115 (or CMIS 141). A study of the fundamental concepts of computer architecture and factors that influence the performance of a system. The aim is to apply practical skills to computer systems architecture. Topics include data representation, assembly language, central processing unit architecture, memory architecture, and input/output (I/O) architecture. Students may receive credit for only one of the following courses: CMIS 270, CMIS 310, CMSC 310, CMSC 311, or IFSM 310.

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CMSC 315 Data Structures and Analysis (3)

(Formerly CMSC 350.) Prerequisite: CMSC 215 (or CMIS 242). A study of user-defined data structures and object-oriented design in computer science. The aim is to develop secure Java programs. Topics include linked lists, stacks, queues, arrays, maps, vectors, and trees. Algorithms that perform sorting, searching, and recursion are discussed and analyzed. Students may receive credit for only one of the following courses: CMSC 350 or CMSC 315.

CMSC 320 Relational Database Concepts and Applications (3)

(Formerly CMIS 320.) Prerequisite: CMSC 115 (or CMIS 141). A study of the functions, underlying concepts, and applications of enterprise relational database management systems (RDBMS) in a business environment. The aim is to appropriately use databases to meet business requirements. Discussion covers entity/relationship diagrams, relational theory, normalization, integrity constraints, the Structured Query Language (SQL), and physical and logical design. Business case studies and projects include hands-on work using an industry-standard RDBMS. Students may receive credit for only one of the following courses: CMIS 320, CMSC 320, or IFSM 410.

CMSC 325 Game Design and Development (3)

Prerequisite: CMSC 215 (or CMIS 242). A project-driven study of the theory and practice of game design and development. The aim is to build realistic graphical 3D worlds, animate characters, and add special effects to games. Discussion covers critical mathematical concepts and real-time game physics. Projects include collaborative development of interactive games.

CMSC 330 Advanced Programming Languages (3)

Prerequisite: CMSC 315 (or CMSC 350). A comparative study of programming languages. The aim is to write safe and secure computer programs. Topics include the syntax and semantics of programming languages and run-time support required for various programming languages. Programming projects using selected languages are required.

CMSC 335 Object-Oriented and Concurrent Programming (3)

Prerequisite: CMSC 315 (or CMSC 350). A study of object-oriented and concurrent programming using features of Java. The goal is to design, implement, test, debug, and document complex robust programs in an object-oriented language. Concepts of object-oriented programming (such as composition, classification, and polymorphism) are explored. Topics include the principles of concurrent programming (such as task synchronization, race conditions, deadlock, threads, and event-driven graphic user interface programs). Programming projects are implemented in Java. Students may receive credit for only one of the following courses: CMSC 300 or CMSC 335.

CMSC 340 Web Programming (3)

Prerequisite: CMSC 115 or CMIS 141. A study of how to develop web applications. The objective is to understand and implement networking protocols, system design, and web security. Topics include basic web architecture, core web standards (such as HTTP, HTML, and CSS), client-side scripting with JavaScript, and server-side programming with PHP.

CMSC 345 Software Engineering Principles and Techniques (3)

(Formerly CMIS 330.) Prerequisite: CMSC 115 (or CMIS 141). A study of software engineering from initial concept through design, development, testing, and maintenance of the product. Discussion covers software development life-cycle models. The goal is to analyze, customize, and document multiple processes to solve information technology problems. Topics include configuration management, quality, validation and verification, security, human factors, and organizational structures. Students may receive credit for only one of the following courses: CMIS 330, CMIS 388A, or CMSC 345.

CMSC 405 Computer Graphics (3)

Prerequisite: CMSC 325 or CMSC 315 (or CMSC 350). A hands-on, project-based introduction to computer graphics. The goal is to develop projects that render graphic images and animate three-dimensional objects. Topics include programming in OpenGL and transforming, viewing, and modeling 2D and 3D objects.

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CMSC 412 Operating Systems (3)
Prerequisite: CMSC 310 or CMSC 311. A study of the fundamental principles underlying modern operating systems. The objective is to design and implement a small-scale operating system and design a virtual memory management system. Discussion covers the essential components of a typical operating system and the interactions among them. Topics also include methods of managing processes and resources in computer systems. A programming project that implements part of an operating system is required.

CMSC 415 Distributed Database Systems (3)
Prerequisite: CMSC 320 or CMIS 320. An examination of the fundamental concepts of distributed databases. Discussion covers distributed database architecture and distributed database design, as well as relevant topics of big data management and distributed NoSQL databases.

CMSC 420 Advanced Relational Database Concepts and Applications (3)
Prerequisite: CMSC 320 (or CMIS 320), IFSM 410, or IFSM 411. A comprehensive study of the features and techniques of relational database management appropriate to the advanced end user, database designer, or database administrator. The goal is to complete hands-on work using an industry-standard enterprise relational database management system. Topics include basic database administration functions, advanced SQL and complex data types, stored procedures, user-defined functions, triggers, and data warehousing. Students may receive credit for only one of the following courses: CMIS 420, CMSC 420, IFSM 420, or IFSM 498I.

CMSC 425 Mobile App Development (3)
Prerequisite: CMSC 215 or CMIS 242. A study of techniques for designing and developing mobile applications using the Android operating system. Topics include mobile architecture, operating systems, programming languages, user interface design, and security and privacy issues related to mobile apps.

CMSC 427 Artificial Intelligence Foundations (3)
Prerequisite: CMSC 315 (or CMSC 350) or SDEV 300. A study of the theoretical foundations and practical applications of artificial intelligence. The objective is to develop algorithms and systems to demonstrate intelligent behavior. Topics include intelligent agents, searching algorithms, knowledge representation, probability, logic, and learning.

CMSC 430 Compiler Theory and Design (3)
Prerequisite: CMSC 330. An examination of the formal translation of programming languages, syntax, and semantics. The goal is to write programs that are constructed using program generators. Topics include evaluation of finite-state grammars and recognizers; context free parsing techniques, such as recursive descent, precedence, LL(K), LR(K), and SLR(K); and improvement and generation of machine-independent code and syntax-directed translation schema. Programming projects that implement parts of a compiler are required.

CMSC 440 Advanced Programming in Java (3)
Prerequisites: CMSC 215 (or CMIS 242) and CMSC 320 (or CMIS 320). An exploration of advanced Java programming, using the Java Enterprise edition. The objective is to analyze, design, develop, test, deploy, and document small- to medium-scale web applications. Hands-on projects in Java server pages, servlets, and Java database connectivity are included. Students may receive credit for only one of the following courses: CMIS 440, CMSC 440 or CMIS 498A.

CMSC 451 Design and Analysis of Computer Algorithms (3)
Prerequisites: CMSC 150 and CMSC 315 (or CMIS 350). A presentation of fundamental techniques for designing and analyzing computer algorithms. The aim is to apply big-O estimates of algorithms and proof-of-correctness techniques and to design algorithms. Basic methods include divide-and-conquer techniques, search and traversal techniques, dynamic programming, greedy methods, and induction. Programming projects are included.

CMSC 465 Image and Signal Processing (3)
Prerequisites: MATH 141 and CMSC 315 (or CMSC 350). A project-driven study of image and signal processing. The goal is to apply spectral analysis techniques to analyze time series data for the purpose of recognizing and classifying signals and to apply image segmentation, representation, and description techniques to recognize and classify objects. Topics include discrete Fourier transforms, fast Fourier transforms, sampling and filtering, and image transformations and enhancements.

CMSC 486A Workplace Learning in Computer Science (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

CMSC 486B Workplace Learning in Computer Science (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

CMSC 495 Computer Science Capstone (3)
Prerequisite(s): Either CMSC 330 and CMSC 335, CMSC 320 (or CMIS 320) and CMSC 345, or SDEV 425. An overview of computer technologies, with an emphasis on integration of concepts, practical application, and critical thinking. The goal is to research, plan, conduct, and complete collaborative computer-related projects in compliance with schedule deadlines. Analysis covers innovative and emerging issues in computer science. Assignments include working in teams throughout the analysis, design, development, implementation, testing, and documentation phases of the projects, including periodic peer reviews.

CMSC 498 Special Topics in Computer Science (1–3)
Prerequisites: Vary according to topic. A seminar on topics in computer science. May be repeated to a maximum of 6 credits when topics differ.

Computer Studies

Certain computer studies courses (CMST 308, CMST 310, CMST 311, CMST 315, CMST 320, CMST 325, CMST 330, CMST 331, CMST 341, and CMST 351) have higher computing requirements than the minimum technical requirements stated on p. 26. They require an Intel Core i7 processor or higher, with speeds of 2GHz or faster, at least 6GB of available disk space, and at least 16GB RAM (32GB recommended). Display devices should have a resolution of 1920 X 1080 or better (PCs) or 1440 X 900 retina display (Mac).

CMST 100B Word Processing (1)
(Not open to students who have completed CMST 303.) An introduction to word processing. The goal is to use word processing applications effectively to produce professional documents for business and personal communication. Topics include creating, formatting, and editing word-processing documents. Hands-on practice with industry-standard word-processing software is provided. Students may receive credit for only one of the following courses: CAPP 100B, CMST 100B, CAPP 103, or CMST 103.

CMST 100D Presentation Graphics (1)
(Not open to students who have completed CMST 303.) An introduction to the principles of presentation graphics. The goal is to use presentation graphics applications effectively to produce electronic presentations for professional and personal communication. Topics include planning and creating effective presentations. Hands-on practice with industry-standard presentation graphics software is provided. Students may receive credit for only one of the following courses: CAPP 100D, CMST 100D, CAPP 103, or CMST 103.

CMST 100F Database Applications (1)
(Not open to students who have completed CMST 303.) An introduction to database systems, their terminology, and the principles of database management. The goal is to use database management applications effectively to create professional databases. Topics include how best to organize, manage, and access stored data; how to protect databases; and how to extract useful information. Hands-on practice with industry-standard database software is provided. Students may receive credit for only one of the following courses: CAPP 100F, CMST 100F, CAPP 103, or CMST 103.

CMST 100G Spreadsheet Applications (1)
(Not open to students who have completed CMST 303.) An introduction to the use of electronic spreadsheets to analyze numerical data, including basic terminology, formats, and other applications. The goal is to use spreadsheet applications to produce professional electronic spreadsheets effectively for business and personal use. Hands-on practice with industry-standard spreadsheet software is provided. Students may receive credit for only one of the following courses: CAPP 100G, CMST 100G, CAPP 103, or CMST 103.

CMST 290 Introduction to Interactive Design (3)
An introduction to the principles, practices, techniques, and theories that govern the use of scripting and programming languages in the design and development of interactive digital media. The objective is to effectively use proven scripting and programming theory to support digital media design for print, web, and mobile devices. Projects involve modifying existing scripting languages and HTML code as well as conducting a usability review.

CMST 295 Fundamentals of Digital Design (3)
An overview of the principles, practices, techniques, and theories that govern web and digital design. The goal is to effectively follow proven design theory in creating digital design for print, web, and mobile devices. Topics include usability, accessibility, ethics, extended reality, and emerging technologies. Career paths in the web and digital design industry are analyzed.

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CMST 301 Digital Media and Society (3)
A survey of technological advancements in the field of digital media and their impact. The objective is to explain how digital media has transformed the communication of ideas in society and to make responsible choices in the creation and consumption of digital media based on awareness of global, social, ethical, and legal contexts. Topics include social media, the visual display of information, ethics and privacy, participatory media, and the impact of digital media on culture.

CMST 303 Advanced Application Software (3)
Prerequisite(s): CMST 100B, CMST 100D, CMST 100G, and CMST 100F; or Microsoft Office Specialist (MOS) certifications in Word, Excel, PowerPoint, and Access; or an introductory course in Microsoft Office. A hands-on, project-based survey of advanced features of office application software. The aim is to use advanced application features to produce documents for professional and personal communication. Topics include information systems, application integration, computer hardware and software, storage, and networking. Students may receive credit for only one of the following courses: CAPP 303 or CMST 303.

CMST 308 User Experience and Interface Design (3)
A hands-on, project-based introduction to user experience (UX) and interface design (UI). An introduction to design thinking and the basic practices of user experience, interface, and interaction design. A study of a user-centric, systematic, data-driven design process that includes research, concept generation, prototyping, and refinement. The goal is to evaluate user interfaces and create a working prototype using industry-standard techniques guided by usability data. Topics include human-computer interaction, measuring and evaluating interface quality, user research, wireframing, prototyping, designing virtual experiences, storyboarding, and career paths.

CMST 310 Fundamentals of Electronic Publishing (3)
A hands-on, project-based introduction to the tools, concepts, processes, and methods of electronic (desktop) publishing. The aim is to use Adobe InDesign (or another professional electronic publishing software program) to create electronic publications for various media formats following fundamental design principles. Topics include the history and evolution of publishing, working with color, incorporating graphics, principles and elements of design, publication workflow, emerging technologies, careers in the field, ethical and legal considerations, and collaborative design. Students may receive credit for only one of the following courses: CAPP 310, CAPP 398B, or CMST 310.

CMST 311 Advanced Electronic Publishing (3)
Prerequisite: CMST 310. A hands-on, project-based study of the advanced concepts, tools, processes, and methods of electronic (desktop) publishing. The goal is to use Adobe InDesign to create engaging electronic publications following fundamental design principles for print, online, and mobile devices. Topics include motion and interactivity, PDF (portable document format) publishing, emerging technologies, design issues related to mobile devices, ethical and legal considerations, collaborative work, and print- and web-ready Adobe Flash files. Students may receive credit for only one of the following courses: CAPP 311 or CMST 311.

CMST 315 Game Design I (3)
A hands-on, project-based introduction to 3D video game design and programming fundamentals. The aim is to use an industry-standard 3D game engine to create a game from concept to final product. Topics include 3D game engines, 3D game design, gameplay mechanics, sound effects, C# programming, project management, 3D physics, and user interface design.

CMST 320 Illustration Graphics (3)
A hands-on, project-based introduction to illustration graphics using Adobe Illustrator. The goal is to apply fundamental concepts of vector image composition to create professional digital media for delivery across multiple platforms, including print, web, and video, following ethical principles and legal guidelines. Topics include terminology, tools, theory, and processes from concept to completion. Discussion covers Bezier curves, shading, depth, paths, drawing tools, vector versus raster images, and color theory.

CMST 325 Image Editing (3)
An introduction to digital image editing using Adobe Photoshop. The aim is to identify established digital image editing tools, techniques, and best practices; create new images; and edit existing images. Topics include terminology, tools, theory, and processes from concept to completion. Discussion covers fundamental concepts and practical techniques, as well as ethical and legal issues. Emphasis is on applying these concepts and techniques to produce high-quality digital works for multiple platforms, including print, web, and other electronic media.

CMST 330 Virtual Reality Design I (3)
Prerequisite: CMST 315. A hands-on, project-based introduction to the theories, best practices, aesthetics, techniques, and workflows used to create immersive virtual reality. The goal is to develop, test, and deploy virtual reality experiences following design theory and industry-standard best practices. Topics include human perception, 3D modeling, game design, design considerations, limitations, storytelling, mobile app development, and 360-degree video.

CMST 331 Augmented Reality Design I (3)
Prerequisite: CMST 315. A hands-on, project-based introduction to the theories, best practices, aesthetics, techniques, and workflows used to create immersive augmented reality (AR). The goal is to develop, test, and deploy augmented reality experiences following design theory and industry-standard best practices. Topics include human-computer interaction and user experience, design principles, 3D modeling, game design, storytelling, and AR application development.

CMST 341 Principles of Multimedia I (3)
A hands-on, project-based introduction to multimedia development. The aim is to create interactive products that integrate images, sound, video, and animation following sound media design principles for optimal display in multiple media formats using Adobe Animate. Topics include storyboarding, web design, animation, motion-tweening, project management, and ethical design.

CMST 351 Motion Graphics I (3)
A hands-on introduction to the basic concepts, techniques, and principles of digital video and motion graphics effects using Adobe After Effects. The objective is to describe digital video compositing techniques; create digital composites that combine video, text, digital images, and audio; and apply visual special effects to create professional results for use on multiple platforms, such as film, video, multimedia, and the web. Topics include techniques such as basic storyboarding, key framing, transformations, and rendering, as well as effects (including levels, curves, color correction, blur, glow, fractal noise, keying, masking, and cartoon effects).

CMST 355 Content Management Systems (3)
A hands-on, project-based introduction to website development using content management systems (CMS). The goal is to use CMSs to quickly create engaging, interactive, and dynamic websites following industry-standard best practices. Topics include content publishing workflows, cross-browser compatibility, security and privacy vulnerabilities, plug-ins, themes, and templates.

CMST 385 Principles of Web Design and Technology I (3)
A study of web design, tools, and technology principles. The goal is to plan and produce a professional website. Topics include internet protocols; usability; accessibility; and social, ethical, and legal issues related to website production. Focus is on HyperText Markup Language version 5 (HTML5) and cascading style sheets (CSS). Students may receive credit for only one of the following courses: CAPP 385 or CMST 385.

CMST 386 Principles of Web Design and Technology II (3)
Prerequisite: CMST 385. Continuation of the study of web design, tools, and technology principles. The objective is to create a website promotion strategy, with search engine optimization, and produce a professional website that incorporates multimedia and scripting. Topics include website marketing, web analytics, performance, privacy, and security issues related to website production. Focus is on Extensible HyperText Markup Language (XHTML), cascading style sheets (CSS), and JavaScript. Students may receive credit for only one of the following courses: CAPP 386 or CMST 386.

CMST 388 Fundamentals of JavaScript (3)
Prerequisite: CMST 385. A hands-on, project-based study of JavaScript using a structured programming approach to build dynamic, interactive web pages. The goal is to use client-side JavaScript to create interactive, cross-browser-compatible web pages that minimize security and privacy vulnerabilities. Topics include form validation, web development tools, documentation, dynamic HTML, event handling, cross-browser compatibility, cookies, and security issues. Programming projects are included. Students may receive credit for only one of the following courses: CMST 388 or CMST 398J.

CMST 390 3D Modeling (3)
A hands-on, project-based introduction to the fundamental concepts, tools, and techniques used in 3D modeling. The aim is to use industry-standard software to design and manipulate models in three-dimensional space and to create 3D assets for virtual and augmented reality, games, animation, architecture, cinematics, and 3D printing. Topics include texturing, lighting, animation, rendering, sculpting, 3D printing, extended reality design, and career paths. Students may receive credit for only one of the following courses: CMST 390 or CMST 429.

CMST 425 Advanced Image Editing (3)
Prerequisite: CMST 325. Continued hands-on, project-based study of digital image editing using Adobe Photoshop. The objective is to identify and apply advanced design concepts, adjustments, and batch-processing techniques to creating new images and editing existing ones. Topics include more advanced terminology, tools, considerations, and processes from concept to completion. Emphasis is on advanced concepts and practical techniques to create professional images for print, web, and other electronic media. Discussion also covers ethical and legal issues.

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CMST 486A Workplace Learning in Web and Digital Design (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl*). The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

CMST 486B Workplace Learning in Web and Digital Design (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl*). The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

CMST 488 Advanced JavaScript (3)
Prerequisite: CMST 388. A hands-on, project-based study of web application development using advanced JavaScript technologies. The aim is to create cross-browser-compatible web applications that adhere to industry standards and minimize security risks. Topics include JavaScript libraries, user interfaces, accessibility, usability, and security. Web development projects using advanced JavaScript are included.

CMST 495 Web and Digital Design Capstone (3)
Prerequisite: Completion of 24 credits within the major. An overview of current trends, technologies, theories, and practices in the web and digital design fields. The aim is to integrate concepts, practical application, and critical thinking acquired through previous study and apply them to professional and postgraduate objectives. Analysis covers innovative and emerging issues in web and digital design. Assignments include industry analysis, résumé design, and portfolio creation.

Criminology/ Criminal Justice

CCJS 100 Introduction to Criminal Justice (3)
(Fulfills the general education requirement in behavioral and social sciences.) An introduction to the three primary components of the criminal justice system: law enforcement, courts, and corrections. The objective is to identify the components of the system, the practitioners within the system and their role in policy formation and implementation, and the major theoretical tenets of criminal behavior. Topics include community relations, the impact of criminal behavior, and the importance of research in the field of criminal justice.

CCJS 101 Introduction to Investigative Forensics (3)
A survey of the practical applications of forensic science. The aim is to learn to apply the scientific method to forensic evidence and distinguish between reality and popular misperceptions of the roles and importance of forensic science and its practitioners. Discussion covers the "CSI effect," the scientific method as it applies to forensic evidence, ethical practices, and legal aspects of the field. Topics include the definition of forensic science and how it has evolved, disciplines within the field, ethical codes, and case law.

CCJS 105 Introduction to Criminology (3)
(Fulfills the general education requirement in behavioral and social sciences.) An exploration of the nature and causes of crime and criminal behavior. Topics include what we rationally know about crime, theoretical explanations of criminal behavior, and how to conduct research to explore the nature and extent of crime and criminal behavior.

CCJS 230 Criminal Law in Action (3)
Prerequisite: CCJS 100. An exploration of how criminal cases are handled, including factors related to criminal liability and how a case is charged. Focus is on the substantive elements of criminal law and on the historical development of criminal law in the United States. Topics include the basic elements of and defenses to criminal liability, crimes against people, crimes against property, and the defenses and justifications commonly used to negate criminal responsibility.

CCJS 234 Criminal Procedure and Evidence (3)
A study of the general principles of criminal procedure. Emphasis is on the history and evolution of criminal procedure in the United States and the fundamental components of criminal procedure, including privacy, reasonableness, probable cause, search and seizure, search warrants, interrogations, and the trial process. Topics include the criminal justice process and the connections between the law, the criminal justice process, criminal procedure, and evidence.

CCJS 301 Criminalistics I: The Comparative Disciplines (4)
Prerequisite: CCJS 100, CCJS 101, or CCJS 105. Recommended: CCJS 234. An intensive study of the analysis of physical evidence in the crime laboratory, with practical laboratory exercises. The objective is to apply skills expected of an entry-level professional in the investigative forensics field that are necessary for the practical analysis of evidence in a criminal investigation. Topics include the comparative disciplines, including impression evidence analysis, trace evidence analysis, and firearms analysis.

CCJS 302 Criminalistics II: The Scientific Disciplines (4)
Prerequisite: CCJS 301. Further intensive study of the analysis of physical evidence in the crime laboratory, with practical laboratory exercises. The goal is to apply skills expected of an entry-level criminalist to the practical analysis of evidence in a criminal investigation. Topics include the applications of the scientific disciplines, including bloodstain pattern analysis, questioned document analysis, controlled dangerous substances analysis, and DNA analysis.

CCJS 311 Intelligence-Led Policing (3)
Prerequisite: CCJS 100. An examination of intelligence-related processes as they apply to domestic law enforcement. The aim is to identify, collect, and assess data and process that information into intelligence that can support strategic and tactical planning. Intelligence reports are reviewed and assessed. Discussion covers the legal and ethical licenses and constraints that provide a framework for intelligence development.

CCJS 321 Digital Forensics in the Criminal Justice System (3)
(For students not majoring in criminal justice; not open to students who have completed CCJS 421; does not satisfy prerequisites for other criminal justice courses.) An overview of the criminal justice system and the application of digital forensic evidence in criminal justice cases. The objective is to apply constitutional and case law to the search and seizure of digital evidence, determine the most effective and appropriate forensic response strategies to digital evidence, and provide effective courtroom testimony in a case involving digital evidence. Topics include crime scene procedures and the collection of digital evidence, procedures performed in a digital forensics lab, and the preparation of courtroom testimony by the digital forensic investigator.

CCJS 340 Law Enforcement Administration (3)
Prerequisite: CCJS 100. An introduction to organization and management in law enforcement. The objective is to communicate effectively and apply research skills and management and administrative principles to a law enforcement agency. Topics include structure, process, policy and procedure, communication and authority, division of work and organizational controls, the human element in the organization, and informal interaction in the context of bureaucracy. Students may receive credit for only one of the following courses: CCJS 340 or CJUS 340.

CCJS 341 Criminal Investigation (3)
Prerequisite: CCJS 100. Recommended: CCJS 230. An exploration of criminal investigation as it relates to the framework of the law that governs such investigations. Emphasis is on crime scene response, the collection and evaluation of crime scene evidence, the complexity of investigative interviews, and the application of current strategies and technology to further criminal investigations.

CCJS 342 Crime Scene Investigation (3)
Prerequisite: CCJS 100, CCJS 101, or CCJS 105. Recommended: CCJS 234. An examination of the investigation of crime scenes. The objective is to apply skills expected of an entry-level professional in the investigative forensics field. Topics include the crime scene, crime scene documentation, evidence, and post–crime scene activities.

CCJS 345 Introduction to Security Management (3)
(Formerly CCJS 445.) Prerequisite: CCJS 100. A study of the history, concepts, principles, and methods of organizing and administering security management and loss prevention activities in industry, business, and government. The objective is to manage security duties, evaluate and apply risk management principles, and evaluate administrative and operational issues. Discussion covers both private and governmental risk assessment and management and the protection of assets, personnel, and facilities. Students may receive credit for only one of the following courses: CCJS 345, CCJS 445, or CCJS 498G.

CCJS 350 Juvenile Delinquency (3)
(Fulfills the general education requirement in behavioral and social sciences.) Prerequisite: CCJS 100. Recommended: CCJS 105. An examination of juvenile delinquency in relation to the general problem of crime. The aim is to apply theories and identify statutory parameters related to juvenile delinquency, analyze prevention measures, and assess the effectiveness of treatment measures. Topics include factors underlying juvenile delinquency, prevention of criminal acts by youths, and the treatment of delinquents. Students may receive credit for only one of the following courses: CCJS 350 or CRIM 450.

CCJS 352 Drugs and Crime (3)
Prerequisite: CCJS 100. An analysis of the role of criminal justice in controlling the use and abuse of drugs. The objective is to apply effective enforcement strategies, demonstrate case management skills, and analyze the effect of drug policy. Students may receive credit for only one of the following courses: CCJS 352 or CJUS 352.

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CCJS 360 Victimology (3)
(Fulfills the general education requirement in behavioral and social sciences.) Prerequisite: CCJS 100. Recommended: CCJS 105. An overview of the history and theory of victimology in which patterns of victimization are analyzed, with emphasis on types of victims and of crimes. The aim is to identify and apply appropriate preventative measures and responses to victimization. Discussion covers the interaction between victims of crime and the system of criminal justice in terms of the role of the victim and the services that the victim is offered. Students may receive credit for only one of the following courses: CCJS 360 or CRIM 360.

CCJS 380 Ethical Behavior in Criminal Justice (3)
Prerequisite: CCJS 100. A survey of the standards for ethical behavior that guide criminal justice professionals in different roles and responsibilities. The aim is to make ethical decisions based on informed personal and accepted professional standards. Rules, laws, and codes of conduct are explored as a foundation for discussing individual ethical responsibilities.

CCJS 390 Cybercrime and Security (3)
An examination of crimes involving the use of computers. Topics include federal and state laws and investigative and preventive methods used to secure computers. Case studies emphasize security. Students may receive credit for only one of the following courses: CCJS 390, CCJS 496, or CCJS 498C.

CCJS 416 Analytical Strategies for Law Enforcement (3)
Prerequisite: CCJS 100 or CCJS 105. An examination of the authenticity, accuracy, viability, and reliability of intelligence reports as they relate to the application of intelligence to public safety problem-solving. The goal is to evaluate intelligence reports to formulate plans, policies, and procedures that ensure effective and efficient agency operations. Focus is on developing critical-thinking and problem-solving skills through role-playing in a simulated environment, working with near-genuine intelligence reports and public safety issues. Practice is provided in analyzing the strategies and activities detailed in intelligence reports, identifying and implementing responsive actions, and determining appropriate redistribution of such reports.

CCJS 420 Medical and Legal Investigations of Death (3)
Prerequisite: CCJS 101, CCJS 100, or CCJS 105. Recommended: CCJS 234. An intensive look at medical and legal investigations into causes of death. The objective is to perform investigative functions at a death scene, determine and apply forensic testing, and analyze and effectively communicate investigative information. Topics include the difference between the medical (or pathological) and legal (or criminal) components of investigations into causes of death, medical and investigative terminology, and the impact of ethics on prosecutions and convictions. Case studies illustrate practical applications of various forms of forensic styles and parameters.

CCJS 421 Principles of Digital Analysis (3)
Prerequisite: CCJS 321. A hands-on exploration of digital analysis based on the overarching principles of data integrity and search and comparison as they relate to digital evidence. Focus is on the data and forensic tools and methodologies used to explore these overarching principles critical to digital evidence and analysis. The comparison and correlation of digital artifacts provide a solid introduction to all facets of digital analysis.

CCJS 440 Fingerprint Analysis (3)
Prerequisite: CCJS 301. A comprehensive study of friction ridge analysis in fingerprints. Emphasis is on the practical analysis of evidence in a criminal investigation. The objective is to apply skills expected of an entry-level fingerprint professional, including assessing surfaces for viable latent fingerprints; evaluating how to process and collect latent fingerprints; analyzing, comparing, evaluating, and verifying fingerprint evidence; and conveying findings. Topics include processing and comparison methodologies, historical and biological foundations of impressions, and legal aspects.

CCJS 441 Firearms and Toolmarks Analysis (3)
Prerequisite: CCJS 301. A comprehensive study of toolmark evidence, including toolmarks imparted by firearms. Discussion covers the practical analysis of evidence in a criminal investigation. The aim is to assess toolmarks; examine, compare, evaluate, and verify firearm and toolmark evidence; and convey findings. Topics include comparison methodologies, historical and mechanical foundations of toolmarks, and legal aspects. Focus is on developing the foundational knowledge and applied skills expected of an entry-level professional in the firearms and toolmarks field.

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CCJS 461 Psychology of Criminal Behavior (3)
Prerequisite: CCJS 100. Recommended: CCJS 105. An overview of delinquent and criminal behavior from a developmental, cognitive-behavioral perspective. The aim is to apply theoretical perspectives (behavioral, emotional, and cognitive) to analyze real or hypothetical criminal scenarios; to identify the various factors that encourage or discourage criminal behavior; and to explain the use of risk assessment tools at various stages of the criminal justice process. Factors that influence the development of adults and juveniles on the road to crime are examined to assess culpability for criminal behavior. Students may receive credit for only one of the following courses: CCJS 461 or CRIM 455.

CCJS 486A Workplace Learning in Criminal Justice (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

CCJS 486B Workplace Learning in Criminal Justice (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

CCJS 495 Criminal Justice Capstone (3)
Prerequisites: CCJS 230, CCJS 340, CCJS 341, CCJS 345, and CCJS 380. An integrative study of the various components of the American criminal justice system. The goal is to apply principles of interagency cooperation, critical thinking, and systems approaches to solve practical problems in a criminal justice environment. Topics include problem-solving, case study analysis, strategic planning, teamwork, and professional writing.

CCJS 497 Correctional Administration (3)
Prerequisites: CCJS 230, CCJS 340, CCJS 341, CCJS 345, and CCJS 380. An examination of prison administration, including theories of management and institutional structure and purpose. Objectives include the application of organizational concepts, leadership, and effective administrative approaches to the management of correctional institutions and offender populations. Emphasis is on concepts of organizational structure, communication, self-assessment, short- and long-term strategic operational planning, decision-making, and human resources.

Cybersecurity and Information Assurance

CSIA 300 Cybersecurity for Leaders and Managers (3)
(Designed in part to help prepare for the EC-Council Secure Computer User [CSCU] certification.) Prerequisite: Any CMIS, CMIT, CMSC, CMST, CSIA, DATA, IFSM, or SDEV course. A survey of the cybersecurity principles, practices, and strategies required by leaders and managers to become strategic partners in the establishment, management, and governance of an enterprise's cybersecurity program. The aim is to develop both an understanding of how cybersecurity supports key business goals and objectives and the "soft skills" necessary for success in a leadership or managerial role. Topics include the fundamentals of cybersecurity practices and principles; enterprise IT governance processes and security controls; data security; the information life cycle; intellectual property protections; privacy laws and regulations; security education, training, and awareness; and the need for cooperation and collaboration between business units and the organization's cybersecurity program.

CSIA 310 Cybersecurity Processes and Technologies (3)
(Includes content designed to help in preparing for EC-Council Certified Incident Handler [ECIH] certification.) Prerequisites: IFSM 201 and WRTG 112 or equivalent. A study of the processes and technologies used to implement and manage enterprise IT security operations. The goal is to apply and integrate cybersecurity concepts and best practices with the principles of IT operations and management and to prepare for a government- and industry-recognized intermediate-level cybersecurity certification (Certified Incident Handler). Topics include the essential management and operational activities (acquisition, deployment, and operations) required to secure IT technologies and business operations against a wide variety of threats and attacks.

CSIA 350 Cybersecurity in Business and Industry (3)
(Designed to help prepare for the Project Management Institute Professional in Business Analysis [PMI-PBA] certification exam.) Prerequisite: CSIA 310. A study of the application and integration of cybersecurity principles, frameworks, standards, and best practices to the management, governance, and policy development processes for businesses. The aim is to apply business analysis principles and methods to cybersecurity problems in business and industry. Discussion covers the organization, management, and governance of cybersecurity for enterprise IT in business settings; risk and risk management practices; and development and implementation of industry-wide cybersecurity initiatives and programs.

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CSIA 360 Cybersecurity in Government Organizations (3)
Prerequisite: CSIA 350. A study of cybersecurity management and governance in the context of the missions, functions, and operations of federal, state, and municipal government agencies, departments, and programs. Discussion covers the policy life cycle and the mechanisms used by governments to formulate and implement laws, policies, regulations, and treaties to protect and defend government operations and society as a whole against cyberattacks and crimes, both foreign and domestic.

CSIA 413 Cybersecurity Policy, Plans, and Programs (3)
(Includes content designed to help in preparing for IAPP Certified Information Privacy Professional/US certification.) Prerequisite: CSIA 360. A study of the application of cybersecurity principles, frameworks, standards, and best practices to organization-level strategies, policies, programs, plans, procedures, and processes. The aim is to help prepare to take an internationally recognized information privacy certification. Projects include writing security policies and plans, developing metrics and measures for information security programs, planning audits of compliance practices and processes, and developing organization-level security policies for enterprise IT governance. Discussion covers principles and best practices for protecting privacy and ensuring compliance with laws and regulations.

CSIA 459 Evaluating Emerging Technologies (3)
Prerequisites: CMIT 320 and CSIA 350. A survey of emerging and leading technologies in the cybersecurity field. The aim is to research, evaluate, and recommend emerging technologies and determine secure implementation strategies for best-fit business solutions. Topics include evolutionary technology development and adoption in organizations.

CSIA 485 Cybersecurity Management and Policy Capstone (3)
(Includes content designed to help in preparing for the EC-Council Certified Chief Information Security Officer [CCISO] and Information Security Manager [EISM] certifications.) Prerequisites: CMIT 320 and CSIA 413. A study of cybersecurity management and policy that integrates knowledge gained from previous coursework and experience. Focus is on developing security strategies, plans, policies, and processes for the protection of an organization's critical information and assets. The goal is to enhance professional skills in cybersecurity management and leadership. Topics also include the ethical integration of cybersecurity best practices and risk management throughout an enterprise.

CSIA 486A Workplace Learning in Cybersecurity (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

CSIA 486B Workplace Learning in Cybersecurity (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

Data Analytics

Courses in data analytics (except DATA 200, DATA 300, DATA 320, and DATA 335) have higher computing requirements than the minimum technical requirements stated on p. 26. They require an Intel Core i7 processor or higher, with speeds of 2GHz and at least 8GB RAM (16GB recommended).

DATA 200 Data Literacy Foundations (3)
An introduction to data and data literacy designed to enhance one's ability to understand and work in today's data-driven world. The aim is to collect, manage, evaluate, and apply data in a critical manner and examine the role, significance, and implications of data, including ethical issues within a society, in organizations, or for individuals. Focus is on developing skills in data manipulation, analysis, and visualization to generate insights from data, build knowledge, and make decisions. Topics include the effective use of cloud-based data storage, collaboration, and communication techniques.

DATA 230 Mathematics for Data Science (3)
Prerequisites: STAT 200 and MATH 115 (or MATH 107 and MATH 108) or higher. A practical introduction to the mathematical principles applied within the context of data science. The aim is to understand the mathematical basis of data science and increase awareness of machine learning algorithm assumptions and limitations. Machine learning topics include linear regression, dimensionality reduction, and classification. Projects involve application of linear algebra, probability, vector calculus, and optimization to build data science solutions.

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DATA 300 Foundations of Data Science (3)

Prerequisite: STAT 200. An examination of the role of data science within business and society. The goal is to identify a problem, collect and analyze data, select the most appropriate analytical methodology based on the context of the business problem, build a model, and understand the feedback after model deployment. Emphasis is on the process of acquiring, cleaning, exploring, analyzing, and communicating data obtained from variety of sources. Assignments require working with data in programming languages such as Python, wrangling data programmatically and preparing data for analysis, and using libraries like NumPy and Pandas.

DATA 320 Introduction to Data Analytics (3)

(Formerly DATA 220.) Prerequisite: STAT 200. A practical introduction to the methodology, practices, and requirements of data science to ensure that data is relevant and properly manipulated to solve problems and address a variety of real-world projects and business scenarios. Focus is on the application of foundational statistical concepts to describing data sets with summary statistics, simple data visualizations, statistical inference, and predictive analytics. The objective is to use data to draw conclusions about the underlying patterns that drive everyday problems through probability, hypothesis testing, and linear model building.

DATA 335 Data Visualization (3)

Prerequisite: DATA 320. An overview of the fundamentals of data visualization principles in the context of business and data science. Practical focus is on data visualization of different data types, including time series and multidimensional data, and on creating dynamic tables, heatmaps, infographs, and dashboards. Hands-on projects require exploring data visually at multiple levels to find insights to create a compelling story and incorporating visual design best practices to better communicate insights to the intended audience, such as business stakeholders. Projects are selected from a wide range of content areas such as retail, marketing, healthcare, government, basic sciences, and technology.

DATA 430 Foundations of Machine Learning (3)

Prerequisite: DATA 300. A hands-on introduction to machine learning principles and methods that can be applied to solve practical problems. Topics include supervised and unsupervised learning, especially linear regression, logistic regression, decision tree, naïve Bayes, and clustering analysis. Focus is on using data from a wide range of domains, such as healthcare, finance, marketing, and government, to build predictive models for informed decision-making. Discussion also covers handling missing data, performing cross-validation to avoid overtraining, evaluating classifiers, and measuring precision.

DATA 440 Advanced Machine Learning (3)

Prerequisites: DATA 230 and DATA 430. A project-based study of advanced concepts and applications in machine learning (ML), such as neural networks, support vector machines (SVM), ensemble models, deep learning, and reinforced learning. Emphasis is on building predictive models for practical business and social problems, developing complex and explainable predictive models, assessing classifiers, and comparing their performance. All stages of the machine learning life cycle are developed, following industry best practices for selecting methods and tools to build ML models, including Auto ML.

DATA 445 Advanced Data Science (3)

Prerequisites: DATA 335 and DATA 430. A project-based introduction to the concepts, approaches, techniques, and technologies for managing and analyzing large data sets in support of improved decision-making. Activities include using technologies such as Spark, Hive, Pig, Kafka, Hadoop, HBase, Flume, Cassandra, cloud analytics, container architectures, and streaming real-time platforms. Discussion covers how to identify the kinds of analyses to use with big data and how to interpret the results.

DATA 450 Data Ethics (3)

Prerequisite: DATA 430. A study of ethics within the context of data science, machine learning, and artificial intelligence. Emphasis is on examining data and model bias; building explainable, fair, trustable, and accurate predictive modeling systems; and reporting responsible results. Topics include the technology implications of human-centered machine learning and artificial intelligence on decision-making in organizations and government and the broader impact on society, including multinational and global effects.

DATA 460 Artificial Intelligence Solutions (3)

(Designed to help prepare for the AWS Certified Machine Learning or Microsoft Designing and Implementing an Azure AI Solution exam.) Prerequisite: DATA 430. A hands-on, project-based study of artificial intelligence and machine learning solutions to complex problems. Topics include natural language processing, computer vision, and speech recognition.

DATA 495 Data Science Capstone (3)

Prerequisites: DATA 440, DATA 445, and DATA 450. A project-based, practical application of the knowledge, technical skills, and critical-thinking skills acquired during previous study designed to showcase one's data science expertise. Individually selected projects include all phases of machine learning life cycles and a peer-reviewed final report and presentation. Topics are selected from student-affiliated organizations or employers, special government/private agency requests, or other faculty-approved sources in a wide range of domains, such as healthcare, financial services, marketing, sciences, and government.

Economics

ECON 103 Economics in the Information Age (3)
A survey of basic concepts and principles in micro- and macroeconomics and how the economy has been affected by technology. The aim is to define and explain the key terms and concepts in economics and determine how technology has affected consumers, producers, and markets, as well as economic growth and policy. Topics include how innovation affects labor markets, the value of information, and the role of technological change in the economy.

ECON 201 Principles of Macroeconomics (3)
An introductory study of the macroeconomy. The objective is to apply select macroeconomic theories to real-world situations. Discussion covers economic growth, technological innovation, unemployment, inflation, and the roles of monetary policy and fiscal policy in determining macroeconomic performance. Students may receive credit for only one of the following courses: ECON 201 or ECON 205.

ECON 203 Principles of Microeconomics (3)
An analysis of the economic principles underlying the behavior of individual consumers and business firms. The goal is to apply select microeconomic theories to real-world situations. Emphasis is on market theory. Topics include the implications of government intervention, technological innovation, the advantages and disadvantages of different market structures, and income distribution and poverty.

ECON 305 Intermediate Macroeconomic Theory and Policy (3)
Prerequisite: ECON 201. An analysis of the forces that determine a nation's income, employment, and price levels. The aim is to analyze macroeconomic indicators and trends and evaluate their impact. Topics include consumption, investment, inflation, and governmental fiscal and monetary policy. Students may receive credit for only one of the following courses: ECON 305, ECON 403, or ECON 405.

ECON 306 Intermediate Microeconomic Theory (3)
Prerequisite: ECON 203. An analysis of the principles underlying the behavior of individual consumers and business firms. The objective is to analyze microeconomic indicators and trends and evaluate their impact. Discussion covers theories of welfare, taxation, marketing systems, and income distribution. Students may receive credit for only one of the following courses: ECON 306 or ECON 403.

ECON 330 Business and Economics of Sustainability (3)
An introduction to natural resource and environmental economics. The objective is to apply basic economic literacy to environmental issues important to business and develop appropriate responses to help enterprises, government agencies, or advocacy organizations gain strategic advantage in the business environments in which they operate. Topics include benefit-cost analysis, valuation, market failure, pollution control, sustainable development, market-based environmental policy, and the economics of renewable and nonrenewable resource management. Business issues related to the environment, such as recycling, the circular economy, environmental offsets, corporate social responsibility, and green certification, are explored.

ECON 430 Money and Banking (3)
Prerequisites: ECON 201 and ECON 203. An examination of the structure of financial institutions and their role in providing money and near money. The goal is to evaluate how the banking and business environments have changed, describe the functions and measurement of money, discuss and evaluate the money supply creation process, and analyze the impact of the Federal Reserve's policies on both the U.S. economy and the economies of other nations. Topics include the composition of the Federal Reserve, the money supply creation process, the tools of monetary policy, the term structure of interest rates, the demand for and supply of money, and interest rate theories. Students may receive credit for only one of the following courses: ECON 430 or ECON 431.

ECON 440 International Economics (3)
Prerequisites: ECON 201 and ECON 203. An examination of international trade and finance theory and their application to contemporary economic issues. The aim is to use economic frameworks to explain international trade and financial flows and analyze information and data on economic policy and institutions. Topics include the costs and benefits of trade, exchange rate markets, global financial imbalances, regional trading blocks, and the role of international economic institutions. Students may receive credit for only one of the following courses: BEHS 440, ECON 440, or ECON 441.

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Education: Teacher Preparation

EDTP 500 Foundations of Teaching for Learning (6)
(May also be applied to the Master of Arts in Teaching at UMGC as equivalent to EDTP 600 if completed with a grade of B or higher.) Prerequisites: Departmental approval; completion of 90 credits of coursework, including at least 24 credits in content area coursework; and a GPA of at least 2.75 in content area coursework. Preparation for effective entry into the classroom as a teacher. Topics include teaching in the contemporary school; human development; approaches to learning, diversity, and collaboration beyond the classroom; learners with exceptional needs; curriculum, instruction, and assessment; teaching in the content area; and synthesis and application. Course materials and assignments focus on documents created and/or typically utilized by school systems and incorporate current school district initiatives. School district personnel may participate as guests. Students may receive credit for only one of the following courses: EDTP 500 or EDTP 600.

EDTP 535 Adolescent Development and Learning Needs (6)
(May also be applied to the Master of Arts in Teaching at UMGC as equivalent to EDTP 635 if completed with a grade of B or higher.) Prerequisite: EDTP 500. Preparation to support the unique development of adolescents from various backgrounds, with varying beliefs and abilities. Learners are examined from the standpoint of developmental characteristics; social, cultural, racial, and gender affiliation; socioeconomic status; religious influences; learning styles; special needs; and exceptionality. Adolescents are also examined from biological, psychological, cognitive, and social perspectives; within the tapestry of their family and community; and through the influences of societal and cultural norms. Discussion covers theories and concepts associated with human growth and development across the lifespan, focusing on the typical and atypical development of the adolescent. Students may receive credit for only one of the following courses: EDTP 535 or EDTP 635.

Emergency Management

EMGT 302 Concepts of Emergency Management (3)
Prerequisite: WRTG 112 or equivalent. An introduction to emergency management at the global, national, regional, state, and local levels. The objective is to identify and analyze forces that formulate policy; apply the principles of policy and law to real-world situations; and analyze emerging political, legal, and policy issues to improve organizational preparedness. Topics include preparedness, mitigation, response, and recovery. The history of emergency management is reviewed, and its future in government and industry is discussed.

EMGT 304 Emergency Response Preparedness and Planning (3)
Prerequisite: EMGT 302. A study of the planning process and format of response procedures for disasters and emergency events. The goal is to evaluate risk vulnerabilities and capabilities, design an emergency plan, and evaluate and critically assess an emergency plan. Topics include risk assessment, modeling, hazard analysis, vulnerability assessment, and response capability assessment. Discussion also covers the evaluation of plans and the use of exercises to improve and implement plans.

EMGT 310 Continuity of Operations Planning and Implementation (3)
Prerequisite: EMGT 304. An exploration of the process for developing, implementing, exercising, and evaluating continuity of operations for both government and industry. The goal is to introduce the role of continuity planning in the public and private sectors of our society, specifically the role continuity planning plays in building community resiliency and how it interacts with emergency management programs and planning. Topics include the role of continuity planning in the nation's enduring constitutional government; ways that continuity planning makes communities and organizations more disaster resilient; and the planning and operational components of continuity plans and programs. The roles of continuity planning in mitigating the effects of cyberattacks and pandemic events are also examined.

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EMGT 312 Social Dimensions of Disaster (3)
Prerequisite: EMGT 304. An examination of the response of the public and individuals to disaster-related issues such as disaster warnings, evacuations, relocations, civil unrest, loss of family and property, and recovery activities. The aim is to evaluate social factors that contribute to increased risk of disaster, design plans and processes that consider social factors, and design strategies and plans to enable communication with diverse social groups. Emphasis is on preparing the community through effective programs and public information. Discussion also covers the impact of disasters on response organizations and personnel.

EMGT 314 Terrorism Issues in Emergency Management (3)
Prerequisite: EMGT 304. A study of the role and responsibilities of the emergency manager in preparing for, responding to, mitigating, and recovering from situations related to terrorism. The objective is to devise and prepare plans, follow appropriate guidelines, and make use of interagency dynamics in planning for and responding to terrorism. Discussion covers the role of first responder groups and other stakeholders and links the protection of critical infrastructure to national, state, and local guidelines.

EMGT 486A Workplace Learning in Emergency Management (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

EMGT 486B Workplace Learning in Emergency Management (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

English

ENGL 102 Composition and Literature (3)
(Fulfills the general education requirements in communications or arts and humanities.) Prerequisite: WRTG 112 or equivalent. Further practice in writing using readings in literature. Focus is on academic writing forms, especially critical analysis of literature, through a variety of modes, such as comparison and contrast, classification, and causal analysis. Students may receive credit for only one of the following courses: ENGL 102 or ENGL 292.

ENGL 103 Introduction to Mythology (3)
(Formerly HUMN 103.) A foundation in ancient mythology, focusing on Greek and Roman myths. Discussion may also cover Norse, Irish, Chinese, Arabic, and Hindu myths, among others. Emphasis is on examining various classical myths as expressed through plays, poems, and stories. The objective is to demonstrate an understanding of the differences between myths, legends, and other similar genres and show how classical world mythology still influences contemporary society. Students may receive credit for only one of the following courses: ENGL 103 or HUMN 103.

ENGL 240 Introduction to Fiction, Poetry, and Drama (3)
Prerequisite: WRTG 112 or equivalent. An introduction to fiction, poetry, and drama, with an emphasis on developing critical reading and writing skills. The objective is to identify and define elements of literature and literary genres, analyze literary texts using principles of close reading, and demonstrate skill in academic writing. Students may receive credit for only one of the following courses: ENGL 240 or ENGL 340.

ENGL 250 Introduction to Women's Literature (3)
Prerequisite: WRTG 112. Recommended: ENGL 102. An overview of multiple forms of writings by and about women from various periods and cultures. The aim is to read critically, understand diverse perspectives, and write effectively about women's literature.

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ENGL 281 Standard English Grammar (3)
(Fulfills the general education requirement in communications but is not a writing course.) Prerequisite: WRTG 112 or equivalent. An overview of standard edited English, a standard central to academic and professional communications. The aim is to write clear, effective prose consistent with the writer's goals. Topics include applying advanced grammatical and linguistic descriptions and prescriptions and attending to the needs of diverse audiences while making writing and editing decisions. Tasks focus on parts of speech, sentence patterns, and sentence transformations. Students may receive credit for only one of the following courses: ENGL 281, ENGL 281X, or WRTG 288.

ENGL 294 Introduction to Creative Writing (3)
Prerequisite: WRTG 112. An introductory survey and practical study of key aspects of literary writing. The objective is to produce original creative writing and to critique, revise, and edit that writing from a writer's perspective. Constructive, collaborative processes are employed to better understand the art and craft of creative writing. Topics may include poetry, fiction, creative nonfiction, or drama.

ENGL 303 Critical Approaches to Literature (3)
(Designed as a foundation for other upper-level literature courses.) Prerequisite: WRTG 112 or equivalent. A study of the techniques of literary criticism, emphasizing close reading, critical thinking, and critical writing. The goal is to apply a variety of theoretical approaches to literature, analyze texts, and create professional written communications.

ENGL 310 Renaissance Literature (3)
Prerequisite: WRTG 112 or equivalent. A study of major British authors and literary works from the English Renaissance period. The goal is to gain historical perspective and discern contemporary relevance by exploring social and cultural contexts.

ENGL 311 The Long 18th-Century British Literature (3)
Prerequisite: WRTG 112 or equivalent. A study of major British authors and literary works from the period known as the long 18th century, roughly from Restoration through the Age of Sensibility (1660–1830s). The goal is to gain historical perspective and discern contemporary relevance by exploring social and cultural contexts.

ENGL 312 19th-Century British Literature (3)
Prerequisite: WRTG 112 or equivalent. A study of major British authors and literary works from the historical eras known as the Romantic Age and Victorian Age. The goal is to gain historical perspective and discern contemporary relevance by exploring social and cultural contexts.

ENGL 363 African American Authors from the Colonial Era to 1900 (3)
Prerequisite: WRTG 112 or equivalent. An examination of African American authors before 1900, including Phillis Wheatley, Frances Harper, Maria W. Stewart, David Walker, Frederick Douglass, William Wells Brown, Charles Chesnutt, and Paul Laurence Dunbar. The goal is to research historical issues; integrate findings into discussion; and articulate, develop, and advance a persuasive argument in written form.

ENGL 364 African American Authors from 1900 to the Present (3)
Prerequisite: WRTG 112 or equivalent. An examination of early 20th-century to early 21st-century African American authors, including James Weldon Johnson, Zora Neale Hurston, Richard Wright, James Baldwin, Ann Petry, Helene Johnson, Dorothy West, and Langston Hughes. The goal is to research historical issues; integrate findings into discussion; and articulate, develop, and advance a persuasive argument in written form. Students may receive credit for only one of the following courses: ENGL 364 or HUMN 364.

ENGL 381 Special Topics in Creative Writing (3)
Prerequisite: WRTG 112 or equivalent. Recommended: ENGL 294 or other creative writing course. A study of special creative writing topics. The goal is to develop creative writing skills within the scope of the special topic. Focus may be on a specific format (such as the novella, novel, or screenplay) or genre (such as mystery, horror, or teen fiction; travel writing; or epic poetry). May be repeated to a maximum of 6 credits when topics differ.

ENGL 384 Advanced Grammar and Style (3)
(Fulfills the general education requirement in communications but is not a writing course.) Prerequisite: WRTG 112 or equivalent. An examination of the basic units of grammatical descriptions, the nature of grammatical categories and structure, the methods and reasons for creating and using those structures, and the application of grammatical concepts to editorial and written style. The focus is on creating dynamic texts that convey complex subject matter to diverse audiences. Students may receive credit for only one of the following courses: ENGL 384 or WRTG 388.

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ENGL 386 History of the English Language (3)
Prerequisite: WRTG 112 or equivalent. An examination of the development and usage of the English language. The objective is to explore various texts and research tools to examine the linguistic heritage and continuing evolution of English. Discussion traces the history of English from its origins and examines contemporary issues and controversies.

ENGL 389 Special Topics in English Literature (1–3)
An in-depth introduction to literary works written by a specific author or authors, representative of a literary movement or produced in a specific time or place. Assignments include advanced reading and research. Students may receive credit for a given topic in either ENGL 289 or ENGL 389 only once.

ENGL 406 Shakespeare Studies (3)
Prerequisite: WRTG 112 or equivalent. An intensive study of Shakespeare's work and its continuing relevance with reference to historically specific social and cultural contexts. The objective is to evaluate and synthesize source materials, apply critical theory, and demonstrate understanding of dramatic text. Histories, comedies, tragedies, romances, and sonnets may be examined. Students may receive credit for only one of the following courses: ENGL 406 or HUMN 440.

ENGL 418 Major British Writers Before 1800 (3)
Prerequisite: WRTG 112 or equivalent. A comprehensive and intensive study of one or two British writers from the period before 1800. The aim is to apply critical reading and thinking skills to analyze and interpret major British works before 1800 from various perspectives (social, historical, political, intellectual, and biographical). Authors studied may include Chaucer, Spenser, Marlowe, Jonson, Milton, Defoe, Richardson, Fielding, Pope, Swift, or Johnson. May be repeated to a maximum of 6 credits when topics differ.

ENGL 430 Early American Literature (3)
Prerequisite: WRTG 112 or equivalent. A study of early American literature. The aim is to examine literary periods, movements, and styles; interpret literature as a reflection of national and world events; recognize the differences among types of American literary works; and apply critical methodology. Topics include Indigenous narratives, revolution and government, American romanticism, slavery, women's rights, the Civil War and Reconstruction, and naturalism and realism.

ENGL 433 Modern American Literature (3)
Prerequisite: WRTG 112 or equivalent. A study of modernist American fiction, poetry, nonfiction, and drama. The goal is to interpret and analyze literature in its social and historical contexts. Topics include the literary movement of modernism and application of critical theory.

ENGL 439 Major American Writers (1–3)
Prerequisite: WRTG 112 or equivalent. A study of works by selected American authors from the colonial period to the present. The goal is to understand the place these authors and their works hold in the canon of American literature. Emphasis is on the impact of historical and social events, as well as biographical influences, on the literature. May be repeated to a maximum of 6 credits when topics differ.

ENGL 441 Postmodern American Literature: 1945 to 1999 (3)
Prerequisite: WRTG 112 or equivalent. A comprehensive study of literature in America from 1945 to the end of the 20th century. The objective is to interpret American literature as a reflection of national and world events, recognize the differences among types of American literary works, and apply critical methodology. Topics include the American Dream; war; fear and paranoia; rebellion and counterculture; civil rights, feminist, and gay movements; postmodernism; and multiculturalism.

ENGL 459 Contemporary Global Literatures (3)
Prerequisite: WRTG 112. An advanced examination of contemporary literary texts written by diverse writers that addresses the connections between geographical regions, history, and social justice. Literature studied will be of varied genres, including poetry, fiction, and memoir, with some in multimedia form. Canonical and emerging writers are studied to understand established and current discourse in the field. The goal is to demonstrate critical, interpretative, and analytical skills in reading and writing as well as apply contemporary theory. Writers covered may vary from term to term.

ENGL 495 English Literature Capstone (3)
Prerequisites: ENGL 240, ENGL 303, and at least 9 additional credits of upper-level ENGL courses. A synthesis and application of knowledge and skills developed by previous study in the discipline. The goal is to refine skills and explore ways that they may be applied after graduation. Focus is on reviewing and revising previously written papers and/or projects to create a comprehensive portfolio. Assignments include the creation of the portfolio and writing original papers on one's professional postgraduate objectives and the current status of the discipline.

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Environmental Health and Safety

ENHS 300 Environmental Systems (3)

Prerequisite: CHEM 297. An introduction to environmental systems and the impact of human activities on the environment. The goal is to explore the Earth's systems, including the biosphere, lithosphere, hydrosphere, and atmosphere, and recognize the complex interconnections of natural and human systems to gain a deeper understanding of human drivers of environmental change and environmental health and safety concerns. Topics include systems thinking, the impact of resource development and use, and general scientific principles and concepts related to environmental systems (e.g., biogeochemical cycles, flow of energy, biodiversity, soil, water, and air). Students may receive credit for only one of the following courses: ENHS 300 or ENMT 301.

ENHS 305 Environmental Health and Safety Regulations (3)

Prerequisite or corequisite: ENHS 300. An analysis of the development, use, and implementation of constitutional and administrative law in environmental health and safety management. The goal is to practice information literacy skills to locate applicable policies, laws, and regulations and to apply knowledge of process and regulatory communication systems for effective environmental health and safety management. The emphasis is on federal legislation and the use of the *Federal Register* and *Code of Federal Regulations.* Discussion explores the relationship between regulations and public policy at local, state, and federal levels. Students may receive credit for only one of the following courses: ENHS 305, ENMT 303, or ENMT 493.

ENHS 310 Hazardous Substances and Toxicology (3)

An exploration of hazardous substances and their effects on human health and the environment. The aim is to examine hazards and risk factors to determine mechanisms leading to injury and damaging health outcomes. Topics include hazard identification and communication, fundamentals of toxicology, task safety analysis, and occupational and environmental exposure science.

ENHS 315 Risk Assessment in Environmental Health and Safety (3)

An examination of the general concepts of risk assessment as applied to environmental health and safety practice. The aim is to incorporate best practices for risk assessment, analysis, and mitigation recommendations for effective management of change. Topics include ecological and human risk assessment; risk perception; risk transfer options; and identification of methods, databases, and tools to characterize risk.

ENHS 320 Incident Response and Investigation (3)

An introduction to incident planning, response, investigation, analysis, and management. The objective is to synthesize data and evidence to develop recommendations for prevention or mitigation of future incidents. Topics include the incident command system, hazardous substances emergency response, incident analysis and investigation methods, and workplace violence prevention.

ENHS 325 Fire Prevention and Protection (3)

An overview of fire prevention and protection as applied to environmental health and safety. The objective is to implement evidence-based practices and strategies to address physical and chemical hazards that may result in a fire or explosion event. Topics include fire science, chemical and electrical hazards, detection and suppression systems, hot work, life safety, and chemical process safety.

ENHS 330 Safety and Security Management (3)

Prerequisite: ENHS 305. A detailed exploration of safety and security management systems applied to the occupational environment. The aim is to implement evidence-based workplace interventions to clarify issues and contributing factors and to evaluate the effectiveness of interventions. Topics include hazard control methods, performance indicators, construction safety practices, fleet safety, inspections and audits, change management, safety culture, and voluntary consensus standards.

ENHS 335 Occupational Health and Industrial Hygiene (3)

Prerequisite: ENHS 310. An investigation of work-related impacts on human health and the environment. The goal is to anticipate, recognize, evaluate, control, and confirm the effectiveness of controls for occupational health hazards and risk factors through the practice of industrial/occupational hygiene. Topics include exposure assessment and management, indoor environmental quality, ventilation, return-to-work programs, susceptible worker protection, and worker privacy.

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ENHS 340 Environmental Technology and Control (3)
Prerequisite: ENHS 300. An introduction to technology for environmental health and safety management, control, and remediation. The objective is to apply appropriate technological solutions to air, land, and water to prevent, treat, detect, and remediate pollution. Discussion covers existing, modified, new, and emerging technologies, as well as factors in making technology application decisions for waste removal, treatment, and disposal. Students may receive credit for only one of the following courses: ENHS 340 or ENMT 340.

ENHS 350 Introduction to Geographic Information Systems (3)
Prerequisite or corequisite: ENHS 300. An introduction to the basic concepts of geographic information systems (GIS). The aim is to apply critical-thinking and problem-solving skills to address current environmental and watershed challenges using GIS software and develop skills in framing problems effectively and ethically. Activities include selecting data; creating and building databases; editing, analyzing, and presenting data in a spatial context; and interpreting and communicating results. Students may receive credit for only one of the following courses: ENHS 350 or ENMT 307.

ENHS 360 Introduction to Watershed Management (3)
Prerequisite or corequisite: ENHS 300. A comprehensive examination of watershed management with a focus on design practices. The aim is to apply critical thinking and build the professional skills in science, management practice, regulatory processes, and stakeholder engagement required to implement watershed and stormwater management in the United States. Topics include watershed characterization, hydrologic processes, land use impacts on watersheds, water quality and quantity, and the design of structural and nonstructural best management practices. Students may receive credit for only one of the following courses: ENHS 360 or ENMT 360.

ENHS 400 Ergonomics and Human Factors (3)
A foundation in ergonomics, human factors, and best practices for worker training. The aim is to apply basic principles of anthropometry, human factors engineering, biomechanics, and work practice controls to prevent injuries and illnesses. Topics include descriptive statistics, qualitative and quantitative data analysis, assessment of worker competency and fitness for duty, and adult learning theory. Assignments include performing a needs and gap analysis for worker learning and development.

ENHS 405 Pollution Prevention Strategies (3)
Prerequisite: ENHS 300. An overview of alternative environmental strategies to prevent, reduce, and minimize pollution. The goal is to integrate knowledge about environmental management systems and regulations. Topics include source reduction, conservation, material substitution, process modifications, quality assurance/control, water minimization, and economic analysis for regulatory compliance related to these strategies. Students may receive credit for only one of the following courses: ENHS 405 or ENMT 405.

ENHS 495 Environmental Health and Safety Capstone (3)
Prerequisite: Completion of 30 credits of ENHS courses, including ENHS 305, ENHS 330, and ENHS 340. A project-driven study of core competencies in environmental health and safety professional practice. The objective is to propose, conduct, and report on an applied project activity to demonstrate depth of technical knowledge in at least one hazard or risk factor area. Topics include legal liability, evidence-based professional and ethical practice, leadership, communication and consultation, collaborative project management, and conflict management.

Experiential Learning

EXCL 301 Prior Learning Portfolio (3)
(Students should visit *umgc.edu/priorlearning* or contact *priorlearning@umgc.edu* for complete requirements.) Prerequisite: Formal admission to the program. Instruction in the preparation of a portfolio documenting college-level learning gained through life experiences. The aim is to translate prior life experiences into college credit by developing a portfolio that documents and presents learning specific to targeted courses. Faculty evaluators assess completed portfolios to recommend credit award.

EXCL X001 Supplement to Prior Learning Portfolio (0)
(Students should visit *umgc.edu/priorlearning* or contact *priorlearning@umgc.edu* for complete requirements.) Prerequisite: EXCL 301. An opportunity to prepare additional portfolios for courses not previously targeted. The aim is to translate prior life experiences into college credit by developing a portfolio that documents and presents learning specific to targeted courses. Faculty evaluators assess completed portfolios to recommend credit award.

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Finance

FINC 321 Fundamentals of Building Wealth (3)
(Formerly BMGT 342. For students majoring in both business and nonbusiness disciplines.) A practical overview of personal finance management and wealth creation that blends financial theory and application. The goal is to develop personal financial management skills (e.g., budgeting income and expenditures and planning for financial security and retirement) and understand elements of the U.S. financial structure (including savings and investment alternatives, financing and credit sources, and the role of insurance in protecting income and assets). These skills are utilized in the development of a personal financial plan. Students may receive credit for only one of the following courses: BMGT 342, BMGT 388F, BMGT 388N, FINC 321, or FINC 322.

FINC 328 Small Business Finance (3)
A project-driven study of small business and entrepreneurial finance that emphasizes the financial knowledge and tools needed to develop a successful venture from start-up through growth and maturity. The goal is to identify, assess, and explain the key decision-making processes required of a small business entrepreneur or financial manager. Topics include financial statement analysis, capital acquisition, legal and regulatory compliance, budgeting, forecasting, and client and vendor relationships. Projects include creation of a financial plan and completion of a loan application. Discussion also covers contemporary issues related to finance.

FINC 330 Business Finance (3)
Prerequisites: ACCT 221 and STAT 200. An overview of the theory, principles, and practices of financial management in a business environment. Topics include financial analysis and financial risk, characteristics and valuations of securities, capital investment analysis and decision-making, the capital structure of the firm, financial leverage, and international finance. The aim is to examine financial information, identify issues and solve business problems, and make sound business decisions. Emphasis is on the application of financial theory and methods for solving the problems of financial policy that managers face. Students may receive credit for only one of the following courses: BMGT 340, FINC 330, MGMT 398D, or TMGT 320.

FINC 331 Finance for the Nonfinancial Manager (3)
Development of the financial skills needed by functional experts in human resources, marketing, production, and general management. The objective is to interpret finance and accounting documents and apply that information to sound business decision-making. Topics include financial statements and forecasting, capital budgeting, project evaluation, working capital management, stocks and bonds, time value of money, and international financial management. Emphasis is on practical applications to facilitate informed discussions with business professionals for financial decision-making. Students may receive credit for only one of the following courses: BMGT 341 or FINC 331.

FINC 335 Fintech, Financial Institutions, and Markets (3)
An overview of the interplay of financial markets, financial institutions, and technology. Topics include the characteristics and roles of financial markets and institutions. Focus is on evaluating what drives the term structure of interest rates. The aim is to be able to discuss how emerging technologies are used in the financial services industry and how they affect delivery of financial products and services, such as insurance, investment advising, and wealth management.

FINC 340 Investments (3)
(Formerly BMGT 343.) Prerequisites: FINC 330 and FINC 335. An introduction to financial investments and portfolio management. The goal is to evaluate and critically analyze asset selection and allocation and perform basic portfolio management activities. Topics include types of securities and securities markets; investment risks, returns, and constraints; portfolio policies and management; and institutional investment policies. Theories, practices, and real-world examples are examined and analyzed. Students may receive credit for only one of the following courses: BMGT 343 or FINC 340.

FINC 351 Risk Management (3)
(Formerly BMGT 346.) A study focused on recognizing and evaluating pure risk facing organizations. The aim is to identify risks to cost control and develop risk management strategies. Discussion covers guides for risk-management decisions concerning the retention, control, and transfer of risk (including insurance). Students may receive credit for only one of the following courses: BMGT 346 or FINC 351.

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FINC 352 Life and Health Insurance (3)
A study of the tools and principles of life and health insurance in financial planning for businesses and individuals. The goal is to assess personal needs in order to determine which types of life and health insurance plans fit best. Topics include pension planning strategies, such as deferred-compensation and profit-sharing plans; use of trusts in business and in planning individual estates; and comprehensive analysis of the effects of income taxes, estate taxes, and gift taxes on life insurance and estate planning. Students may receive credit for only one of the following courses: BMGT 347 or FINC 352.

FINC 355 Retirement and Estate Planning (3)
(Content aligned with the Certified Financial Planner [CFP] curriculum.) A comprehensive study of retirement and estate planning techniques for individuals, families, and businesses. The aim is to evaluate retirement plans, analyze regulatory considerations of retirement planning, and apply estate planning techniques for businesses and families. Topics include retirement planning and estate planning, as well as regulations relevant to the financial services industry. Discussion covers processes of retirement planning (retirement need, investments, taxes, Social Security, Medicare, qualified versus nonqualified plans, and tax-advantage plans) and estate planning (wills, trusts, asset protection, and life insurance).

FINC 421 Financial Analysis (3)
(For students with general business interests, as well as those majoring or minoring in accounting or finance.) Prerequisite: FINC 340. An analysis and interpretation of financial statements directed at the decision-making needs of managers, stockholders, and creditors. The aim is to analyze and interpret financial information, apply financial information directly to valuation models, and evaluate growth strategies to maximize company value. Topics include assessment of business performance, projection of financial requirements, analysis of capital investment decisions and financing choices, risk assessment, and valuation. Students may receive credit for only one of the following courses: BMGT 498Q or FINC 421.

FINC 430 Financial Management (3)
Prerequisite: FINC 340. A study of financial management. The objective is to apply financial principles and concepts to assess and solve financial problems and make financial and corporate policy at the executive level. Topics include assessments of the financial health of the organization, company valuation, cost of capital, risk analysis, investment decisions, and financial systems and capital markets. Students may receive credit for only one of the following courses: BMGT 440 or FINC 430.

FINC 440 Security Analysis and Valuation (3)
Prerequisites: FINC 340. A comprehensive and quantitative examination of financial investments and portfolio management. The aim is to quantitatively evaluate and value assets, critically analyze asset selection and allocation, and apply financial statistics and other evaluation methods to perform basic portfolio management activities and functions. Topics include the analysis, valuation, and selection of securities; investment risks, returns, and constraints; portfolio policies and management; institutional investment policies; and the operation and efficiency of financial markets. Theory, practice, and real-world examples are analyzed to value financial assets and compare alternatives. Students may receive credit for only one of the following courses: BMGT 443 or FINC 440.

FINC 450 Commercial Bank Management (3)
Prerequisites: FINC 330 and FINC 340. An analysis of commercial bank management. The aim is to examine how the changing commercial banking environment has affected profitability and evaluate bank business strategies. Discussion covers the loan function and the management of liquidity reserves, investments for income, and sources of funds. The objectives, functions, policies, organization, structure, services, and regulations of banks are considered. Students may receive credit for only one of the following courses: BMGT 445 or FINC 450.

FINC 460 International Finance (3)
Prerequisite: FINC 340. An analysis and discussion of financial management issues for the multinational enterprise. The aim is to use financial and economic strategies in quantitative decision-making. Topics include the organization and functions of the foreign exchange market and international capital markets; financing foreign trade; and identifying, analyzing, and evaluating the globalization strategies of the multinational enterprise. Students may receive credit for only one of the following courses: BMGT 446 or FINC 460.

FINC 486A Workplace Learning in Finance (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

FINC 486B Workplace Learning in Finance (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

FINC 490 Financial Plan Development (3)
(Content aligned with the Certified Financial Planner [CFP] curriculum.) Prerequisites: ACCT 323, FINC 321, FINC 340, FINC 352, and FINC 355. A thorough review of financial planning principles and applications, based on case studies. The objective is to gather and analyze data, evaluate the impact of governmental regulations and economic changes, and effectively communicate a comprehensive financial plan to clients. Topics include taxes, estates, asset protection, debt, credit, investments, insurance, economic theories, the financial planning process, ethics, and risk.

FINC 495 Contemporary Issues in Finance Practice (3)
(Intended as a final, capstone course to be taken in a student's last 15 credits.) Prerequisites: FINC 330 and FINC 340. A study of finance that integrates knowledge gained through previous coursework and experience and builds on that conceptual foundation through integrative analysis, academic research, practical application, and critical thinking. The objective is to apply financial theories and contemporary financial practices to business issues. Emerging issues in finance and business are considered. Individual and group case studies and research papers are used to integrate key financial knowledge in the areas of financial analysis, investments, business valuation, risk, and international finance. Students may receive credit for only one of the following courses: BMGT 495 or FINC 495.

Fire Science

FSCN 302 Fire and Emergency Services Administration (3)
Prerequisite: WRTG 112 or equivalent. A presentation of modern management and planning techniques that apply to organizing a fire department. The objective is to apply management concepts to fire service administration and analyze the community approach to risk reduction. Discussion covers procedures for evaluation and control of budgeting, personnel, communications, and planning. Topics also include the traditional and evolving roles of the fire department in protection, prevention, and community service.

FSCN 304 Personnel Management for Fire and Emergency Services (3)
Prerequisite: FSCN 302. An examination of personnel practices, including management procedures, collective bargaining, binding arbitration, and applicable legislative and administrative procedures. The aim is to manage emergency service personnel; develop, communicate, and implement organizational goals and objectives; and lead personnel in compliance with regulations and within an ethical framework. Topics include promotion, personnel development, career and incentive systems, validation of physical requirements, and managerial and supervisory procedures.

FSCN 305 Fire Prevention Organization and Management (3)
Prerequisite: FSCN 302. An examination of prevention as the primary community-based strategy for fire protection. The objective is to design, implement, and manage programs addressing community risks; administer prevention programs; and influence change and development of legislation, regulation, and policy. Emphasis is on applying principles to anticipate problems and develop strategies for fire prevention. Topics include community risk reduction, codes and standards, inspections and plans review, incident investigation, fire-prevention research, and the relationship of master planning to fire prevention. The cultural, economic, governmental, nongovernmental, and departmental influences on fire prevention are also explored.

FSCN 413 Community Risk Reduction for the Fire and Emergency Services (3)
Prerequisites: FSCN 304 and FSCN 305. An examination of the ethical, sociological, organizational, political, and legal components of community risk reduction. The goal is to analyze environments and design and develop a community risk reduction plan and implement that plan. A framework for understanding these issues and a methodology for developing a comprehensive community risk reduction plan are provided.

FSCN 416 Emergency Services Training and Education (3)
Prerequisites: FSCN 304 and FSCN 305. An examination of the management and administration of training and education in fire and emergency services. The objective is to manage and administer development programs, integrate concepts in training programs, and analyze and assess programs. Discussion explores how higher education/training contributes to the professional development of fire-service personnel. Topics include the many systems of training and education available and professional development on both individual and organizational levels. Focus is on safety, especially understanding and preventing training deaths and injuries.

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French

FREN 111 Elementary French I (3)
For online sections, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of French; assumes no prior knowledge of French. Students with prior experience with the French language should take a placement test to assess appropriate level.) An introduction to the French language. The objective is to listen to, speak, read, and write elementary French in concrete, real-life situations and in culturally appropriate ways. Practice in pronunciation is provided. The diverse language and culture of the French-speaking world is also explored. Students may receive credit for only one of the following courses: FREN 101 or FREN 111.

FREN 112 Elementary French II (3)
(Not open to native speakers of French.) Prerequisite: FREN 111 or appropriate score on a placement test. A continued introduction to the French language. The objective is to listen to, speak, read, and write French in concrete, real-life situations related to oneself and others in culturally appropriate ways. Practice in speaking and listening is provided. The diverse language and culture of the French-speaking world is explored. Students may receive credit for only one of the following courses: FREN 102 or FREN 112.

Geography

GEOG 100 Introduction to Geography (3)
An exploration of how geography is used to analyze, understand, and interpret our world. The goal is to use an interdisciplinary approach and a spatial perspective to analyze complex social issues. Emphasis is on using geospatial tools and concepts to investigate the interconnection of human and physical systems and their relationship to major global problems and prospects. Topics include globalization, climate change, population dynamics, cultural diversity, and ecological conservation.

Geology

GEOL 100 Physical Geology (3)
An introductory study of geology, encompassing the Earth, the materials that constitute its makeup, the structure of those materials, and the processes acting on them. The goal is to understand geological principles and how humans affect geological processes. Topics include the rocks and minerals composing Earth, the movement within Earth, and its surface features and the agents that form them and our environment. Discussion also covers energy and mineral resources. Students may receive credit for only one of the following courses: GEOL 100 or GEOL 101.

German

GERM 111 Elementary German I (3)
For online sections, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of German; assumes no prior knowledge of German. Students with prior experience with the German language should take a placement test to assess appropriate level.) An introduction to the German language. The objective is to communicate in German in some concrete, real-life situations using culturally appropriate language. Aspects of German life and culture are explored through the German language. Students may receive credit for only one of the following courses: GERM 101 or GERM 111.

GERM 112 Elementary German II (3)
For online sections, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of German.) Prerequisite: GERM 111 or appropriate score on a placement test. A continued introduction to spoken and written German. The goal is to communicate in German in concrete, real-life situations relating to oneself and others. German culture and language are explored. Students may receive credit for only one of the following courses: GERM 102 or GERM 112.

GERM 211 Intermediate German I (3)
For online sections, microphone, speakers, and occasional synchronous work required. Prerequisite: GERM 112 or appropriate score on a placement test. Further development of listening, speaking, reading, and writing skills in German. The aim is to communicate in German in real-life situations and social contexts in culturally appropriate ways. Students may receive credit for only one of the following courses: GERM 114, GERM 201, or GERM 211.

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GERM 212 Intermediate German II (3)
For online sections, microphone, speakers, and occasional synchronous work required. Prerequisite: GERM 211 or appropriate score on a placement test. Further development of listening, speaking, reading, and writing skills in German. The objective is to interact effectively with German-speaking individuals in a variety of personal settings and on issues of topical interest in culturally appropriate ways. Students may receive credit for only one of the following courses: GERM 115, GERM 202, or GERM 212.

GERM 311 Advanced German I (3)
Prerequisite: GERM 212 or appropriate score on a placement test. An in-depth review and expansion of German language communication skills. The aim is to express opinions and use narration and description in a variety of personal and professional contexts. Focus is on improving linguistic proficiency while increasing cultural awareness. Students may receive credit for only one of the following courses: GERM 301 or GERM 311.

GERM 314 Modern German-Speaking Cultures (3)
Prerequisite: GERM 212 or appropriate score on a placement test. An overview of contemporary life and culture in the German-speaking world, taught entirely in German. The objective is to demonstrate intercultural communication skills, recognize aspects of German-speaking cultures and their significance to global society, and employ strategies to enhance language development and cultural awareness. Discussion covers the social, historical, and political experience of the German-speaking people.

Gerontology

GERO 100 Contemporary Issues in Aging (3)
(Fulfills the general education requirement in the behavioral and social sciences.) A multidisciplinary exploration of aging in the 21st century, with an emphasis on the policies, evidence-based approaches, and attitudes that promote healthful aging. Activities include skill-building exercises. The objective is to locate and read scholarly sources, create effective presentations in different modalities, and communicate with and on behalf of older people.

GERO 301 Service/Program Management (3)
(Fulfills the general education requirement in behavioral and social sciences.) Recommended: GERO 100. An exploration and analysis of the managerial aspects of providing health and human services in the field of gerontology through an integrated delivery system. The aim is to integrate concepts, strategies, and best practices for the management of health and human services. Topics include planning, strategic management, marketing, financing, legal issues, and capacity building.

GERO 302 Health and Aging (3)
Recommended: GERO 100. An exploration of the physiological processes of aging that covers normal aging and chronic illness. The goal is to distinguish normal aging from disease and evaluate factors that affect the health of older adults. Topics include biological processes and theories of aging, bodily changes normally associated with aging, long-term and healthcare systems, and related medical terminology. Review also covers substance abuse; environmental factors affecting aging; and ways of promoting health, preventing disease, and assessing health risks.

GERO 306 Programs, Services, and Policies (3)
Recommended: GERO 100 and GERO 302. An overview of the impact of policy related to older adults on U.S. society. The aim is to examine the role of legislative mandates on older adults at both societal and individual levels. Topics include Social Security, Medicare, and the Older Americans Act. Students may receive credit for only one of the following courses: GERO 304 or GERO 306.

GERO 311 Gender and Aging (3)
(Fulfills the general education requirement in behavioral and social sciences.) Recommended: GERO 100. An analysis and discussion of issues related to gender and the aging process. The goal is to evaluate and challenge negative, socially constructed assumptions associated with gender and aging, as well as examine gender-relevant issues in health and well-being after midlife. Discussion covers life transitions, socioeconomic status, culture, family and social relationships, ageism, and sexuality and health as each relates to gender. The impact of public policy and services on gender and aging is also addressed. Students may receive credit for only one of the following courses: GERO 311 or GERO 497E.

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GERO 320 Psychosocial Aspects of Aging (3)
(Fulfills the general education requirement in behavioral and social sciences.) Recommended: GERO 100. An advanced multidisciplinary examination of the psychosocial forces that affect the aging process. Aspects of aging are analyzed from a number of theoretical perspectives found in psychology, sociology, and social gerontology. The goal is to articulate the impact of biological, sociocultural, and life cycle forces on psychological and social well-being in post-midlife. Topics include normative and atypical psychological and social functioning in post-midlife; the social construction of aging; and the impact of aging, ageism, and longevity on social structures, such as the family, work, retirement, and healthcare. Students may receive credit for only one of the following courses: GERO 220, GERO 320, or PSYC 357.

GERO 338 Health Promotion in Older Adults (3)
Recommended: GERO 100. A project-based exploration of health promotion for an aging population. The objective is to articulate different models of health promotion for older adults and design a health promotion campaign.

GERO 342 Long-Term Care Administration (3)
Recommended: GERO 100. An overview of the administrative and operational issues of long-term care facilities. The aim is to identify common forms of long-term care and articulate the responsibilities of a long-term care administrator. Relationships with personnel and administrative structure are examined. Topics include policy, procedures, insurance, and financing. Discussion also covers the ethical and legal concerns of long-term care.

GERO 390 The Business of Aging (3)
Recommended: GERO 100 and ECON 201 (or ECON 203). A comprehensive study of the sources of economic security for older adults, the problems encountered in retirement, and the impact of an aging population on the nation's economy. The goal is to outline the key sources of economic security received by older adults (including Social Security, pensions, personal savings, Medicare, and Medicaid); examine how economic security varies by race, ethnicity, gender, and social status as people age; evaluate how longevity and the "graying" of society impact the nation's economy; and explore potential solutions to the problems posed by entitlement programs. Topics include retirement planning; financing longevity; health, disability, and long-term care costs; economic disparities by social group; and the international economics of aging.

GERO 427 Culture and Aging (3)
(Fulfills the general education requirement in behavioral and social sciences.) Recommended: GERO 100. An interdisciplinary examination of how different cultures interpret and deal with aging and the life cycle. Focus is on the increasingly heterogeneous aging population in the United States. The goal is to raise critical awareness of how aging is experienced across cultures. Topics include cross-cultural theory and research on aging; global demographics of aging; cross-cultural perspectives of norms and values regarding work, family, and community roles for older adults; the social and economic status of older adults; intergenerational relationships; ethical caregiving; end-of-life issues; social services; and social policy. Health disparities among older adults of certain ethnicities within the United States are also addressed. Students may receive credit for only one of the following courses: GERO 327, GERO 410, or GERO 427.

GERO 486A Workplace Learning in Gerontology (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl*). The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

GERO 486B Workplace Learning in Gerontology (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl*). The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

GERO 495 Special Topics in Development and Health (1–3)
Specialized study in gerontology and related topics focusing on issues in development and health. May be repeated to a maximum of 6 credits when topics differ.

GERO 496 Special Topics in Social and Family Relations (1–3)
Specialized study in gerontology and related topics focusing on social and family relations. May be repeated to a maximum of 6 credits when topics differ.

GERO 497 Special Topics in Administration and Planning (1–3)
Specialized study in gerontology and related topics focusing on administration and planning. May be repeated to a maximum of 6 credits when topics differ.

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Government and Politics

GVPT 100 Introduction to Political Science (3)

A survey of the basic principles of political science. The objective is to define the main features of primary systems of political economy to understand differing methods of governance and articulate consequences of government actions in a globally interdependent system. Topics include the relationship of political science to the other social sciences; modern democracy, political ideology, and political socialization; the function of public opinion, mass media, interest groups, and political parties; the basic institutions of government and the separation of powers; and the role of international relations and globalization.

GVPT 101 Introduction to Political Theory (3)

An overview of the main schools of political theory, including democracy, authoritarianism, and alternative theories. The aim is to demonstrate familiarity with important thinkers and major works in the history of political theory; use theoretical language to analyze and critique political behavior and events; identify the strengths and weaknesses of different forms of government; and demonstrate knowledge of crucial concepts (justice, power, authority, the state, social contract, etc.) and their history. Topics include the philosophical foundations of liberalism, socialism, and conservatism and the core political concepts of justice, power, and authority.

GVPT 125 Understanding 21st-Century Global Challenges (3)

An examination of the changing face of international affairs in a post–Cold War world and the role of the United States in the evolving international order. The aim is to recognize and explain trends in international affairs, apply theoretical frameworks in international relations, and analyze world events to explain and evaluate global developments. Focus is on the roles of key international institutions, states, nonstate actors, and globalization in the evolution of global relations since the collapse of the Soviet Union. Discussion also covers various influences on contemporary affairs, including technology, migration, disease, economic development, and terrorism. Students may receive credit for only one of the following courses: GVPT 125 or GVPT 401.

GVPT 170 American Government (3)

A comprehensive study of government in the United States, including the basic principles of American government and political culture. The aim is to explain the vertical and horizontal structure of the American government and the roles of the three federal branches, bureaucracies, and the state governments; describe the development of the American political system and its impact on the political landscape; and explain the processes of the electoral system, political parties, and interest groups to persuade and influence. Institutions, processes, and public policies are examined from a cross-cultural perspective.

GVPT 200 International Political Relations (3)

A study of the major factors underlying international relations, the methods of conducting foreign relations, and the means of avoiding or alleviating international conflicts. The objective is to interact with global communities, contribute to policy formation, analyze differing worldviews, and apply historical and cultural contexts to identify probable outcomes of disputes. Students may receive credit for only one of the following courses: GVPT 200 or GVPT 300.

GVPT 210 Introduction to Public Policy and Public Administration (3)

Prerequisite: GVPT 100. An introduction to the study of the administrative process in the executive branch and the structure and function of the federal system. The aim is to apply the mechanisms of policy formulation to the budgetary process, analyze the nature of public personnel policy and the fundamentals of organization theory, and evaluate the impact of new technologies on public organizations. Topics include the organizational structure, the political cultural environment, intergovernmental relations, performance management, social equity, and public administration and public finance administration.

GVPT 280 Comparative Politics and Government (3)

An introductory study of institutional patterns and trends in a variety of countries with dissimilar governmental styles. The goal is to compare the stages of political development in the modern state system on a spectrum ranging from liberal democracies to authoritarian regimes. Discussion covers ethnic conflict and economic inequality in relation to the success and failure of governmental approaches in solving compelling issues.

GVPT 306 Global Political Economy (3)

A study of the relationship between political and economic processes in international affairs. Discussion covers the effect of globalization on the global environment, the economy, world peace, the power of the nation-state, and inequality between nation-states.

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GVPT 308 International Human Rights (3)
Recommended: GVPT 100. An examination of the principles and practices governing human rights from ancient times to contemporary international conventions and U.N. declarations. The aim is to analyze, evaluate, and discuss present national/international pushes for human rights and emancipation. Students may receive credit for only one of the following courses: GVPT 308 or GVPT 399Y.

GVPT 403 Law, Morality, and War (3)
Prerequisite: WRTG 112. A study of just war traditions. The objective is to make informed decisions and analyze conflict. Discussions cover the theoretical and practical connections between law, war, and morality.

GVPT 406 Global Terrorism (3)
Prerequisite: WRTG 112. An examination of the development of global terrorism and its impact on the international community. The goal is to participate in strategy and policy formulation and implementation, evaluate threats, and assess infrastructures that support global terrorist organizations. Students may receive credit for only one of the following courses: GVPT 401A or GVPT 406.

GVPT 407 State Terrorism (3)
An examination of the use of force and power (terrorism) by states against various populations to advance the interests of their civilization or state. The objective is to apply knowledge of culture, tradition, ideology, and methodology to comprehend state terrorism; analyze risk to national security; and explain how domestic climates and international relationships interact to support state terrorism. Topics include state behavior and norms; state interests, power, and force; application of power and force; and coercion within and among civilizations. Students who have completed GVPT 401B or GVPT 401C may not receive credit for GVPT 407.

GVPT 408 Counterterrorism (3)
An investigation of counterterrorism (including its historical context), focusing on the evaluation of threats and the formulation of defeat strategies. The aim is to evaluate response strategies, help improve offensive and defensive planning, and construct a defeat strategy for a terrorist threat. Students may receive credit for only one of the following courses: GVPT 399H or GVPT 408.

GVPT 409 Terrorism, Antiterrorism, and Homeland Security (3)
An expanded study of global terrorism and the impact on the homeland security of the United States in the 21st century. The objective is to investigate the relationship between the evolving terrorism threat environment and its impact on the U.S. homeland. Topics include partners and approaches to detect, defeat, or mitigate terrorism and various ways the nation readies its diverse communities to identify, respond, and protect critical infrastructure. Students may receive credit for only one of the following courses: GVPT 409 or GVPT 498X.

GVPT 444 American Political Theory (3)
Prerequisite: WRTG 112. A study of the development and growth of American political concepts from the colonial period to the present. The objective is to apply the rule of law to the decision-making process; interpret, apply, and synthesize the concepts of individual rights and collective responsibilities; and evaluate the interconnection between war, peace, and diplomacy.

GVPT 457 American Foreign Relations (3)
Prerequisite: WRTG 112. A study of the principles and machinery of American foreign relations. The goal is to apply historical themes of American foreign policy to contemporary international relations, incorporate tenets of international law into American diplomatic approaches, and inform and influence policy making. Emphasis is on the conduct of the U.S. Department of State and the Foreign Service. Analysis covers the major foreign policies of the United States.

GVPT 475 The Presidency and the Executive Branch (3)
Prerequisite: WRTG 112. A study of the president's influence on legislative matters, the president's function in the executive branch (including domestic and foreign policy), and the president's role in his or her political party. The aim is to analyze contemporary uses of the presidency, evaluate an election strategy, and communicate realities of the presidential office.

GVPT 486A Workplace Learning in Government and Politics (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

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GVPT 486B Workplace Learning in Government and Politics (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

GVPT 495 Political Science Capstone (3)
Prerequisites: WRTG 112 or equivalent and 9 upper-level credits in GVPT coursework. A study of political science that integrates knowledge gained through previous coursework and experience. The aim is to build on that conceptual foundation through integrative analysis, practical application, and critical thinking. Concepts and methods of political science are applied in producing a political, policy, or position paper for a project organization.

GVPT 498 Advanced Topics in Government and Politics (1)
In-depth study of topics of specialized interest. May be repeated to a maximum of 6 credits when topics differ.

Graphic Communication

GRCO 100 Introduction to Graphic Communication (3)
(Access to Adobe Photoshop and Illustrator required.) An introduction to graphic communication and the various roles and responsibilities of the profession. The aim is to demonstrate the skills and knowledge necessary for graphic communication professionals. Design theories and content are explored through hands-on projects. Topics include industry standards, portfolios, and research and assessment practices.

GRCO 230 Typography and Layout (3)
Prerequisites: GRCO 100 and ARTT 120. An introduction to typography and layout as compositional tools to construct graphic communications. The goal is to analyze and determine appropriate typefaces and apply typographical skills to layout design. Emphasis is on the individual aspects of the letterform and the interrelationship of letters on the page. Discussion covers the process of design, from research to comprehensive mock-up, to produce portfolio-quality designs.

GRCO 350 Intermediate Graphic Communication: Portfolio Development (3)
Prerequisite: GRCO 230. The development of a professional graphic communications portfolio. The goal is to assemble a select body of work for web presentation that demonstrates knowledge of color, typography, composition, and design. Projects are designed to synthesize and refine basic design skills. Emphasis is on gathering the elements of a cohesive portfolio and presenting a personal body of work. Students may receive credit for only one of the following courses: ARTT 250 or GRCO 350.

GRCO 354 Digital Media (3)
(Formerly ARTT 354.) Prerequisite: GRCO 230. An introduction to digital media and design. The objective is to use current technologies in raster and vector image creation, two-dimensional animation, and the integration of text with graphics in cohesive layouts and to develop and oversee static and animated digital media projects through all stages of production. Focus is on advanced illustrative techniques for animated digital media, web graphics, and social media on a commercial level. Students may receive credit for only one of the following courses: ARTT 354 or GRCO 354.

GRCO 355 Digital Media II (3)
Prerequisite: GRCO 354. Further examination of design for interactive media that incorporates raster- and vector-based visuals, video files, and brand generation. The goal is to use current technologies to develop functional static and responsive multimedia layouts for a range of platforms, including desktop, handheld, and mobile devices. Discussion covers strategies for developing work for a variety of output applications. Focus is on production of portfolio-caliber projects that simulate real-world work experience.

GRCO 450 Advanced Graphic Communication: Professional Branding (3)
Prerequisites: GRCO 350 and GRCO 355. A review of professional branding and development of a portfolio and personal branding package. The objective is to synthesize, refine, and expand an existing portfolio to reflect personal branding. Focus is on refining a portfolio through peer review, critique, and assessment. Projects include creating a personal mission statement, identity package, and video component.

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GRCO 479 Motion Graphics (3)
(Formerly ARTT 479.) Prerequisite: GRCO 354 or ARTT 354. A study of media production. Discussion covers the aesthetic and practical aspects of creating moving images in a short movie or documentary. The goal is to understand the principles of preproduction, production, and postproduction. Students may receive credit for only one of the following courses: ARTT 479 or GRCO 479.

GRCO 486A Workplace Learning in Graphic Communication (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

GRCO 486B Workplace Learning in Graphic Communication (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

GRCO 495 Graphic Communication Capstone (3)
Prerequisite: GRCO 450, GRCO 458, or GRCO 479. A portfolio-driven study of business and professional practices in the field of graphic communication. The goal is to be prepared for a career in graphic communication. Activities include review of existing work, creation of portfolio projects, and production of a professional portfolio (including a résumé). Focus is on applying skills (in areas such as motion graphics, typography, digital media, illustration, and commercial design) acquired through previous study. Students may receive credit for only one of the following courses: ARTT 495 or GRCO 495.

Health Services Management

HMGT 300 Introduction to the U.S. Healthcare Sector (3)
Prerequisite: WRTG 112 or WRTG 101. An overview of healthcare organizations in the United States and current and emerging concepts, trends, policies, and issues in healthcare. The aim is to explain the structure of the U.S. healthcare sector, understand the role of healthcare managers in meeting industry standards of care, and apply knowledge of healthcare workforce issues to solve management challenges. Students may receive credit for only one of the following courses: BMGT 361, HMGT 100, or HMGT 300.

HMGT 307 Managerial Epidemiology and Decision-Making in Healthcare (3)
Prerequisites: HMGT 300 and STAT 200. An overview of epidemiologic principles and tools applicable to decision-making in healthcare. The objective is to apply the basic principles of descriptive epidemiology to healthcare planning, directing, controlling, organizing, staffing, and financial management; critically evaluate the factors that influence the health status of populations served; and distinguish among study designs in terms of causal inference and sources of bias. Focus is on applying epidemiological and decision-making tools to integrative decision-making in healthcare.

HMGT 310 Healthcare Policies (3)
Prerequisite: HMGT 307. An overview and analysis of public policies that govern the organization, delivery, and financing of health services in the United States. The aim is to evaluate national, state, and local policies to determine their impact on the delivery of healthcare services.

HMGT 320 Management in Healthcare Organizations (3)
Prerequisite: HMGT 307. An introduction to management in the healthcare services field. The aim is to explain key management concepts and apply them to the management of health services organizations. Discussion covers the management skills and capabilities that are essential for effective supervision and leadership. An overview of the unique requirements of healthcare organizations and their management is provided. Focus is on the application of essential management and leadership skills in a healthcare environment. Students may receive credit for only one of the following courses: BMGT 367 or HMGT 320.

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HMGT 322 Healthcare Financial Management (3)
Prerequisites: HMGT 300 (or BMGT 361) and HMGT 310. An overview of the acquisition, allocation, and management of the financial resources of healthcare organizations. Economic and accounting practices are discussed in terms of budget administration, cost analysis, financial strategies, and internal controls. The goal is to examine financial information and regulatory requirements and policies, identify issues and solve problems, and make sound financial decisions in the healthcare field. Students may receive credit for only one of the following courses: HMGT 322 or HMGT 440.

HMGT 335 Healthcare Marketing (3)
Prerequisite: HMGT 307. An examination of the makeup of the healthcare market, the role of marketing in the delivery of healthcare, and relevant consumer behavior. Topics include basic principles and key concepts related to the design and implementation of marketing efforts in health services organizations. The goal is to develop and evaluate healthcare marketing plans. Discussion covers the marketing process and the development and analysis of strategic healthcare marketing plans.

HMGT 372 Legal and Ethical Issues in Healthcare (3)
Prerequisite: HMGT 300 or NURS 300. An examination of legal and ethical issues encountered in healthcare management and the ramifications of those issues on the delivery of health services and patient care. The aim is to apply ethical principles and practice within legal and ethical standards of healthcare.

HMGT 400 Research and Data Analysis in Healthcare (3)
Prerequisites: HMGT 320 and STAT 200. An introduction to research methods and the process of data identification and analysis in the healthcare field. The objective is to inform healthcare decision-making and formulate research hypotheses. Emphasis is on the analytic process, especially in the presentation and interpretation of results. Topics include the use of healthcare databases, the analysis of problems and issues, and evaluation of research in healthcare settings. Students may receive credit for only one of the following courses: HMGT 398C or HMGT 400.

HMGT 420 Healthcare Facilities Management (3)
Prerequisite: HMGT 320. An examination of the organization and operation of hospitals and freestanding ambulatory care centers, with a focus on the manager's role in internal operations and external relations. The objective is to understand the key issues driving healthcare facilities management and apply sound management principles to ensure successful operations. Discussion covers managed care programs and their impact on healthcare facilities management.

HMGT 435 Healthcare Economics (3)
Prerequisites: HMGT 300 (or BMGT 361) and HMGT 310. A comprehensive and analytical study of basic economics and its relationship to the delivery of healthcare. The aim is to apply the principles of economics to healthcare management and to anticipate the impact of economics on the outcomes of healthcare management decisions. Topics include the microeconomic aspects of the organization and delivery of healthcare, financing and other major components of the healthcare system, and economic factors that influence the delivery of healthcare.

HMGT 486A Workplace Learning in Healthcare Services Management (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl)*. The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

HMGT 486B Workplace Learning in Healthcare Services Management (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl)*. The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

HMGT 495 Strategic Planning and Leadership in Healthcare (3)
(Intended as a final, capstone course to be taken in a student's last 15 credits.) Prerequisite: HMGT 320. A study of strategic planning and leadership within a healthcare organization. The aim is to integrate the knowledge and experience gained from previous study and build on that conceptual framework through analysis, practical application, and critical thinking. Leadership qualities and skills are also covered.

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History

HIST 115 World History I (3)

Recommended: WRTG 112 or equivalent. A survey of global civilizations from prehistory to the 1500s. The aim is to explain the impact of environmental conditions on the development of civilizations using basic geographical knowledge; describe how human contacts, global connections, and migrations contribute to the development of civilizations; and compare the development of institutions (social, political, familial, cultural, and religious) to explain their impact on societal transformations. Focus is on examining what history is and thinking critically about history by analyzing historical approaches and methods.

HIST 116 World History II (3)

Recommended: WRTG 112 or equivalent. A survey of global civilizations from the 1500s to the present. The aim is to explain the development of new political and economic systems using basic geographical knowledge; describe how human contacts, global connections, and migrations contribute to the development of nations and global systems; and compare the development of institutions (social, political, familial, cultural, and religious) to explain their impact on societal transformations. Focus is on examining what history is and thinking critically about history by analyzing historical approaches and methods.

HIST 125 Technological Transformations (3)

A focused survey of the intersection of technology and history and the evolutionary process that marks what we call progress. The objective is to apply historical precedent to everyday responsibilities and relationships in order to advance the goals and ideals of contemporary society; compare and contrast historical eras; and describe how events influence our sense of time, space, and technology.

HIST 141 Western Civilization I (3)

Recommended: WRTG 112 or equivalent. A survey of the history of Western civilization from antiquity through the Reformation. The objective is to chart major societal changes; identify major conflicts and wars; describe the evolution of religions; and recognize how philosophy and the arts reflect and influence peoples' lives, cultures, and societies. The political, social, and intellectual developments that formed the values and institutions of the Western world are examined.

HIST 142 Western Civilization II (3)

Recommended: WRTG 112 or equivalent. A survey of the history of Western civilization from the Reformation to modern times. The goal is to chart major societal changes; identify major conflicts and wars; describe the evolution of religions; and recognize how philosophy and the arts reflect and influence peoples' lives, cultures, and societies.

HIST 156 History of the United States to 1865 (3)

A survey of the United States from colonial times to the end of the Civil War. The establishment and development of national institutions are traced. The aim is to locate, evaluate, and use primary and secondary sources and interpret current events and ideas in a historical context. Students may receive credit for only one of the following courses: HIST 156 or HUMN 119.

HIST 157 History of the United States Since 1865 (3)

A survey of economic, intellectual, political, and social developments since the Civil War. The objective is to use primary and secondary sources to describe U.S. historical events and interpret current events and ideas in a historical context. Discussion covers the rise of industry and the emergence of the United States as a world power. Students may receive credit for only one of the following courses: HIST 157 or HUMN 120.

HIST 202 Principles of War (3)

A study of the nine classic principles that guide the conduct of war at the strategic, operational, and tactical levels and form the foundation of the art and science of the military profession. The aim is to use primary and secondary historical resources to explore how past theory and practice have shaped the underlying policy, strategic planning, and operational procedures of today's military and national security agencies.

HIST 289 Historical Methods (3)

Prerequisite: A 100-level HIST course. An introduction to historical methods, approaches, and techniques. The goal is to explain what history is and why it matters, identify historical paradigms, and employ the moral and ethical standards of the historical profession. Focus is on the philosophical and practical skills employed by historians.

HIST 309 Historical Writing (3)

Prerequisite: HIST 289. A study of the historical research and writing process. The goal is to construct a framework for an original historical research project, locate and evaluate source materials, and demonstrate proficiency in research methods.

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HIST 316L The American West (3)

An examination of the exploration, settlement, development, and mythology of the American West, from 1490 to 1990, with attention paid to the role of the West as a key factor in the formation of national identity. Assignments include advanced reading and research.

HIST 326 The Roman Republic (3)

Prerequisite: Any writing course. A study of ancient Rome during the period 753 to 44 BC, from its founding to the assassination of Julius Caesar. The goal is to use primary and secondary historical resources to explore Roman thought, demonstrate its influence in the modern Western world, and apply it to modern contexts. Focus is on Rome's conquest of the Mediterranean world, the social and political pressures that led to that conquest, and the consequent transformation and decline of the republic. Students may receive credit for only one of the following courses: HIST 326 or HIST 421.

HIST 337 Europe and the World (3)

An analysis of how European powers shaped and were shaped by global events between 1884 and 1989 from the Conference of Berlin to the fall of the Berlin Wall. Emphasis is on the reciprocal relationships between great cities and the outposts of European culture worldwide. The objective is to examine the interplay between Europe and colonial regions, subjects, cultures, politics, economies, and immigration.

HIST 365 Modern America (3)

A comprehensive survey course that examines the history of the United States from 1933 to 2001. Discussion will focus on the expanding federal government; the Cold War and its legacy; the struggle over constitutional rights; and the changing landscape of American culture, society, and politics. The goal is to understand the impact of domestic and global issues on American society.

HIST 377 U.S. Women's History: 1870 to 2000 (3)

An examination of the history of women in the United States from 1870 to the eve of the 21st century. The goal is to examine primary and secondary sources and documents to comprehend and articulate the impact of gender on the historical experiences of American women. Historical methodologies that focus on the ways in which race, class, ethnicity, and sexuality have shaped these experiences are used to analyze the varied experiences of U.S. women. The relationship between these experiences and the larger historical forces of the era, including social movements, technology, and changing family roles and structure, is evaluated. Students may receive credit for only one of the following courses: HIST 211, HIST 367, or HIST 377.

HIST 381 America in Vietnam (3)

Prerequisite: A writing course. Recommended: WRTG 291. An examination of the complexity of the lengthy involvement of the United States in Vietnam. The goal is to engage in divergent historical interpretations and develop personal conclusions and perspectives about America's role in Vietnam and its legacy. Discussion covers the social, cultural, political, and military dimensions of the Vietnam War, beginning with the declaration of Vietnamese independence at the conclusion of World War II. Emphasis is on the influence of the media in shaping government policy and public opinion. Students may receive credit for only one of the following courses: BEHS 337 or HIST 381.

HIST 392 History of the Contemporary Middle East (3)

Prerequisite: A writing course. Recommended: WRTG 291. A survey of the history of the Middle East from the late 19th century to the present. The aim is to identify the important events of the last century in the Middle East; understand the sources of contention in that area; and examine the ideology, politics, and culture of the area and how they impact U.S.–Middle East relations. Focus is on major political, economic, social, and cultural trends that inform current events in the region. Topics include the late Ottoman Empire, European colonialism, the rise of nationalism and nation-states, the Arab-Israeli conflict, political Islam, the role of the United States in the region, and contemporary approaches to modernity in the Middle East.

HIST 461 African American History: 1865 to the Present (3)

Prerequisite: A writing course. Recommended: WRTG 291. An examination of African Americans in the United States since the Civil War. The objective is to examine the significance of the emancipation of African Americans and various leadership and philosophical perspectives within the African American community. Topics include emancipation and Reconstruction; segregation, accommodationism, and institution building; migration and urbanization; resistance and the birth and growth of the civil rights movement; and the problem of race and racism as a national issue with global impact in the modern world.

HIST 462 The U.S. Civil War (3)

An examination of the origins, conduct, and impact of the American Civil War and Reconstruction (1850–77). The goal is to apply historical methodology to issues of the Civil War and Reconstruction; assess Civil War strategies, tactics, and operations; and evaluate how race, culture, politics, and technology affected the course of the Civil War and Reconstruction.

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HIST 464 World War I (3)
Prerequisite: Any writing course. An intensive study of the First World War. Topics include the development of nationalism and socialism in late 19th-century Europe, the causes of the First World War, trench warfare on the western front, war in the Balkans, total war on the home fronts, the Russian Revolution of 1917, the collapse of the Central Powers, the 1918 settlements, the postwar conflicts that continued to haunt Europe until 1923, and the concept of the Lost Generation.

HIST 465 World War II (3)
An investigation of the global issues and events that led to the Second World War. Emphasis is on analyzing the factors that contributed to the competing ideologies, as well as the social, political, and economic conditions that ignited the most lethal conflict in human history. The goal is to understand the causes, nature, and outcome of the Second World War and the impact on the world in which we live.

HIST 480 History of China to 1912 (3)
A study of the history of China from Confucius (around 500 BC) to the demise of the Qing dynasty in 1912. The objectives are to interpret, educate, and advise others based on a historical, cultural, and social awareness of traditional China. Emphasis is on the changes within Chinese political, social, cultural, and philosophical structures that have molded the history of China and its peoples.

HIST 482 History of Japan to 1800 (3)
Prerequisite: A writing course. Recommended: WRTG 291. An examination of traditional Japanese civilization from the age of Shinto mythology to the late Edo period. The aim is to interpret, educate, and advise others based on a historical, cultural, and social awareness of traditional Japan.

HIST 483 History of Japan Since 1800 (3)
Prerequisite: A writing course. Recommended: WRTG 291. An examination of Japan's emergence as an industrial society and world power. The goal is to interpret, educate, and advise others based on a historical, cultural, and social awareness of modern Japan. Discussion covers Japan's role in World War II, postwar recovery, and re-emergence as an exporter of cultural goods.

HIST 486A Workplace Learning in History (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl)*. The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

HIST 486B Workplace Learning in History (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

HIST 495 History Capstone (3)
Prerequisites: 21 credits in HIST courses, including HIST 289 and HIST 309. Intensive research into a specific topic in history of the student's choice. The objective is to produce a substantial, original historical research project suitable for presentation or publication.

Homeland Security

HMLS 302 Introduction to Homeland Security (3)
Prerequisite: WRTG 112 or equivalent. An introduction to the theory and practice of homeland security in both the public and private sector at national, regional, state, and local levels. The objective is to apply management concepts to homeland security, identify legal and policy issues related to homeland security, and compare the four phases of homeland security. An overview of the administrative, legislative, and operational elements of homeland security programs and processes (including a review of homeland security history, policies, and programs) is provided. Topics include the threat of terrorism and countermeasures, including intelligence, investigation, and policy that support U.S. homeland security objectives.

HMLS 304 Strategic Planning in Homeland Security (3)
Prerequisite: HMLS 406. Recommended: HMLS 310, HMLS 408, HMLS 414, and HMLS 416. An examination of the fundamentals of strategic planning, necessary for the maintenance of domestic security and the operation of the homeland security organization in the public and private sectors. The goal is to develop and analyze homeland security strategic plans. Topics include organizational priorities, planning documents, policy development, legislation, financial operations, and the evaluation process. Analysis covers threat, risk, vulnerability, probability, and impact as parameters for decision-making and resource allocation.

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HMLS 310 Homeland Security Response to Critical Incidents (3)

Prerequisites: HMLS 302 and HMLS 406. A real-world assessment of the issues involved in responding to homeland security critical incidents. The aim is to prepare for future challenges, integrate critical incident responses at all levels, and analyze the effect of regulations and laws on critical incident response. Discussion covers historical and potential incidents as they relate to resources, cooperation, politics, regulations, operations, and postincident response.

HMLS 406 Legal and Political Issues of Homeland Security (3)

Prerequisite: HMLS 302. A study of the legal aspects of and public policy in homeland security. The aim is to analyze governmental and private-sector roles and form a model homeland security policy. The development of public policy in homeland security is examined at local, regional, national, and international levels. Topics include surveillance, personal identity verification, personal privacy and redress, federal legislation passed in the aftermath of the terrorist attacks of 2001, the rights of foreign nationals, the rights of U.S. citizens, the governmental infrastructure for decisions concerning legal rights, and the difficulties of prosecuting terrorist suspects (such as jurisdictional issues, rules of evidence, and prosecution strategies).

HMLS 408 Infrastructure in Homeland Security (3)

Prerequisite: HMLS 406. An examination of infrastructure protection at international, national, regional, state, and local levels. The objective is to assess threat, risk, and vulnerabilities and recommend protective measures. Topics include critical infrastructure at all levels of government, the private sector, and the international community. An overview of U.S. homeland security policy as it relates to the protection of critical infrastructures and key assets (including the roles of the federal, state, and local governments and the private sector in the security of these resources) is provided. Focus is on risk reduction and protection of critical infrastructures using available resources and partnerships between the public and private sectors.

HMLS 414 Homeland Security and Intelligence (3)

Prerequisite: HMLS 406. A study of the role of intelligence in homeland security. The objective is to interpret the concepts of information; analyze the production of intelligence; and recognize the U.S. intelligence and law enforcement communities, as well as other agencies and organizations that have a part in the nation's homeland security intelligence activities. Topics include the various steps of the intelligence process: the collection, analysis, sharing, and dissemination of information between governments and between government and the private sector. Emphasis is on evaluating current intelligence and enforcement efforts. Discussion also covers future challenges and opportunities for intelligence operations.

HMLS 416 Homeland Security and International Relations (3)

Prerequisite: HMLS 406. An examination of the relationship of international institutions to U.S. homeland security policy, intelligence, and operations. The aim is to incorporate a global perspective in the development of U.S. homeland security, analyze international institutions that influence U.S. homeland security, and integrate international information sharing in public- and private-sector approaches to security. Domestic security operations abroad are compared to U.S. policy, laws, and procedures. Topics include the commonality of global approaches to domestic security everywhere and the value of information sharing between governments and international institutions.

HMLS 495 Homeland Security Capstone (3)

Prerequisites: At least 15 credits in upper-level FSCN, EMGT, HMLS, or PSAD courses (numbered 300 or 400). A study of leadership theories, skills, and techniques used in the public safety professions. The interdisciplinary perspective—encompassing criminal justice, emergency management, fire science, and homeland security—is designed to support integrated public safety management. A review of current issues and contemporary leadership styles in the public safety professions integrates knowledge and principles gained through previous coursework. Case studies and exercises are used to address challenges in strategic planning. Other tools focus on evaluation of personal leadership styles and techniques.

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Humanities

HUMN 100 Introduction to Humanities (3)
An introduction to the humanities through a review of some of the major developments in human culture. The goal is to analyze how societies express their ideas through art, literature, music, religion, and philosophy and to consider some of the underlying assumptions about the way societies are formed and run. Focus is on developing the conceptual tools to understand cultural phenomena critically.

HUMN 344 Technology and Culture (3)
An interdisciplinary survey examining the impact technology has on human culture. The objective is to evaluate the influence technology has on the human experience, employ interdisciplinary knowledge on issues of technology and culture, and communicate in writing and via oral presentation the results of critical reflection and cultural criticism. Topics include technology and history, misinformation and disinformation, social media, ethics, the arts, race and gender, transhumanism, and technology and the self.

HUMN 351 Myth in the World (3)
Recommended: HUMN 100. An interdisciplinary survey of myths from around the world. The objective is to evaluate the influences of myth on culture and society; develop critical reflection using the methods of interdisciplinary study; discuss how myths shape cultural, individual, and national identities; and communicate in writing and via oral presentation the influence of world myths on their material and nonmaterial culture. Topics include origin myths, comparative mythology, gender, the archetypes, heroes, tricksters, material and nonmaterial culture, ritual, and sacred place.

HUMN 495 Humanities Capstone (3)
Prerequisites: HUMN 100, an upper-level ARTH course, an upper-level ENGL course, an upper-level HUMN course, and an upper-level PHIL course. A study of humanities that synthesizes knowledge gained through previous study. An individually chosen research project is used to examine the nature of human responsibility to self, others, and the environment; the role of intellectual inquiry in human life; and the role of creativity in human life. Career options are also explored.

Human Resource Management

HRMN 300 Human Resource Management (3)
A basic study of the strategic role of human resource management. The objective is to apply knowledge of human behavior, labor relations, and current laws and regulations to a working environment. Topics include employment laws and regulations, diversity in a global economy, total rewards management, and training and development for organizational success. Students may receive credit for only one of the following courses: BMGT 360, HRMN 300, or TMGT 360.

HRMN 302 Organizational Communication (3)
A study of the structure of communication in organizations. The goal is to apply theory and examples to improve managerial effectiveness in communication and negotiation. Problems, issues, and techniques of organizational communication are analyzed through case histories, exercises, and projects. Students may receive credit for only one of the following courses: BMGT 398N, HRMN 302, MGMT 320, MGST 315, or TEMN 315.

HRMN 362 Labor Relations (3)
A survey of contemporary labor relations practices. The aim is to research and analyze labor relations issues and support the labor relations process. Discussion covers the history of organized labor in the United States, the role of third parties, organizing campaigns, the collective bargaining process, and the resolution of employee grievances. Students may receive credit for only one of the following courses: BMGT 362 or HRMN 362.

HRMN 367 Organizational Culture and Change (3)
An examination of the nature, definitions, theories, and aspects of organizational culture. The goal is to apply knowledge of organizational culture to develop a change-management plan. Analysis covers patterns of behavior and their relationship to organizational culture, especially the impact of the organization's business on employee behavior and culture. Topics include the role of nationality, gender, and race within organizational culture; implications of addressing organizational challenges; theory versus practice; and the relative roles of the individual, groups, and the organization in a cultural context. Students may receive credit for only one of the following courses: BMGT 398T or HRMN 367.

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HRMN 395 The Total Rewards Approach to Compensation Management (3)

Prerequisite: HRMN 300. An exploration of alternative compensation philosophies that define total rewards as everything that employees value in the employment relationship. The objective is to design a total rewards program that ensures organizational success. Topics include building and communicating a total rewards strategy, compensation fundamentals, the conduct and documentation of a job analysis, linking pay to performance, employee motivation, and performance appraisal. Strategies such as incentive cash and/or stock compensation programs, employee ownership, benefits, and nonmonetary rewards are discussed and evaluated. The interrelationships among compensation, motivation, performance appraisal, and performance within the organization are examined. Discussion also covers the design and implementation of a total rewards program, including organizational compatibility. Students may receive credit for only one of the following courses: BMGT 388L, HRMN 390, or HRMN 395.

HRMN 400 Talent Acquisition and Management (3)

Prerequisite: HRMN 300. A study of the role of human resource management in the strategic planning and operation of organizations, including staffing, onboarding, recruiting, performance appraisal systems, and compensation and labor/management issues. The goal is to research and evaluate issues and present strategic solutions related to talent acquisition and management. The influence of federal regulations (including equal opportunity, sexual harassment, discrimination, and other employee-related regulations) is analyzed. A review of research findings, readings, discussions, case studies, and applicable federal regulations supports the critical evaluation of human resource problems as they relate to the employment life cycle. Students may receive credit for only one of the following courses: BMGT 460 or HRMN 400.

HRMN 406 Employee Training and Development (3)

Prerequisite: HRMN 300. An examination of employee training and human resource development in various organizations. Topics include the development, administration, and evaluation of training programs; employee development; career development; and organizational change. Issues in employee development (including assessment of employee competencies, opportunities for learning and growth, and the roles of managers in employee development) are explored. Students may receive credit for only one of the following courses: BMGT 498I, HRMN 406, or MGMT 498I.

HRMN 408 Employment Law for Business (3)

(Designed for managers and human resource professionals.) Prerequisite: HRMN 300. A conceptual and functional analysis of the legal framework of employment relations. The aim is to understand employment law; comply with laws and regulations; and evaluate rights, obligations, and liabilities in the employment process, from hiring and staffing to compensation and layoff. Topics include discrimination based on race, national origin, religion, sex, affinity and sexual orientation, age, and disability; the hiring process, testing, and performance appraisal; employee privacy; wrongful discharge; employee benefits; health and safety; independent contractors; and labor unions. Students may receive credit for only one of the following courses: BMGT 468, BMGT 498G, HRMN 408, or MGMT 498G.

HRMN 410 HR Information Systems and Metrics Analysis (3)

A study of human resource metrics associated with performance management, talent acquisition, retention, and employee engagement in the strategic planning and operation of organizations. The goal is to research and evaluate HR information systems for the collection, mining, dissemination, and analysis of data related to HR issues and present strategic solutions. A review of research findings and case studies supports the critical evaluation of human resource problems. Common HR metrics are applied to people analytics for problem-solving.

HRMN 467 Global Human Resource Management (3)

Prerequisite: HRMN 300. A comprehensive study of global human resource management. The objective is to demonstrate intercultural competencies; identify trends in the globalized workforce; and analyze policies, practices, and functions in global human resources. Topics include global staffing, training, compensation, and evaluation.

HRMN 486A Workplace Learning in Human Resource Management (3)

Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

HRMN 486B Workplace Learning in Human Resource Management (6)

Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

HRMN 495 Contemporary Issues in Human Resource Management Practice (3)

(Intended as a final, capstone course to be taken in a student's last 15 credits.) Prerequisite: HRMN 400. A study of human resource management that integrates knowledge gained through previous coursework and experience and builds on that conceptual foundation through integrative analysis, practical application, and critical thinking. The goal is to consider and analyze emerging issues in human resource management. Students may receive credit for only one of the following courses: BMGT 388K, HRMN 494, or HRMN 495.

Information Systems Management

IFSM 201 Concepts and Applications of Information Technology (3)

(Access to a standard office productivity package, i.e., word processing, spreadsheet, database, and presentation software, required.) An introduction to data and the range of technologies (including hardware, software, databases, and networking and information systems) that provide the foundation for the data-centric focus of modern organizations. The objective is to apply knowledge of basic technical, ethical, and security considerations to select and use information technology (and the data that arise from technology) effectively in one's personal and professional lives. Discussion covers issues related to technology as a vehicle for collecting, storing, and sharing data and information, including privacy, ethics, security, and social impact. Applied exercises focus on the manipulation, analysis, and visualization of data and effective data communication strategies. Students may receive credit for only one of the following courses: BMGT 301, CAPP 101, CAPP 300, CMST 300, IFSM 201, or TMGT 201.

IFSM 300 Information Systems in Organizations (3)

An overview of information systems and how they provide value by supporting organizational objectives. The goal is to analyze business strategies to recognize how technology solutions enable strategic outcomes and to identify information system requirements by analyzing business processes. Discussion covers concepts of business processes and alignment of information systems solutions to strategic goals.

IFSM 301 Foundations of Management Information Systems (3)

Prerequisite: IFSM 300. An overview of information technology management and governance. The goal is to be familiar with IT organizations, management of IT strategy, and factors in IT decision-making. Topics include strategic alignment, portfolio management, risk management, business continuity, compliance, and organizational relationships.

IFSM 304 Ethics in Information Technology (3)

A comprehensive study of ethics and of personal and organizational ethical decision-making in the use of information systems in a global environment. The aim is to identify ethical issues raised by existing and emerging technologies, apply a structured framework to analyze risk and decision alternatives, and understand the impact of personal ethics and organizational values on an ethical workplace.

IFSM 305 Information Systems in Healthcare Organizations (3)

An overview of how information systems provide value by supporting organizational objectives in the healthcare sector. The goal is to evaluate how technology solutions support organizational strategy in the healthcare environment and improve quality of care, safety, and financial management. Topics include the flow of data among disparate health information systems and the ethical, legal, and regulatory policy implications.

IFSM 310 Software and Hardware Infrastructure Concepts (3)

Prerequisite: IFSM 301. A study of the hardware, software, and network components of computer systems and their interrelationships. The objective is to select appropriate components for organizational infrastructures. Discussion covers the application of system development life-cycle methodology to build secure integrated systems that meet business requirements. Students may receive credit for only one of the following courses: CMIS 270, CMIS 310, CMSC 311, or IFSM 310.

IFSM 311 Enterprise Architecture (3)

Prerequisite: IFSM 310. A study of enterprise architecture and frameworks, including the transition of current business processes and functional systems to an enterprise solution. The aim is to analyze how enterprise architecture and resulting enterprise systems support an organization's ability to adapt and respond to a continually changing business and competitive environment.

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IFSM 330 Business Intelligence and Data Analytics (3)
A hands-on, project-based introduction to databases, business intelligence, and data analytics. The aim is to design secure industry-standard databases and utilize business intelligence and data analytics techniques and technologies to support decision-making. Topics include data and relational databases, SQL queries, business intelligence tools and alignment with business strategy, data analytics, and visualization techniques.

IFSM 370 Telecommunications in Information Systems (3)
Prerequisite: IFSM 300. An introduction to telecommunication infrastructure. The goal is to plan, analyze, and design a secure telecommunication infrastructure that meets business needs and protects information assets. Topics include cybersecurity, data communication protocols and standards, networks, and trends in telecommunications. Students may receive credit for only one of the following courses: CMIS 370, CMSC 370, CSIA 302, IFSM 370, or IFSM 450.

IFSM 380 Managing and Leading in Information Technology (3)
Prerequisite: IFSM 201 or IFSM 300. A foundation in leadership skills for the fast-paced information technology environment. The goal is to expand interpersonal communication skills, think critically, solve problems, and apply basic management principles to complete tasks effectively. Topics include effective communication in customer facing and managerial environments, critical thinking and problem-solving, time management, and the application of leadership and management concepts in the workplace of today and tomorrow. Students may receive credit for only one of the following courses: IFSM 380 or IFSM 250.

IFSM 432 Business Continuity Planning (3)
Prerequisite: IFSM 311. An analysis of the requirements for business continuity and disaster recovery planning related to mission critical business information systems. The goal is to assess the risk to continuity of business processes, develop a business continuity/disaster recovery plan according to industry standards and best practices, and develop a test plan. Topics include risk assessment and organizational requirements for maintaining systems. A group project is designed to produce and validate a comprehensive business continuity and disaster recovery plan. Students may receive credit for only one of the following courses: IFSM 432 or IFSM 498N.

IFSM 438 Information Systems Project Management (3)
Prerequisite: IFSM 300 or CSIA 350. A practical application of project management principles and procedures. The objective is to manage and control IT projects in alignment with organizational strategic goals and within resource constraints and to manage high-performing project teams to implement IT solutions. Topics include the development, control, and execution of plans to manage information systems projects as part of a team and the use of Microsoft Project to develop project schedules and related components. Students may receive credit for only one of the following courses: IFSM 438 or TMGT 430.

IFSM 441 Agile Project Management (3)
Prerequisite: IFSM 438. An advanced study of agile project management methods for software development. The objective is to apply agile practices to better manage projects characterized by complexity and uncertainty with responsiveness and adaptability and to consider alternative approaches to managing projects by matching the approach to the characteristics of a project. Topics include estimation techniques; the scrum (software development) process, i.e., inspect, adapt, and improve; and dealing with organizational impediments to adoption.

IFSM 461 Systems Analysis and Design (3)
Prerequisites: IFSM 311 and either IFSM 330 or CMIS 320. A project-driven study of tools and techniques for translating business requirements into operational systems. The goal is to plan, build, and maintain systems that meet organizational strategic goals by applying enterprise architecture and enterprise governance principles and practices. Topics include processes and system development life-cycle methodologies, data modeling methods, and the importance of stakeholder involvement. Students may receive credit for only one of the following courses: IFSM 436, IFSM 460, or IFSM 461.

IFSM 486A Workplace Learning in Management Information Systems (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

IFSM 486B Workplace Learning in Management Information Systems (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

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IFSM 495 Management Information Systems Capstone (3)
Prerequisites: IFSM 438 and IFSM 461. A practical application of the knowledge and experience gained from previous study in management information systems. The aim is to demonstrate a mastery of management information systems concepts. Emerging issues and trends in management information systems are considered.

Japanese

JAPN 111 Elementary Japanese I (3)
For online sections, sound card, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of Japanese; assumes no prior knowledge of Japanese. Students with prior experience with the Japanese language should take a placement test to assess appropriate level.) An introduction to spoken and written Japanese language. The objective is to communicate in Japanese in some concrete, real-life situations using culturally appropriate language; read and write hiragana; and read some katakana words in context.

JAPN 112 Elementary Japanese II (3)
For online sections, sound card, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of Japanese.) Prerequisite: JAPN 111 or appropriate score on a placement test. A continued introduction to spoken and written Japanese. The goal is to communicate in Japanese in concrete, real-life situations using culturally appropriate language; read and write katakana; and recognize some kanji characters in context. Practice is provided in improving pronunciation and developing the oral and written skills used in everyday communication.

JAPN 114 Elementary Japanese III (3)
For online sections, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of Japanese.) Prerequisite: JAPN 112 or appropriate score on a placement test. Further study of spoken and written Japanese. The aim is to communicate in Japanese in a variety of concrete, real-life situations using culturally appropriate language and to expand recognition of kanji characters in context. Practice is provided in improving pronunciation and developing the oral and written skills used in everyday communication.

JAPN 115 Elementary Japanese IV (3)
For online sections, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of Japanese.) Prerequisite: JAPN 114 or appropriate score on a placement test. Further development of skills in elementary spoken and written Japanese. The aim is to interact effectively with native speakers of Japanese in a variety of real-life situations using culturally appropriate language and to recognize and distinguish more commonly used kanji characters in context. Practice is provided in fine-tuning pronunciation and applying language skills to a range of contexts.

JAPN 221 Intermediate Japanese I (3)
For online sections, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of Japanese.) Prerequisite: JAPN 115 or appropriate score on a placement test. Development of skills in intermediate spoken and written Japanese. The aim is to interact effectively with native speakers of Japanese in a range of personal and professional situations and to recognize and read approximately 275 Japanese characters in context. Focus is on using culturally appropriate language in a variety of contexts.

JAPN 222 Intermediate Japanese II (3)
For online sections, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of Japanese.) Prerequisite: JAPN 221 or appropriate score on a placement test. Further development of skills in intermediate spoken and written Japanese. The aim is to communicate effectively with native speakers of Japanese in a broad range of personal and professional situations and to recognize and read approximately 320 Japanese characters in context. Practice is provided in interacting with others in a variety of interpersonal contexts.

JAPN 333 Japanese Society and Culture (3)
(Formerly ASTD 333. Fulfills the general education requirement in the arts and humanities. Conducted in English.) A study of the origin and historical background of contemporary Japanese society and culture. Students may receive credit for only one of the following courses: ASTD 333 or JAPN 333.

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Journalism

JOUR 201 Introduction to News Writing (3)
(Fulfills the general education requirement in communications.) Prerequisite: WRTG 112 or equivalent. An introduction to writing news articles for print and electronic media. The aim is to evaluate the newsworthiness of information and events and write in journalistic style. Emphasis is on writing, from mechanics (grammar, spelling, punctuation, and journalistic style) to content (accuracy, completeness, audience, and readability) and reporting.

JOUR 330 Public Relations Theory (3)
Prerequisite: JOUR 201. A study of the evolution, scope, and contemporary practice of public relations and its strategic value in business, nonprofits, government, associations, and other organizations. The goal is to apply legal, ethical, and professional standards to the everyday practice of public relations. Topics include communication theory, social science, and audience dimensions as they are applied to a four-step process: research, planning, communication, and evaluation.

JOUR 486A Workplace Learning in Journalism (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

JOUR 486B Workplace Learning in Journalism (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

Korean

KORN 333 Korean Society and Culture (3)
(Formerly ASTD 353. Fulfills the general education requirement in the arts and humanities. Conducted in English.) Recommended: Any writing class and either ASTD 284 or ASTD 285. An interdisciplinary study of contemporary Korea from a variety of sociohistorical and cultural perspectives. Topics include the Korean diaspora, the Korean Wave (Hallyu), Korea as a conduit between China and Japan, social and religious practices, Korean women, the Japanese occupation, and Korea's global impact. The aim is to articulate the key historic developments that have shaped contemporary Korean society, recognize and distinguish unique Korean influences and contributions, and assess key aspects of traditional and contemporary Korean society and culture. Focus is on developing a stronger understanding of Korean society and culture for practical and professional application. Students may receive credit for only one of the following courses: ASTD 353 or KORN 333.

Legal Studies

LGST 101 Introduction to Law (3)
A survey of the U.S. legal system and the roles and responsibilities of the various personnel who work in that environment. The objective is to evaluate situations and make recommendations for action based on an understanding of law, legal institutions, and court procedures. Topics include the organization and powers of federal and state lawmaking institutions, court procedures, legal analysis, and careers in the legal environment. Students may receive credit for only one of the following courses: LGST 101 or PLGL 101.

LGST 200 Techniques of Legal Research (3)
An introduction to common research methods used to locate primary and secondary authority relevant to given topics and issues. The goal is to find valid, relevant, mandatory primary authority. Topics include the analysis, publication, and citation of judicial opinions and statutory law; the features and use of secondary sources; and various computer-assisted research tools to find and validate primary authority. Students may receive credit for only one of the following courses: LGST 200 or PLGL 200.

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LGST 201 Legal Writing (3)
Prerequisite: LGST 200. An introduction to the principles of writing clearly and effectively in the legal environment. The objective is to draft writings that synthesize law, analyze legal issues, and explain law and legal analysis to a nonlegal audience. Assignments include a legal synthesis memo, case law and statutory analysis memos, and a client letter. Students may receive credit for only one of the following courses: LGST 201 or PLGL 201.

LGST 204 Legal Ethics (3)
A survey of basic principles relating to the ethical practice of law. The objective is to identify ethical problems, draft writings that apply ethical rules and interpretations to legal ethical dilemmas, and avoid and resolve legal ethical problems through appropriate use of office procedures. Rules and guidelines governing the ethical conduct of lawyers and nonlawyers are covered, as are law office management principles relevant to ethical requirements. Students may receive credit for only one of the following courses: LGST 204 or PLGL 204.

LGST 300 Advanced Legal Research and Analysis (3)
Prerequisite: LGST 200. An in-depth examination of research methods to identify primary authority relevant to legal issues. The goal is to identify legal issues, implement research strategies to find relevant primary authority, and use this authority to analyze the issues. Topics include the use of computer-assisted legal research systems to locate case law, statutory law, administrative law, and rules of procedure and evidence and methods to identify and analyze legal issues. Students may receive credit for only one of the following courses: LGST 400 or PLGL 400.

LGST 301 Advanced Legal Writing (3)
Prerequisite: LGST 201. A focused study of the principles and techniques for drafting legal advocacy writings. The objective is to analyze legal issues and advocate for results based on that analysis. Assignments include a complex office memorandum, a demand letter, and an external advocacy memorandum. Students may receive credit for only one of the following courses: LGST 301, LGST 401, or PLGL 401.

LGST 312 Torts (3)
Prerequisite: LGST 201. A study of the causes of action, defenses, and remedies in the major categories of tort law, as well as tort-litigation procedures and writings. The goal is to investigate and evaluate tort claims in order to develop litigation strategies and to research law in order to draft legal writings that support a legal conclusion. Topics include intentional torts, negligence, strict liability, damages, and civil procedure. Students may receive credit for only one of the following courses: LGST 312 or PLGL 312.

LGST 314 Workers' Compensation Law (1)
A thorough study of the Maryland Workers' Compensation Act and the practice of workers' compensation law in Maryland. The goal is to apply knowledge of legal systems, concepts, and methodologies to support client objectives efficiently and ethically. Topics include employer/employee relationships, injuries, defenses, compensation benefits, vocational rehabilitation, and appeals. Assignments include legal and factual research and the composition of legal documents or completion of forms. Students may receive credit for only one of the following courses: LGST 314 or PLGL 398H.

LGST 315 Domestic Relations (3)
Prerequisite: LGST 201. A study of the processes, procedures, and writings of family law practice. The aim is to identify, analyze, and apply the rules of professional conduct to domestic issues; research applicable law and factual information related to domestic relations issues and draft legal writings; and complete standardized forms to resolve domestic issues. Topics include divorce, separation, and annulment and alimony; child custody and visitation; child support; disposition of property; and the legal rights of children. Relevant aspects of civil procedures, enforcement, and the modification of orders and agreements are covered. Students may receive credit for only one of the following courses: FMCD 487, LGST 315, or PLGL 315.

LGST 316 Estates and Probate (3)
Prerequisite: LGST 201. A fundamental study of the legal concepts required to draft and prepare simple wills and administer estates. The goal is to construct an estate plan supporting the creation and administration of a simple estate. Topics include preliminary and practical considerations of administering an estate; the appraisal of estate assets and probate inventory; inheritance taxes; claims against the estate; management of debts, accounting, and distribution considerations; the drafting and execution of wills; and guardianships. Assignments include legal research and written analysis that reflect the processes and procedures required by law. Students may receive credit for only one of the following courses: LGST 316, PLGL 216, or PLGL 316.

LGST 320 Criminal Law and Procedures (3)
Prerequisite: LGST 201. A study of the substantive and procedural aspects of the criminal justice system. The objective is to identify, analyze, and apply the rules of professional conduct to develop ethical strategies, research law, and draft legal writings to support the prosecution or defense of crimes. Topics include crimes and defenses, penalties, and court procedures. Students may receive credit for only one of the following courses: LGST 320 or PLGL 320.

LGST 325 Litigation (3)
Prerequisite: LGST 201. A comprehensive study of the Federal Rules of Civil Procedure and the process of civil litigation. The aim is to use technology and administrative best practices to collect, track, retrieve, and prepare evidence during the litigation process; interpret and apply the rules to develop case strategies; and interact with individuals within the legal system to effectively and ethically support the litigation process. Students may receive credit for only one of the following courses: LGST 325 or PLGL 325.

LGST 327 Alternative Dispute Resolution (3)
An overview of the various processes and techniques to settle disputes without court adjudication. Topics include alternatives to litigation and their advantages, characteristics of effective mediation, ethics, and virtual dispute resolution techniques. The objective is to become familiar with various methods of dispute resolution and potential career opportunities in alternative dispute resolution. Students may receive credit for only one of the following courses: LGST 327, PLGL 327, or PLGL 398G.

LGST 330 Administrative Law (3)
Prerequisite: LGST 201. An overview of the functions and procedures of federal and state administrative agencies. The goal is to monitor and analyze administrative agency actions in order to make recommendations to proposed and final agency rules and administrative decisions. Topics include rulemaking, adjudication, the use and control of agency discretion, and disclosure of information. Focus is on researching relevant law and writing effective and persuasive communications for use in administrative adjudications or to obtain information held by government agencies. Students may receive credit for only one of the following courses: LGST 330 or PLGL 330.

LGST 340 Contract Law (3)
Prerequisite: LGST 201. A comprehensive study of the major areas of contract law. The objective is to identify and analyze contractual precedent and statutory authority; develop litigation strategies; and explain contract concepts, remedies, and procedures that support a legal conclusion. Topics include formation, interpretation and enforcement, discharge, breach, and remedies for breach. Students may receive credit for only one of the following courses: LGST 340 or PLGL 340.

LGST 486A Workplace Learning in Legal Studies (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

LGST 486B Workplace Learning in Legal Studies (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

LGST 495 Legal Studies Capstone (3)
Prerequisite: LGST 301. A portfolio-driven study of professional practices in the legal field. The goal is to integrate the competencies gained through previous coursework and experience. Assignments include projects relevant to work in the legal environment.

Library Skills and Information Literacy

LIBS 150 Introduction to Research (1)
An introduction to the research process and methods for retrieving information in a library or through online sources. The aim is to identify an information need and locate, evaluate, and use appropriate resources in keeping with academic integrity and ethical standards. Focus is on implementing effective strategies for finding relevant information—including selecting appropriate print and electronic sources and effectively using web search engines and the UMGC Library's electronic resources to find information—and evaluating and correctly citing the information found. Students may not earn credit for LIBS 150 through challenge exam or portfolio credit and may receive credit for only one of the following courses: COMP 111, LIBS 100, or LIBS 150.

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Marketing

MRKT 310 Marketing Principles (3)

A foundational study of the marketing principles followed to create, communicate, and deliver value for customers. Focus is on the pivotal role of value and customer satisfaction in marketing. Discussion covers strategies, tactics, and all the major components of the marketing process. Students may receive credit for only one of the following courses: BMGT 350, MGMT 322, MRKT 310, or TMGT 322.

MRKT 311 Digital Marketing Principles (3)

An introduction to the various types of digital marketing and the skills needed for each type. The aim is to recognize the various stages in the customer journey and marketing funnel. Discussions explore developing a unique value proposition and assessing the contribution of a SWOT (strengths, weaknesses, opportunities, threats) analysis to a marketing plan. Projects involve developing a digital marketing plan that includes designing a digital strategy to create and deliver value to consumers in a digital world.

MRKT 314 Nonprofit Marketing (3)

Prerequisite: MRKT 310. An overview of the key issues of marketing in a nonprofit organization. The aim is to develop marketing plans that maximize exchange relationships with multiple stakeholders. Topics include the application of marketing-mix principles. Projects include researching and writing a grant proposal. Students may receive credit for only one of the following courses: BMGT 398B or MRKT 314.

MRKT 354 Integrated Marketing Communications (3)

Prerequisite: MRKT 310 or MRKT 311. A study of the integration of marketing communication strategies to coordinate the marketing mix's components and achieve harmony in messages to customers and other stakeholders. Emphasis is on leveraging various digital tools to achieve customer-centered marketing communications objectives. Topics include various communication modalities e.g., digital media (including search, display, and social media), traditional advertising, personal selling, sales promotion, public relations, and direct marketing.

MRKT 356 Email Marketing (3)

Prerequisite: MRKT 310 or MRKT 311. A study of email marketing techniques as essential components of an effective marketing strategy. The goal is to design email marketing campaigns. Topics include the fundamental concepts of email marketing, legal and privacy regulations, email automation, and the evaluation of success in email campaigns.

MRKT 394 Managing Customer Relationships in Digital Marketing (3)

Prerequisite: MRKT 310 or MRKT 311. An examination of customer relationship management (CRM) from strategic, operational, and analytical perspectives through the engagement of marketing, sales, and customer service functions with prospective and acquired customers. The goal is to build customer relationships and business processes through effective CRM strategy development and execution. Topics include integrating people, technology, and analytics to effectively bring valued solutions and knowledge to customers and profitable relationships to organizations.

MRKT 410 Consumer Behavior (3)

Prerequisite: MRKT 310. A study of the increasing importance of understanding consumers in the marketing system. The objective is to assess internal, external, and situational factors in developing marketing strategies; apply internal factors to market segmentation; and formulate marketing-mix strategies. Discussion covers the foundations of consumer behavior (such as economic, social, psychological, and cultural factors) and the influence of well-directed communications. Consumers are analyzed in marketing situations as buyers and users of products and services and in relation to the various social and marketing factors that affect their behavior. Students may receive credit for only one of the following courses: BMGT 451, CNEC 437, or MRKT 410.

MRKT 411 Consumer Behavior in Digital Media (3)

Prerequisite: MRKT 310 or MRKT 311. A study of consumer behavior covering what happens before, during, and after the point of purchase with an emphasis on the role of digital media. The objective is to gain insight into how digital media affects consumer choices and behavior. Discussion examines how consumers interpret information received from different sources and how the opinions of other people and groups influence purchase decision-making. Topics include consumer behavior, persuasive communications in digital formats, data privacy, and consumer rights.

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MRKT 412 Marketing Research (3)
Prerequisite: MRKT 310 or MRKT 311. A study of the specialized field of marketing research as it is used to identify market needs, profile target markets, test promotional efforts, and measure the effectiveness of marketing plans. The goal is to assess marketing research needs, design and implement a marketing research plan, and use results to formulate marketing strategies. Discussion covers procedures for planning survey projects, designing statistical samples, tabulating data, and preparing reports. Emphasis is on managing the marketing research function. Students may receive credit for only one of the following courses: BMGT 452 or MRKT 412.

MRKT 454 Global Marketing (3)
Prerequisite: MRKT 310. An in-depth study of marketing principles as they relate to the global marketplace. The aim is to apply marketing principles and strategies to a global organization and markets. Discussion covers the influence of internationalization on the U.S. economy, the competitive pressures on the intensifying global markets, and the development of marketing plans tailored to reach international and global markets. Topics also include the political, economic, legal, regulatory, and sociocultural trends affecting international marketing; the dynamic environments in which global marketing strategies are formulated; and the challenge of implementing marketing programs leading to competitive advantage.

MRKT 458 Social Media Marketing (3)
Prerequisite: MRKT 310 or MRKT 311. An introduction to social media marketing to increase brand and product exposure and cultivate meaningful relationships with consumers. The aim is to engage with consumers to create an interactive, relevant conversation as part of a dynamic marketing strategy. Discussions explore the current benefits and advantages of social media strategies and campaigns. Projects involve developing social media posts, using best practices for target markets, and evaluating successful campaigns.

MRKT 486A Workplace Learning in Marketing (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

MRKT 486B Workplace Learning in Marketing (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

MRKT 495 Strategic Marketing Management (3)
(Intended as a final, capstone course to be taken in a student's last 15 credits.) Prerequisites: MRKT 354, MRKT 410, and MRKT 412. A study of marketing that integrates knowledge gained through previous coursework and experience in marketing and builds on those concepts through integrative analysis, practical application, and critical thinking. The aim is to manage the marketing process, perform root cause analysis, formulate alternative solutions, and propose marketing strategies and tactics. Emphasis is on the use of appropriate decision models. Topics include the analysis of consumers and markets. Discussion also covers emerging issues. Students may receive credit for only one of the following courses: BMGT 457 or MRKT 495.

Mathematics

MATH 105 Topics for Mathematical Literacy (3)
(For students who do not need a college algebra, statistics, or higher-level mathematics course. Meets the general education requirement in mathematics.) An investigation of contemporary topics in mathematics. The aim is to apply mathematical processes to solve problems involving exponential and logarithmic modeling, personal finance, probability, basic logical thinking, and statistical reasoning.

MATH 107 College Algebra (3)
(The first course in the two-course series MATH 107–MATH 108. An alternative to MATH 115.) An introduction to equations and inequalities and a study of functions and their properties, including the development of graphing skills with polynomial, rational, exponential, and logarithmic functions. The objective is to apply appropriate technology and demonstrate fluency in the language of algebra; communicate mathematical ideas; perform operations on real numbers, complex numbers, and functions; solve equations and inequalities; analyze and graph circles and functions; and use mathematical modeling to translate, solve, and interpret applied problems. Technology is used for data modeling. Discussion also covers applications. Students may receive credit for only one of the following courses: MATH 107 or MATH 115.

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MATH 108 Trigonometry and Analytical Geometry (3)
(The second course in the two-course series MATH 107–MATH 108. An alternative to MATH 115.) Prerequisite: MATH 107. An introduction to trigonometric functions, identities, and equations and their applications. The goal is to demonstrate fluency in the language of trigonometry, analytic geometry, and selected mathematical topics; communicate mathematical ideas appropriately; apply and prove trigonometric identities; solve triangles and trigonometric equations; and perform vector operations. Discussion covers analytical geometry and conic sections, systems of linear equations, matrices, sequences, and series. Students may receive credit for only one of the following courses: MATH 108 or MATH 115.

MATH 115 Pre-Calculus (3)
(Not open to students who have completed MATH 140 or any course for which MATH 140 is a prerequisite.) An explication of equations, functions, and graphs. The goal is to demonstrate fluency in pre-calculus; communicate mathematical ideas appropriately; solve equations and inequalities; analyze and graph functions; and use mathematical modeling to translate, solve, and interpret applied problems. Topics include polynomials, rational functions, exponential and logarithmic functions, trigonometry, and analytical geometry. Students may receive credit for only one of the following courses: MATH 107, MATH 108, or MATH 115.

MATH 140 Calculus I (4)
Prerequisite: MATH 108 or MATH 115. An introduction to calculus. The goal is to demonstrate fluency in the language of calculus; discuss mathematical ideas appropriately; and solve problems by identifying, representing, and modeling functional relationships. Topics include functions, the sketching of graphs of functions, limits, continuity, derivatives and applications of the derivative, definite and indefinite integrals, and calculation of area. Students may receive credit for only one of the following courses: MATH 130, MATH 131, or MATH 140.

MATH 141 Calculus II (4)
(A continuation of MATH 140.) Prerequisite: MATH 140. A study of integration and functions. The aim is to demonstrate fluency in the language of calculus; discuss mathematical ideas appropriately; model and solve problems using integrals and interpret the results; and use infinite series to approximate functions to model real-world scenarios. Focus is on techniques of integration, improper integrals, and applications of integration (such as volumes, work, arc length, and moments); inverse, exponential, and logarithmic functions; and sequences and series. Students may receive credit for only one of the following courses: MATH 131, MATH 132, or MATH 141.

MATH 241 Calculus III (4)
Prerequisite: MATH 141. An introduction to multivariable calculus. Exposition covers vectors and vector-valued functions; partial derivatives and applications of partial derivatives (such as tangent planes and Lagrangian multipliers); multiple integrals; volume; surface area; and the classical theorems of Green, Stokes, and Gauss. The objective is to use multivariate calculus to solve real-world problems.

MATH 246 Differential Equations (3)
Prerequisite: MATH 141 or MATH 132. An introduction to the basic methods of solving differential equations. The goal is to demonstrate fluency in the language of differential equations; communicate mathematical ideas; solve boundary-value problems for first- and second-order equations; and solve systems of linear differential equations. Topics include solutions of boundary-value problems for first- and second-order differential equations; solutions of systems of linear differential equations; series solutions, existence, and uniqueness; and formulation and solution of differential equations for physical systems.

MATH 301 Concepts of Real Analysis I (3)
Prerequisite: MATH 141. A study of real analysis. The aim is to construct formal mathematical proofs and solve problems. Topics include sequences and series of numbers, continuity and differentiability of real-valued functions of one variable, the Riemann integral, sequences of functions, and power series. Students may receive credit for only one of the following courses: MATH 301 or MATH 410.

MATH 340 Linear Algebra (4)
Prerequisite: MATH 140. An examination of linear algebra. The aim is to demonstrate applications of various concepts in linear algebra. Topics include abstract vector spaces, linear transformations, algebra of matrices, determinants, similarity, eigenvalues and eigenvectors, and applications to systems of equations. Discussion also covers solutions of problems in physics, engineering, and the sciences. Students may receive credit for only one of the following courses: MATH 240, MATH 340, MATH 400, or MATH 461.

MATH 402 Algebraic Structures (3)
Prerequisite: MATH 141. An overview of algebraic structures. The aim is to construct mathematically correct and concise proofs. Set theory, techniques of proofs, and the application of those techniques are introduced. Topics include groups, subgroups, isomorphisms, rings, integral domains, and fields.

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MATH 463 Complex Analysis (3)

Prerequisite: MATH 141. An overview of the theory and practice of complex variables to enrich the study of differential equations, real analysis, and numerical analysis. The aim is to use complex variables to analyze problems that have direct application to physical problems. Topics include complex numbers, functions, inverse functions, mappings, integrals, series, and poles in the complex numbers.

Music

MUSC 210 Music as Cultural Expression (3)

A study of the role of music in various cultures. The objective is to identify key features that define various genres of world music, articulate the roles and functions of music in world cultures, use the medium of music to explore intercultural relationships, and consciously define personal musical perspectives. Discussion covers music from various cultural traditions and the contexts in which composers and musicians practice their craft. Students may receive credit for only one of the following courses: HUMN 211 or MUSC 210.

Natural Science

NSCI 100 Introduction to Physical Science (3)

Prerequisite: MATH 105, STAT 200, or a higher MATH or STAT course. An introduction to the basic principles of physics and chemistry, with applications to geology, oceanography, meteorology, and astronomy. The objective is to use scientific and quantitative reasoning to make informed decisions about topics related to physical science. Discussion covers the development of scientific thinking, the scientific method, the relationships among the various physical sciences, the role of the physical sciences in interpreting the natural world, and the integrated use of technology. Students may receive credit for only one of the following courses: GNSC 100, NSCI 100, or NSCI 103.

NSCI 101 Physical Science Laboratory (1)

(Fulfills the laboratory science requirement.) Prerequisite: MATH 105, STAT 200, or a higher MATH or STAT course. Prerequisite or corequisite: NSCI 100. A laboratory study of the basic principles of physics and chemistry, with applications to geology, oceanography, meteorology, and astronomy. The objective is to apply the scientific method and use scientific and quantitative reasoning to make informed decisions about experimental results in the physical sciences. Discussion and laboratory activities cover the development of scientific thinking, the scientific method, the relationships among the various physical sciences, and the role of the physical sciences in interpreting the natural world.

NSCI 103 Fundamentals of Physical Science (4)

(Fulfills the laboratory science requirement.) Prerequisite: MATH 105, STAT 200, or a higher MATH or STAT course. An introduction to the basic principles of physics and chemistry, with applications to geology, oceanography, meteorology, and astronomy. The objective is to apply the scientific method and use scientific and quantitative reasoning to make informed decisions about experimental results in the physical sciences. Discussion and laboratory activities cover the development of scientific thinking, the scientific method, the relationships among the various physical sciences, the role of the physical sciences in interpreting the natural world, and the integrated use of technology. Students may receive credit for only one of the following courses: GNSC 100, NSCI 100, or NSCI 103.

NSCI 120 Natural Sciences Laboratory (1)

(Fulfills the laboratory science requirement.) Prerequisite: MATH 105, STAT 200, or a higher MATH or STAT course. A study of the basic principles of science investigation and observation. The objective is to apply knowledge of the natural world and experimental design to address questions about physical, chemical, geological, and ecological phenomena. Activities include observation of the natural world, experiments, measurements, data collection, and quantitative reasoning exercises.

NSCI 170 Weather and Climate (3)

An introduction to the basic principles of atmospheric science. The goal is to use scientific and quantitative reasoning to make informed decisions about topics related to atmospheric science. Topics include the effect of different weather elements (such as temperature, pressure, winds, and humidity) on weather patterns and climate. Discussion also covers weather phenomena such as El Niño, thunderstorms, tornadoes, tropical cyclones, and midlatitude cyclones, as well as the impact of humans on Earth's atmosphere. Students may receive credit for only one of the following courses: GNSC 170, GNSC 398D, or NSCI 170.

NSCI 171 Weather and Climate Laboratory (1)

(Fulfills the laboratory science requirement.) Prerequisite or corequisite: NSCI 170. An introduction to the basic concepts of meteorology. The aim is to apply the scientific method and use scientific and quantitative reasoning to make informed decisions about experimental results in meteorology. Focus is on the observation, measurement, and analysis of weather data, including the interpretation of weather patterns and conditions found on weather maps, satellite images, radar imagery, and atmosphere diagrams. Students may receive credit for only one of the following courses: GNSC 171 or NSCI 171.

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NSCI 301 Laboratory Management and Safety (3)

Recommended: WRTG 112, WRTG 101, or WRTG 101S. An overview of the role of scientific methodology, data handling, and management practices in research and manufacturing laboratories. The aim is to examine scientific principles; research and development practices; safety and health compliance; and management of laboratory personnel, space, inventory, and equipment. Assignments will address laboratory operating systems, finances and recordkeeping, safety regulations and procedures, data management, project planning, problem-solving, procurement, personnel training, and communication with a broad array of stakeholders. Students may receive credit for only one of the following courses: GNSC 301, MEDT 301, or NSCI 301.

NSCI 362 Our Environment: Human Impact and Sustainable Choices (3)

A scientific examination of the impact humans have had on the global environment in the current era, the Anthropocene. The goal is to apply scientific reasoning to evaluate human impact on the environment and strategies to mitigate this impact. Topics address sustainability as it relates to individual choices, collective responsibility, environmental stewardship, energy use, diet, and consumer behavior. Current scientific research is used to explore environmental issues such as population growth, climate change, resource depletion, biodiversity losses, food security, and the economic implications of making sustainable choices. Students may receive credit for only one of the following courses: BEHS 361, BEHS 365, ENMT 365, GNSC 361, HUMN 360, NSCI 361, or NSCI 362.

NSCI 398 Special Topics in Natural Science (3)

A study of topics in the sciences of special interest to students and faculty.

Nursing

NURS 300 Science and Research in Nursing (3)

(Open only to students majoring in nursing for registered nurses.) An overview of the basic concepts of nursing research. The aim is to examine the contribution of research to nursing knowledge and practice, demonstrate skill in conducting research using available scientific literature, critically appraise current evidence-based research, and apply the findings to promote clinical best practices in nursing. Evidence-based research is evaluated from a legal and ethical perspective in the protection of human subjects. Topics include scientific process, research methods, experimental protocols, informed consent, evaluation of research literature, and ethical issues in research.

NURS 305 Informatics and Technology in Nursing Practice (3)

(Open only to students majoring in nursing for registered nurses.) Prerequisite or corequisite: NURS 300. An overview of the role of informatics and technology used in nursing practice. The aim is to demonstrate how informatics and technology are used to improve safety and outcomes for patients and healthcare organizations and analyze how informatics used in nursing practice is a combination of knowledge and skills from nursing science, computer science, information science, and cognitive science. Topics include health literacy, regulation, standardization and security of patient data, implementation of health information systems, nursing ethics and informatics, and the role of nursing informatics in disaster preparedness.

NURS 350 Global Health Issues (3)

(Open only to students majoring in nursing for registered nurses.) Prerequisite: NURS 300. An exploration of global health issues and strategies that promote the health of nations. The aim is to explore global perspectives on health issues and policies and analyze how disparities in health and access to healthcare can influence the burden of disease. Discussion covers the global burden of disease, determinants of health, and factors that affect the health of countries. Topics include nutrition, maternal and child health, mental health, environmental health, communicable and noncommunicable diseases, and disaster/emergency preparedness and response.

NURS 362 Health Assessment for Registered Nurses (4)

(Open only to students majoring in nursing for registered nurses.) Prerequisite: NURS 300. An overview of the role of the professional nurse in performing comprehensive health assessments. The aim is to conduct comprehensive and holistic health assessments, recognize health deviations, formulate thorough individualized plans of care, and anticipate treatment outcomes. Focus is on demonstrating appropriate communication and interprofessional collaboration skills in promoting patient-centered care. Topics include diversity, special populations, care across the lifespan, recognizing deviations in health, health promotion, and disease prevention. Students may receive credit for only one of the following courses: NURS 360 or NURS 362.

NURS 410 Applying Evidence-Based Practice in Nursing (3)
(Open only to students majoring in nursing for registered nurses.) Prerequisite: NURS 300. A study of the principles and models of evidence-based nursing practice. The objective is to demonstrate critical-thinking skills in applying the findings of evidence-based practice to the clinical environment. Focus is on evaluating patient outcomes data to identify clinical practice areas that are amenable to quality improvement projects. Assignments include selecting a problem area of clinical practice and developing a proposal for a solution.

NURS 420 Advocacy and Politics in Nursing (3)
(Open only to students majoring in nursing for registered nurses.) Prerequisite: HMGT 372. An overview of the basic principles involved with the legislative process and an examination of how nurses can use political advocacy strategies to influence healthcare policies. Focus is on applying interpersonal, communication, leadership, and advocacy skills to support the application of social justice principles in healthcare delivery practices to diverse populations and promote the nursing profession.

NURS 462 Nursing Care of the Family and Community (4)
(Open only to students majoring in nursing for registered nurses.) Prerequisite: NURS 360 or NURS 362. An overview of the role of the professional nurse in the care of the family and community. Focus is on applying the nursing process to the care of families and communities. The goal is to identify health risks within a family and design a plan of care using evidence-based practices, obtain information about family and community health systems using systematic research practices, and develop a health promotion education plan for the community. Direct patient-care practice experiences include conducting a windshield survey and communicating and collaborating with community healthcare professionals in planning and implementing health promotion activities that address a community healthcare need. Topics include diversity, the community as a patient, environmental influences, families at risk, health promotion, risk reduction, vulnerable populations, disaster preparedness, and coalition building. Students may receive credit for only one of the following courses: NURS 460 or NURS 462.

NURS 485 Leadership and Management in Professional Nursing Practice (4)
(Open only to students majoring in nursing for registered nurses. Intended as a final, capstone course to be taken in a student's last 9 credits.) Prerequisite: NURS 410. A study of leadership concepts, theories, and techniques used in the nursing profession to promote high-quality patient care in a variety of settings. The aim is to integrate nursing leadership concepts and theories into the various roles of the professional nurse, promote professional development for self and others, and apply business principles in the management of patients in complex and diverse healthcare environments. Students may receive credit for only one of the following courses: NURS 485 or NURS 495.

Nutrition

NUTR 100 Elements of Nutrition (3)
A study of the scientific and quantitative foundations of the applied science of human nutrition. The goal is to understand how nutrition reflects an integration across scientific disciplines and how foods provide important nutrients that provide substance and energy for healthy living. Topics include scientific reasoning, healthy meal planning, and weight management. Students may receive credit for only one of the following courses: NUTR 100 or NUTR 200.

NUTR 101 Nutrition Laboratory (1)
(For students not majoring in biotechnology or laboratory management. Fulfills the laboratory science requirement only with previous or concurrent credit for NUTR 100.) Prerequisite or corequisite: NUTR 100. A hands-on study of human nutrition. The goal is to use an experimental approach to questions in nutrition science. Laboratory exercises emphasize critical thinking in the analysis of quantitative data derived from investigations into various areas of nutrition science, including energy balance, macro- and micronutrients, food guidelines, and food safety.

Philosophy

PHIL 100 Introduction to Philosophy (3)
An introduction to the literature, problems, and methods of philosophy. The goal is to identify and consider central, recurring problems of philosophy. Emphasis is on developing awareness of the significance of philosophical problems and learning to offer rationally justifiable solutions. Students may receive credit for only one of the following courses: HUMN 125 or PHIL 100.

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PHIL 110 Practical Reasoning (3)
An examination of methods for thinking analytically about real-world problems and solving them. The goal is to apply logical arguments to practical decision-making. Topics include inductive and deductive reasoning; the properties of arguments; methods of logical analysis; synthesis of ideas; informal fallacies; and the role of presuppositions and other factors in scientific, social, ethical, and political problems.

PHIL 140 Introduction to Moral Philosophy and Ethical Reasoning (3)
An introductory exploration of Eastern and Western moral philosophy and an examination of methods for thinking clearly about ethical issues. The objective is to employ a knowledge of moral theory and the methods of ethical reasoning to address contemporary ethical issues and dilemmas in areas such as business, medicine, information technology, and personal ethics. Students may receive credit for only one of the following courses: HUMN 300 or PHIL 140.

PHIL 304 Contemporary Social Justice Issues (3)
An exploration of the political and ethical writings of philosophers who shaped contemporary ideas of social justice and individual rights. The objective is to evaluate political theories and philosophies, defend ethical reasoning on issues of justice, and communicate critical reflections on contemporary social justice issues, such as environmental justice, healthcare, racial justice, women's rights, immigration, and religious freedom. Topics include freedom and the social contract, individual and human rights, distributive and economic justice, gender and racial justice, internationalism, and theories of war.

PHIL 336 Ideas Shaping the 21st Century (3)
Recommended: PHIL 100 or PHIL 110. An exploration of the philosophical arguments concerning the ideas shaping human knowledge in the 21st century. The objective is to evaluate the ideas and arguments that shape human understanding of reality from antiquity to the 21st century, develop critical reflection of these ideas utilizing the tools of analytical philosophy, and communicate the results of philosophical and critical reflection in writing and oral presentation. Topics include analytical philosophy, the human mind, consciousness, materialism, naturalism, and the limits of scientific realism. Students may receive credit for only one of the following courses: HUMN 336 or PHIL 336.

PHIL 348 Religions of the East (3)
An examination of South and East Asian religions, including the Jain, Hindu, Sikh, Buddhist, Confucian, Daoist, and Shinto traditions. The goal is to apply key methods in the academic study of religions to examine their geographical, historical, and cultural contexts. Topics include the religious meaning and social significance of rituals, material culture, and written texts. Papers and presentations organize research findings, critical reflections, and creative perspectives. Students may receive credit for only one of the following courses: HUMN 348, HUMN 350, or PHIL 348.

PHIL 349 Religions of the West (3)
An examination of Western religions, including the Zoroastrian, Judaic, Christian, and Islamic traditions. The goal is to apply key methods in the academic study of religions to examine their geographical, historical, and cultural contexts. Topics include the religious meaning and social significance of rituals, material culture, and written texts. Papers and presentations organize research findings, critical reflections, and creative perspectives. Students may receive credit for only one of the following courses: HUMN 350 or PHIL 349.

Physics

PHYS 121 Fundamentals of Physics I (4)
(For students majoring or minoring in a science; not appropriate for nonscience students fulfilling general education requirements. Fulfills the laboratory science requirement. Together with PHYS 122, generally satisfies the minimum requirement of medical and dental schools. Offered through the UMCP Science in the Evening Program; follows all UMCP schedules, prerequisites, and expectations. The first course in a two-course sequence.) Prerequisite: MATH 108, MATH 115, or knowledge of college-level trigonometry. An exploration of mechanics. Topics include kinematics, force, dynamics, conservation laws, and rotational motion.

PHYS 122 Fundamentals of Physics II (4)
(For students majoring or minoring in a science; not appropriate for nonscience students fulfilling general education requirements. Fulfills the laboratory science requirement. Together with PHYS 121, generally satisfies the minimum requirement of medical and dental schools. Offered through the UMCP Science in the Evening Program; follows all UMCP schedules, prerequisites, and expectations. A continuation of PHYS 121.) Prerequisite: PHYS 121. An exploration of the fields of heat, sound, electricity, magnetism, optics, and modern physics.

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Professional Exploration

PACE 100 Professional and Career Exploration for Transfer Students (3)

(Fulfills the general education requirement in professional explorations for eligible transfer students with 60 or more credits in transfer.) A condensed orientation to UMGC and an exploration of how UMGC academic programs align to professional goals and career options. Focus is on exploring ways to develop and enhance career opportunities, becoming familiar with program options, and reflecting on personal goals. Students may receive credit for only one of the following courses: PACE 100, PACE 111B, PACE 111C, PACE 111M, PACE 111P, PACE 111S, or PACE 111T.

PACE 111B Program and Career Exploration in Business (3)

(Fulfills the general education requirement in research and computing literacy.) An orientation to UMGC and exploration of how UMGC academic programs align to professional goals and career options. Focus is on developing and practicing communication, teamwork, professionalism, and integrity skills while exploring ways to develop and enhance career opportunities. The aim is to become familiar with the university's academic culture and expectations; learn about UMGC resources for success; reflect on academic and professional goals; and explore opportunities to shorten programs through transfer credit and other prior learning. Students may receive credit for only one of the following courses: PACE 111B, PACE 111C, PACE 111M, PACE 111P, PACE 111S, or PACE 111T.

PACE 111C Program and Career Exploration in Communication/Humanities (3)

(Fulfills the general education requirement in research and computing literacy.) An orientation to UMGC and exploration of how UMGC academic programs align to professional goals and career options. Focus is on developing and practicing communication, teamwork, professionalism, and integrity skills while exploring ways to develop and enhance career opportunities. The aim is to become familiar with the university's academic culture and expectations; learn about UMGC resources for success; reflect on academic and professional goals; and explore opportunities to shorten programs through transfer credit and other prior learning. Students may receive credit for only one of the following courses: PACE 111B, PACE 111C, PACE 111M, PACE 111P, PACE 111S, or PACE 111T.

PACE 111M Program and Career Exploration in Multidisciplinary Studies (3)

(Fulfills the general education requirement in research and computing literacy.) An orientation to UMGC and exploration of how UMGC academic programs align to professional goals and career options. Focus is on developing and practicing communication, teamwork, professionalism, and integrity skills while exploring ways to develop and enhance career opportunities. The aim is to become familiar with the university's academic culture and expectations; learn about UMGC resources for success; reflect on academic and professional goals; and explore opportunities to shorten programs through transfer credit and other prior learning. Students may receive credit for only one of the following courses: PACE 111B, PACE 111C, PACE 111M, PACE 111P, PACE 111S, or PACE 111T.

PACE 111P Program and Career Exploration in Public Safety (3)

(Fulfills the general education requirement in professional explorations.) An orientation to UMGC and exploration of how UMGC academic programs align to professional goals and career options. Focus is on practicing and improving communication, teamwork, professionalism, and integrity skills while exploring ways to develop and enhance career opportunities. The aim is to become familiar with the university's academic culture and expectations, learn about UMGC resources for success; reflect on academic and professional goals, and explore opportunities to shorten programs through transfer credit and other prior learning. Students may receive credit for only one of the following courses: PACE 111B, PACE 111C, PACE 111M, PACE 111P, PACE 111S, or PACE 111T.

PACE 111S Program and Career Exploration in Health and Sciences (3)

(Fulfills the general education requirement in research and computing literacy.) An orientation to UMGC and exploration of how UMGC academic programs align to professional goals and career options. Focus is on developing and practicing communication, teamwork, professionalism, and integrity skills while exploring ways to develop and enhance career opportunities. The aim is to become familiar with the university's academic culture and expectations; learn about UMGC resources for success; reflect on academic and professional goals; and explore opportunities to shorten programs through transfer credit and other prior learning. Students may receive credit for only one of the following courses: PACE 111B, PACE 111C, PACE 111M, PACE 111P, PACE 111S, or PACE 111T.

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PACE 111T Program and Career Exploration in Technology (3)
(Fulfills the general education requirement in research and computing literacy.) An orientation to UMGC and exploration of how UMGC academic programs align to professional goals and career options. Focus is on developing and practicing communication, teamwork, professionalism, and integrity skills while exploring ways to develop and enhance career opportunities. The aim is to become familiar with the university's academic culture and expectations; learn about UMGC resources for success; reflect on academic and professional goals; and explore opportunities to shorten programs through transfer credit and other prior learning. Students may receive credit for only one of the following courses: PACE 111B, PACE 111C, PACE 111M, PACE 111P, PACE 111S, or PACE 111T.

Psychology

PSYC 100 Introduction to Psychology (3)
A survey of the basic principles, research concepts, and problems in psychological science. The biological, cognitive, and social perspectives of human thought and behavior are addressed. The goal is to apply major concepts and use the scientific method to enhance the understanding of individual, community, and organizational life experiences. Topics include neuroscience, sensation and perception, learning and conditioning, memory, motivation, language and intelligence, personality and social behavior, and psychopathology and therapy. Applications of psychology are also presented. Students may receive credit for only one of the following courses: BEHS 101 or PSYC 100.

PSYC 220 Social Psychology (3)
(Formerly PSYC 321.) Prerequisite: PSYC 100. An examination of the influence of social factors on individual and interpersonal behaviors. The objective is to analyze how thoughts, feelings, and behaviors are affected by the presence of others (actual or imagined). Topics include the self, social perception, social cognition and information processing, relationships, attitudes, social influence, and group behavior. Students may receive credit for only one of the following courses: BEHS 221, BEHS 421, BEHS 450, PSYC 220, PSYC 221, or PSYC 321.

PSYC 251 Lifespan Development (3)
(Formerly PSYC 351.) Prerequisite: PSYC 100. An integrated study of the biological, socioemotional, and cognitive development of humans from conception through death. The aim is to apply knowledge of lifespan development to interpersonal, community, and organizational relationships. Emphasis is on the interaction of nature and nurture on one's physiology, capability, and potential at each progressive stage of development. Students may receive credit for only one of the following courses: PSYC 251 or PSYC 351.

PSYC 300 Research Methods in Psychology (3)
Prerequisites: PSYC 100 and STAT 200. A survey of research methods focusing on the fundamentals of research design and behavior. The aim is to apply research methodologies critically and creatively to communicate effectively about the domains of psychology. Topics include scientific writing using APA style, evaluation of research literature, and ethical issues in research. Practice is provided in asking research questions, formulating research hypotheses, designing and conducting a simulated research study, and presenting results. Students may receive credit for only one of the following courses: PSYC 300 or PSYC 305.

PSYC 301 Biological Basis of Behavior (3)
Prerequisite: PSYC 100. An introduction to the anatomical structures and physiological processes that determine behavior. The objective is to use scientifically valid resources to communicate effectively about the biological basis of behavior. Topics include the acquisition and processing of sensory information, the neural control of movement, and the biological bases of complex behaviors (such as sleep, learning, memory, sex, and language), as well as the basic functioning of the nervous system.

PSYC 306 Special Topics in Psychology (1–3)
Seminar discussion of topics of current interest. Areas explored may extend or augment those covered in more general topical courses. May be repeated to a maximum of 6 credits when topics differ.

PSYC 307 Special Topics in Biological Psychology (1–3)
Seminar discussion of topics of current interest. Areas explored may extend or augment those covered in more general topical courses. May be repeated to a maximum of 6 credits when topics differ.

PSYC 308 Special Topics in Social Psychology (1–3)
Seminar discussion of topics of current interest. Areas explored may extend or augment those covered in more general topical courses. May be repeated to a maximum of 6 credits when topics differ.

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PSYC 309 Special Topics in Professional Psychology (1–3)
Seminar discussion of topics of current interest. The goal is to attain specialized knowledge in a particular area of professional psychology. Topics may extend or augment those covered in more general courses. May be repeated to a maximum of 6 credits when topics differ.

PSYC 310 Sensation and Perception (3)
Prerequisite: PSYC 100. A survey of theories and historical and contemporary research in how the auditory, visual, gustatory, olfactory, kinesthetic, and tactile senses acquire information and how psychological, anatomical, physiological, and environmental factors help us perceive the world. The objective is to apply an understanding of complex neural and behavioral processes to evaluate research and analyze variations within and between species.

PSYC 332 Psychology of Human Sexuality (3)
Prerequisite: PSYC 100. An examination of human sexuality and sexual behavior. The objective is to apply knowledge of the physiology and psychology of human sexuality. Topics include sexual anatomy, intimate relationships, sexual health, and sexual identity across the lifespan. Students may receive credit for only one of the following courses: BEHS 363, HLTH 377, or PSYC 332.

PSYC 335 Theories of Personality (3)
(Formerly PSYC 435.) Prerequisite: PSYC 100. A study of major theories and perspectives on personality. The goal is to explain and evaluate major concepts in personality. Topics include trait, psychodynamic, behavioral, and humanistic theories. Methods of personality research and relevant findings are also introduced. Students may receive credit for only one of the following courses: PSYC 335 or PSYC 435.

PSYC 338 Psychology of Gender (3)
Prerequisite: PSYC 100. A survey of the biology, lifespan development, socialization, personality attributes, mental health factors, and special considerations associated with gender. The aim is to apply knowledge of cultural and historical influences relating to gender. Topics include conceptions of gender, gender roles, and gender similarities and differences.

PSYC 341 Memory and Cognition (3)
Prerequisite: PSYC 100. An introduction to basic models, methods of research, and findings in the fields of memory, problem-solving, and language. The objective is to apply knowledge of cognitive processes to a variety of situations, including organizational and educational settings. Both applications and theory are explored.

PSYC 353 Abnormal Psychology (3)
Prerequisite: PSYC 100. An examination of mental disorders across the lifespan. The goal is to evaluate emerging issues in abnormal psychology. Topics include the identification and diagnosis of specific disorders and the evolution of treatment protocols. Students may receive credit for only one of the following courses: PSYC 331, PSYC 353, or PSYC 431.

PSYC 354 Cross-Cultural Psychology (3)
Prerequisite: PSYC 100. An examination of the interplay of individual, ethnic, and cultural factors in psychosocial growth and well-being. The objective is to use theory, research, and the practiced utilization of cultural factors to understand identity development, communication, social institutions and norms, health and well-being, cross-cultural interpersonal relations, and cultural humility and competence. Issues of globalization, diversity, cultural bias, and intersectionality are addressed.

PSYC 386 Psychology of Stress (3)
Prerequisite: PSYC 100. An examination of the forces that define and determine the stress response. The aim is to apply stress management techniques to remediate the negative impact of stress. Stress is studied as the product of the interactions among one's social structure, occupational status, and psychological and physiological levels of well-being. The psychological perspective is examined in relation to the stresses produced in a variety of contexts, such as families and work organizations. Students may receive credit for only one of the following courses: BEHS 463, HLTH 285, or PSYC 386.

PSYC 432 Introduction to Counseling Psychology (3)
Prerequisite: PSYC 100. Recommended: PSYC 300 and PSYC 335. A survey and critical analysis of research and intervention strategies developed and used by counseling psychologists. The goal is to evaluate current trends in content and methodology. Topics include counseling protocols in various applied settings.

PSYC 436 Introduction to Clinical Psychology (3)
Prerequisite: PSYC 100. A survey of the field of clinical psychology as a distinct mental health discipline. The objective is to evaluate current trends in content and methodology. Topics include the history of the field, diagnostic and therapeutic strategies employed by clinical psychologists, ethical issues, and working with diverse populations. Emphasis is on the scientist-practitioner model and the critical analysis of theories and empirical research.

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PSYC 437 Positive Psychology (3)
Prerequisite: PSYC 100. A survey of the science of positive psychology. The aim is to analyze and evaluate theories and applications of positive psychology. Focus is on the unique characteristics of the human experience that contribute to health and well-being. Topics include hope, optimism, human strengths, happiness, flow, and attachment.

PSYC 495 Psychology Capstone (3)
Prerequisites: PSYC 100, PSYC 300, and completion of all requirements for the psychology major. A study of psychology that integrates knowledge gained through previous coursework and experience. The aim is to build on that conceptual foundation through case study, reflective essays, and portfolio development.

Public Safety Administration

PSAD 302 Introduction to Public Safety Administration (3)
Prerequisite: WRTG 112 or equivalent. An introduction to public safety organizations and the functions of administrators within these organizations. The objective is to identify key functions of public safety administration and describe the history and current forces and trends facing public safety administrators. The history, development, growth, and future of various interdependent public safety entities are examined from an interdisciplinary perspective. Topics include key responsibilities of administrators in public safety administration.

PSAD 304 Contemporary Public Safety Practices (3)
Recommended: PSAD 302. An investigation of contemporary strategic public safety practices. The goal is to explore several best practices generally associated with successful organizations and apply them to the field of public safety. Topics include the role of hazard and risk management, quality control, and customer service in public safety organizations. Discussion also covers contemporary views of public safety integration and consolidation, as well as public and private partnerships.

PSAD 306 Public Safety Planning (3)
Recommended: PSAD 304. An examination of strategic, operational, and tactical planning in public safety administration with an emphasis on the planning process. The aim is to demonstrate key skills in public safety planning by successfully developing a hazards mitigation plan. Topics include strategic, operational, and tactical planning, as well as resource allocation and hazards mitigation.

PSAD 408 Public Safety Legal Issues and Public Policy (3)
Recommended: PSAD 304. A review of the U.S legal system and an analysis of the law as it relates to the administration of public safety organizations. Principles of legal obligations, limitations, liabilities, and immunities are examined and discussed, both in general terms and, where applicable, in terms of how they differ in the treatment of public employers and employees. The objective is to develop an appreciation of the legal responsibilities of a public safety administrator to their employees and the public at large.

PSAD 410 Public Safety Research and Technology (3)
Recommended: PSAD 304. An examination of research and the applications of technology in public safety administration. The goal is to describe the principles of scientific research; evaluate existing research and technology; and apply the methods and resources of research, science, and technology to public safety administration. Topics include scientific research, research methodology, technology, and the evaluation and use of research and technology in public safety administration.

PSAD 414 Public Safety Administration Ethics (3)
Recommended: PSAD 304. An in-depth examination of ethics and ethical issues in public safety administration. The aim is to recognize the principles of ethical decision-making and those factors that tend to undermine their application and those that tend to support them. Topics include the most well-known ethical systems, values and empathy, moral disengagement, ethical decision-making and ethical leadership, and deception as viewed through the lens of ethical responsibility.

PSAD 416 Public Safety Leadership (3)
Recommended: PSAD 304. A study of leadership theories, skills, and techniques used in public safety administration. The objective is to define and explain basic concepts of leadership; analyze personal leadership knowledge, skills, and abilities; and evaluate leadership performance in the current public safety environment. Topics include leadership, leadership theories and styles, leadership roles, leadership performance, individual leadership skills and plans, effective leadership, and future trends.

PSAD 486A Workplace Learning in Public Safety Administration (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

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PSAD 486B Workplace Learning in Public Safety Administration (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

PSAD 495 Public Safety Leadership Capstone (3)
Prerequisites: PSAD 306, PSAD 408, PSAD 410, PSAD 414, and PSAD 416. An intensive study of public safety administration that integrates knowledge gained through previous coursework and builds on that foundation through integrative analysis, practical application, and critical thinking. Focus is on using these skills to address the challenges of current and future issues in public safety administration. The aim is to integrate leadership, administration, and management concepts and apply them to current public safety issues. Assignments include the development of a comprehensive case study related to a current public safety issue.

Sociology

SOCY 100 Introduction to Sociology (3)
An introduction to the basic concepts, theoretical perspectives, and research methods in sociology. The objective is to apply sociological imagination, perspectives, and research to uncover patterns of social behavior and identify their consequences. Topics include culture, socialization, groups, deviance, stratification, institutions, and social change. Students may receive credit for only one of the following courses: BEHS 102 or SOCY 100.

SOCY 300 American Society (3)
Prerequisite: SOCY 100. An in-depth examination of American society and what it means to be American from a sociological perspective. Discussion explores past and current values, ideals, and norms and applies sociological theories to analyze the ways that these values, ideals, and norms have shaped aspects of American social life, such as politics, consumerism, popular culture, social stratification, economics, diversity, education, religion, and social change. The objective is to identify and describe various aspects of social and cultural change to better understand American society.

SOCY 309 Social Demography (3)
(Formerly SOCY 410.) Prerequisite: SOCY 100. A study of social demography. The goal is to identify, evaluate, and interpret key demographic concepts and develop an understanding of global population dynamics. Topics include types of demographic analysis, demographic data, population characteristics, migration, mortality, fertility, population theories, world population growth, and population policy. Students may receive credit for only one of the following courses: SOCY 309 or SOCY 410.

SOCY 313 The Individual and Society (3)
Prerequisite: SOCY 100. A sociological examination of how individuals shape and are shaped by society. The objective is to analyze and communicate how the individual self is molded through social forces and how individuals contribute to the continuous creation of society, using micro-level sociological theories and concepts. Discussions will apply sociological concepts and theories to examine interpersonal relations, group processes, identity, and social change. Topics include the influence of social inequality on identity, the social aspects of emotion management, interpersonal conflict and cooperation, and workplace interactions. Students may receive credit for only one of the following courses: BEHS 312, SOCY 311, or SOCY 313.

SOCY 325 The Sociology of Gender (3)
Prerequisite: SOCY 100. An inquiry into how gender is socially constructed and reconstructed in contemporary society. The aim is to assess the interaction between gender and other social identities.

SOCY 350 Contemporary Social Problems (3)
Prerequisite: SOCY 100. An advanced examination of various local, national, and global problems that affect societies. The aim is to apply sociological perspectives and research to analyze the process by which social conditions become recognized as social problems and are resolved by various actors. Topics include the subjective/objective aspects of social problems, claims about social problems in the media, and how sociologists can help inform possible solutions to social problems. Discussion also covers problems related to human rights, violence, social isolation/loneliness, and social inequality. Students may receive credit for only one of the following courses: SOCY 105, SOCY 210, or SOCY 350.

SOCY 398 Special Topics in Sociology (3)
Prerequisite: SOCY 100. A study of topics of special interest. May be repeated to a maximum of 6 credits when topics differ.

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SOCY 423 Race and Ethnicity: A Global Perspective (3)
Prerequisite: SOCY 100. An advanced examination of race and ethnicity in a variety of social and cultural contexts across the globe. The aim is to apply sociological theories and concepts to understand how race and ethnicity are constructed; how prejudice develops; the ways in which structural racism manifests in society; the social effects of migration and immigration; the global outcomes of slavery and genocide; and how social movements seek to effect change for a more equitable society. Topics include theories of prejudice transmission and reduction, critical race theory, and global consequences of structural racism related to climate change and health.

SOCY 426 Sociology of Religion (3)
Prerequisite: SOCY 100. Recommended: BEHS 220 or HUMN 350. An advanced examination of religion from a sociological perspective. The aim is to evaluate the influence of social location on religious beliefs and attitudes; examine relationships between church and state; and analyze current religious conflicts and controversies. Topics include fundamentalism versus extremism; modernity; religious conflicts; and the relationship of religion with race, class, gender, sexuality, and politics.

SOCY 428 Migrants and Refugees (3)
Prerequisite: SOCY 100. An advanced sociological study of international, global, and economic issues regarding migrants and refugees, addressing population movements to and from countries. The objective is to analyze data and historical evidence and assess the role of globalization on migration. Topics include migrants and refugees, immigration, the role of conflict in migration, politics and laws regarding migrants and refugees, and the role of globalization in generating population flows.

SOCY 443 Sociology of the Family (3)
Prerequisite: SOCY 100. An advanced examination of the family in society. The goal is to analyze, communicate, and project trends regarding family structures and outcomes through the application of major sociological perspectives. Discussions will use sociological research to describe some of the following: changing definitions of family; demographic trends in marriage and family patterns; social dynamics within families; and the effects of technology on family relationships. Topics include single parenting, blended families, cultural differences among families, changes in families over the life course, and governmental policies regarding families.

SOCY 462 Women in the Military (3)
Prerequisite: SOCY 100. An advanced examination of women in the military from a sociological perspective. The objective is to understand gender, power, and the changing roles of women in the military; assess how policies affect women in the military; examine military, community, and family support systems for military women; and compare the roles and duties of women in the U.S. armed forces in war and peacetime with those of military women in other countries. Topics include the social construction of gender and sexuality of the armed forces; the history of women in the military; violence against women in the military; rank, status, and advancement of women in the military; and postmilitary transitions and career options for women.

SOCY 473 Cities and Communities (3)
Prerequisite: SOCY 100. An advanced sociological study of cities and the urban landscape. The aim is to apply major sociological theories to investigate interdependencies between social action, urbanization, and the environment. Focus is on current issues relevant to the challenge of building livable and sustainable cities. Topics include urban social networks, suburbanization, social problems of urbanization, and urban planning and policies.

SOCY 486A Workplace Learning in Sociology (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

SOCY 486B Workplace Learning in Sociology (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

Software Development and Security

Courses in software development and security (designated SDEV) have higher computing requirements than the minimum technical requirements stated on p. 26. They require an Intel Core i7 processor or higher, with speeds of 2GHz and at least 8GB RAM (16GB recommended).

SDEV 300 Building Secure Python Applications (3)

Prerequisite: CMSC 215. A hands-on study of best practices and strategies for building secure Python desktop and web applications. The objective is to design and build Python applications that are resistant to common security threats. Topics include syntax, data structures, style guides, data munging, web application frameworks, and the use of secure coding tools and processes to guard against application vulnerabilities.

SDEV 325 Detecting Software Vulnerabilities (3)

Prerequisites: CMSC 320 and SDEV 300. An in-depth, practical application of techniques and tools for detecting and documenting software vulnerabilities and risks. The goal is to research, select, and use software to analyze code and isolate and prioritize application code and processes that could lead to failure or compromise data integrity or privacy. Topics include the top 25 software vulnerabilities, secure coding guidelines, static code analysis, and software assurance metrics.

SDEV 350 Database Security (3)

Prerequisite: CMSC 320. A study of processes and techniques for securing databases. The objective is to design, build, and maintain databases to minimize risks and security attacks. Topics include privileges and roles, user accounts, encryption, authentication methods, and auditing.

SDEV 355 Securing Mobile Apps (3)

Prerequisite: SDEV 325. A hands-on study of best practices for designing and building secure mobile applications. The aim is to formulate proper defenses and processes to mitigate common attacks. Focus is on mobile device infrastructure, security models, and mobile applications. Topics include code analysis, risk modeling, native and web mobile applications security, secure mobile communication, and back-end application attacks and counterattacks.

SDEV 360 Secure Software Engineering (3)

Prerequisite: CMSC 215. An in-depth study of the processes, standards, and regulations associated with secure software engineering. The objective is to plan, manage, document, and communicate all phases of a secure software development cycle. Topics include security requirements, secure software life cycle development, threat modeling, and Security Technical Implementation Guides (STIGs).

SDEV 400 Secure Programming in the Cloud (3)

Prerequisite: SDEV 300. A hands-on study of programming secure applications in the cloud. The goal is to design and build applications in the cloud while implementing appropriate security policies. Topics include cloud computing models, risks and security challenges of programming in the cloud, and data security.

SDEV 425 Mitigating Software Vulnerabilities (3)

Prerequisites: SDEV 325 and SDEV 360. An in-depth analysis and evaluation of the mitigation of software vulnerabilities. The aim is to detect and mitigate software vulnerabilities by evaluating code. Topics include language-specific software vulnerabilities, mitigation, and input validation.

SDEV 455 Risk Analysis and Threat Modeling (3)

Prerequisite: SDEV 360. An examination of the risks and threats associated with application development. The objective is to identify valuable assets, create system architecture diagrams, decompose applications, identify and prioritize threats, and document results in a threat model. Topics include security requirements and objectives, threat identification and mitigation, and calculating risk.

SDEV 460 Software Security Testing (3)

Prerequisite: SDEV 425. A hands-on study of exploits, attacks, and techniques used to penetrate application security defenses and strategies for mitigating such attacks. The objective is to apply appropriate methodologies for software penetration testing to identify application weaknesses and logic flaws and to test and create scripts for exploitation and discovery. Topics include web architecture, application infrastructure, reconnaissance, discovery, mapping, and exploitation.

SDEV 486A Workplace Learning in Software Development (3)

Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

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SDEV 486B Workplace Learning in Software Development (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

Spanish

SPAN 111 Elementary Spanish I (3)
For online sections, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of Spanish; assumes no prior knowledge of Spanish. Students with prior experience with the Spanish language should take a placement test to assess appropriate level.) An introduction to the Spanish language. The objective is to listen to, speak, read, and write elementary Spanish in concrete, real-life situations and in culturally appropriate ways. The diverse language and culture of the Spanish-speaking world is explored. Students may receive credit for only one of the following courses: SPAN 101 or SPAN 111.

SPAN 112 Elementary Spanish II (3)
For online sections, microphone, speakers, and occasional synchronous work required. (Not open to native speakers of Spanish.) Prerequisite: SPAN 111 or appropriate score on a placement test. A continued introduction to the Spanish language. The goal is to listen to, speak, read, and write Spanish in concrete, real-life situations and in culturally appropriate ways. The diverse language and culture of the Spanish-speaking world is explored. Students may receive credit for only one of the following courses: SPAN 102 or SPAN 112.

SPAN 211 Intermediate Spanish I (3)
For online sections, microphone, speakers, and occasional synchronous work required. Prerequisite: SPAN 112 or appropriate score on a placement test. An intermediate-level study of the Spanish language. The aim is to improve listening, speaking, reading, and writing skills in Spanish and apply them in a variety of real-life situations and social contexts in culturally appropriate ways. Students may receive credit for only one of the following courses: SPAN 114, SPAN 201, or SPAN 211.

SPAN 212 Intermediate Spanish II (3)
For online sections, microphone, speakers, and occasional synchronous work required. Prerequisite: SPAN 211 or appropriate score on a placement test. Further intermediate-level study of the Spanish language. The objective is to listen to, speak, read, and write Spanish and interact effectively with native speakers in a variety of personal and professional settings in culturally appropriate ways. Students may receive credit for only one of the following courses: SPAN 115, SPAN 202, or SPAN 212.

SPAN 311 Advanced Spanish I (3)
Prerequisite: SPAN 212 or appropriate score on a placement test. An in-depth review and expansion of Spanish language communication skills. The aim is to express opinions and use narration and description in a variety of personal and professional contexts. Focus is on improving linguistic proficiency while increasing cultural awareness. Students may receive credit for only one of the following courses: SPAN 301 or SPAN 311.

SPAN 314 Modern Spanish-Speaking Cultures (3)
For online sections, microphone, speakers, and occasional synchronous work required. Prerequisite: SPAN 212 or appropriate score on a placement test. An overview of the diverse cultures that constitute the Spanish-speaking world, taught entirely in Spanish. The objective is to foster intercultural communication skills, recognize aspects of Spanish-speaking cultures and their significance to global and American society, and employ strategies to enhance language development and cultural awareness. Discussion covers the social, historical, and political experiences of the Spanish-speaking people of Latin America, Spain, and the United States.

SPAN 418 Business Spanish I (4)
For online sections, microphone, speakers, and occasional synchronous work required. (Formerly SPAN 318.) Prerequisite: Any 300-level SPAN course or appropriate score on a placement test. An exploration of business contexts and practices in the Spanish-speaking world, taught entirely in Spanish. The objective is to use knowledge of diverse business cultures to communicate and interact effectively in a business environment. Topics include contemporary economic conditions in various Spanish-speaking areas (including those within the United States), enterprise, management, human resources, and cultural issues that influence the workplace. Assignments include preparing a job-search portfolio and making a business presentation, both in Spanish. Students may receive credit for only one of the following courses: SPAN 315, SPAN 318, or SPAN 418.

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SPAN 419 Business Spanish II (4)
For online sections, microphone, speakers, and occasional synchronous work required. Prerequisite: Any 300-level SPAN course or appropriate score on a placement test. A continued exploration of business conditions and practices in the Spanish-speaking world, taught entirely in Spanish. The goal is to use knowledge of diverse business cultures to communicate and interact effectively in a business environment in Spanish. Topics include contemporary economic conditions in various Spanish-speaking areas (including areas within the United States), marketing, investments, finances, logistics, and cultural issues that influence the market. Projects include preparation of a business proposal portfolio and a professional presentation with a peer review, both in Spanish.

SPAN 486A Workplace Learning in Spanish (3)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

SPAN 486B Workplace Learning in Spanish (6)
Prerequisites: 9 credits in the discipline and prior program approval (requirements detailed online at *umgc.edu/wkpl).* The integration of discipline-specific knowledge with new experiences in the work environment. Tasks include completing a series of academic assignments that parallel work experiences.

Speech Communication

SPCH 100 Foundations of Oral Communication (3)
For online sections, access to a broadband internet connection, use of a digital camera capable of recording 10-minute videos, and the ability to save and transfer video to a hosting site required. (Fulfills the prerequisite for all upper-level SPCH courses.) An introduction to oral communication, with emphasis on interpersonal communication, small-group communication, and public speaking. The objective is to prepare speeches, provide feedback to others, and participate in group activities. Students may receive credit for only one of the following courses: SPCH 100, SPCH 100X, SPCH 101, SPCH 107, or SPCH 108.

SPCH 125 Introduction to Interpersonal Communication (3)
(Fulfills the prerequisite for all upper-level SPCH courses.) An exploration of the role interpersonal communication plays in our personal and professional lives. The aim is to apply theoretical frameworks and key concepts in communication to personal behavior and personal and professional contexts. Topics include self-identity, perception, listening, verbal and nonverbal communication, relationship development, and conflict management.

SPCH 324 Communication and Gender (3)
Prerequisite: Any SPCH course or COMM 300. An investigation of how communication influences gender and how gender affects communication. The objective is to apply theoretical frameworks and key concepts of gender to contexts, situations, and messages. Discussion covers gender roles, gender variation across communication styles, and the role gender plays in personal and professional relationships, as well as its role in culture and the media.

SPCH 470 Effective Listening (3)
Prerequisite: Any SPCH course or COMM 300. An exploration of the complexities of message reception and interpretation as related to personal growth, social relationships, and professional development. The goal is to assess and modify listening practices. Topics include the role of listening in communication, types of listening, and listening skills for specific contexts.

SPCH 472 Nonverbal Communication (3)
Prerequisite: Any SPCH course or COMM 300. A comprehensive investigation of nonverbal communication in human interaction. The aim is to analyze the impact of nonverbal messages on interpersonal, organizational, and public communication. Emphasis is on hands-on application of principles and practices to real-world situations. Topics include foundations of interpersonal attraction, use and abuse of personal space, and cross-cultural and gendered behaviors.

SPCH 482 Intercultural Communication (3)
Prerequisite: Any SPCH course or COMM 300. An examination of the major variables of communication in an intercultural context. The objective is to develop and apply communication strategies. Topics include cultural, racial, and national differences; stereotypes; values; cultural assumptions; and verbal and nonverbal channels.

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Statistics and Probability

STAT 200 Introduction to Statistics (3)
An introduction to statistics. The objective is to assess the validity of statistical conclusions; organize, summarize, interpret, and present data using graphical and tabular representations; and apply principles of inferential statistics. Focus is on selecting and applying appropriate statistical tests and determining reasonable inferences and predictions from a set of data. Topics include methods of sampling; percentiles; concepts of probability; probability distributions; normal, t-, and chi-square distributions; confidence intervals; hypothesis testing of one and two means; proportions; binomial experiments; sample size calculations; correlation; regression; and analysis of variance (ANOVA). Students may receive credit for only one of the following courses: BEHS 202, BEHS 302, BMGT 230, ECON 321, GNST 201, MATH 111, MGMT 316, PSYC 200, SOCY 201, STAT 100, STAT 200, STAT 225, or STAT 230.

STAT 400 Applied Probability and Statistics (3)
Prerequisite: MATH 141. An intermediate study of statistical and probabilistic theory. The aim is to apply quantitative tools for decision-making and interpret statistical results in professional literature and the media. Topics include random variables, standard distributions, sampling methods, law of large numbers and the Central Limit Theorem, moments, estimations of parameters, and testing of hypotheses.

Theatre

THET 110 Introduction to the Theatre (3)
An introduction to the experience of the theatre. The objective is to gain a historical perspective and critically appraise dramatic content in performing arts. Emphasis is on engaging with theatrical performances as informed audience members and assessing one's role within the script-performance-audience dynamic. Assignments include attendance at two live professional performances. Students may receive credits for only one of the following courses: HUMN 110 or THET 110.

Women's Studies

WMST 200 Introduction to Women, Gender, and Sexuality Studies (3)
An interdisciplinary study of the status, roles, and experiences of women in contemporary society. The aim is to recognize the impact of gender in all academic disciplines; analyze political, economic, social, and cultural issues through a feminist lens; and apply knowledge of local and global issues to affect positive change in women's lives. Discussion covers women's experiences across geography and history. Topics include gender and other identities, systems of privilege and inequality, sexuality, and power relations.

Writing

WRTG 111 Academic Writing I (3)
(The first course in the two-course series WRTG 111–WRTG 112. Fulfills the general education requirement in communications.) An introduction to reading, writing, and critical thinking in an academic setting. The goal is to practice strategies for understanding academic texts and for developing one's ideas in relation to those texts. Focus is on writing thesis-driven essays that incorporate ideas and information from sources and demonstrate critical thinking, proper attribution, and effective language use. Students may receive credit for only one of the following courses: WRTG 100A, WRTG 111, or WRTG 111X.

WRTG 112 Academic Writing II (3)
(The second course in the two-course series WRTG 111–WRTG 112. Fulfills the general education requirement in communications.) Continued practice in reading, writing, and critical thinking with an emphasis on research and argumentation. The goal is to implement strategies for analyzing ideas and rhetorical techniques in academic texts and for conducting academic research. Focus is on writing an argumentative research paper that synthesizes information and ideas from multiple sources and demonstrates critical thinking, varied rhetorical strategies, proper source documentation, and effective language use. Students may receive credit for only one of the following courses: ENGL 101, ENGL 101X, WRTG 101, WRTG 101S, WRTG 101X, WRTG 112, or WRTG 112X.

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WRTG 291 Research Writing (3)
(Fulfills the general education requirement in communications.) Prerequisite: WRTG 112 or equivalent. Continued practice in critical reading, thinking, and writing skills. The objective is to analyze, evaluate, and synthesize diverse sources and viewpoints to develop persuasive and academic writing projects. Assignments include prewriting exercises, an annotated bibliography, a synthesis research essay, and a reflective paper. Students may receive credit for only one of the following courses: ENGL 291, ENGL 291H, or WRTG 291.

WRTG 293 Introduction to Professional Writing (3)
(Fulfills the general education requirement in communications.) Prerequisite: WRTG 112 or equivalent. An overview of professional writing. The goal is to analyze professional communication scenarios to develop effective workplace writing. Topics include the standards, conventions, and technologies of professional writing; communicating to a variety of audiences; and developing appropriate written responses to workplace challenges. Students may receive credit for only one of the following courses: COMM 293, ENGL 293, or WRTG 293.

WRTG 391 Advanced Research Writing (3)
(Fulfills the general education requirement in upper-level advanced writing.) Prerequisite: WRTG 112 or equivalent. Instruction and practice in academic research skills. The objective is to critically analyze scholarly and other credible sources and effectively integrate source material into a complex argument. Emphasis is placed on synthesizing multiple sources in producing a literature review on a focused topic. Students may receive credit for only one of the following courses: ENGL 391, ENGL 391X, WRTG 391, or WRTG 391X.

WRTG 393 Advanced Technical Writing (3)
(Fulfills the general education requirement in upper-level advanced writing.) Prerequisite: WRTG 112 or equivalent. Recommended: WRTG 291 or WRTG 293. A comprehensive, project-based study of applied technical writing. The aim is to design and develop appropriate and effective technical documents using strategies and technologies for a variety of audiences. Students may receive credit for only one of the following courses: COMM 393/393X, ENGL 393/393X, or WRTG 393/393X.

WRTG 394 Advanced Business Writing (3)
(Fulfills the general education requirement in upper-level advanced writing.) Prerequisite: WRTG 112 or equivalent. A comprehensive, project-based study of applied business writing. The aim is to develop documents appropriate to audience and purpose that are well argued and conform to standards to business writing. Topics include context, purpose, audience, style, organization, format, results, technologies, and strategies for persuasion in typical workplace messages. In addition to shorter assignments, a substantial formal report that incorporates research and support for conclusions or recommendations is required. Students may receive credit for only one of the following courses: COMM 394/394X, ENGL 394/394X, or WRTG 394/394X.

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COURSE INFORMATION
GRADUATE COURSE DESCRIPTIONS

Index to Course Descriptions

The courses summarized on the following pages are listed alphabetically by discipline or subject, as follows.

Accounting

ACCT 610 Financial Accounting (3)
Prerequisite: 15 credits of undergraduate accounting. A study of accounting theory in a strategic framework. An overview of relevant theory provides a foundation for further study. Focus is on developing skills in critical thinking and applying accounting concepts and principles. Topics include the preparation and interpretation of corporate financial statements in accordance with generally accepted accounting practices (GAAP); accounting standards and the standard setting process; the use of electronic technology in financial accounting; effective communication; professional ethics; and current issues, debates, and research in accounting.

ACCT 611 Managerial Accounting Data Analytics (3)
Prerequisite: 15 credits of undergraduate accounting. An examination of the control and decision-making methodologies used by management accountants in solving strategic problems for business. Methodologies covered include data analytics, break-even analysis, regression analysis, the balanced scorecard, activity-based costing/management, value chain analysis, total quality management, and performance evaluation/assessment. Business problems examined range from ethical issues to product costing.

ACCT 613 Federal Income Taxation (3)
Prerequisite: ACCT 610. A case study-based, problem-oriented examination of fundamental federal tax concepts. Tax issues and controversies are explored in-depth. Emphasis is on applying tax laws, as opposed to learning individual tax rules. Methods of case analysis and research that are typically involved in tax planning and litigation are covered. Important definitions, judicially created rules, and other tax conventions are explored in great detail through the study of each one's genesis and purpose. Topics include tax issues that concern gross income, identification of the proper taxpayer, deductions, timing, income and deduction characterization, and deferral and capital gains and losses.

ACCT 618 Accounting Information Systems (3)
(Formerly ACCT 614.) Prerequisite: ACCT 610. A study of the use of information systems in the accounting process, with an emphasis on computer systems and internal controls. Focus is on the analytical tools necessary to evaluate users' accounting information needs and to design, implement, and maintain an accounting information system to support business processes and cycles. Topics include the components of contemporary accounting information systems; security and internal controls, particularly within internet and e-commerce environments; traditional flow charts and data-flow diagrams; computer networks; theory and application of relational databases; and relational database management systems. Assignments include designing an accounting information system using a commercial database software package.

ACCT 620 CyberAccounting: Management and Compliance (3)
Prerequisites: ACCT 610 and ACCT 618. An applied study of the principles of information systems management and their integration within private-sector organizations served by accounting professionals. Emphasis is on developing strategic cyberaccounting initiatives to increase cybersecurity awareness inside organizations, with organizations in its supply chain, and with other stakeholders. topics include cybersecurity compliance requirements issued by federal and state regulatory agencies and voluntary cybersecurity standards, such as the G-7 Fundamentals of Cybersecurity for the Financial Sector; and the AICPAs Cybersecurity's Risk Management Framework.

ACCT 625 Government and Not-for-Profit Accounting (3)
Prerequisite: ACCT 610. A study of the financial accounting standards applicable to public-sector and not-for-profit organizations in the United States and their unique reporting requirements. Emphasis is on similarities and differences among accounting rules for different types of entities and the rationale for the accounting standards governing each type. Students may receive credit for only one of the following courses: ACCT 625 or ACCT 665.

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ACCT 628 Auditing (3)
(Formerly ACCT 612.) Prerequisite: ACCT 610. An in-depth examination of generally accepted auditing standards (GAAS), as well as standards for attestation and other services. Alternative audit models are evaluated for both their practical relevance and their theoretical justification as informed by current research and emerging information technology. The use of computer-assisted auditing techniques (CAAT) and other computer-related technology for obtaining evidence is evaluated in terms of its effectiveness and suitability in diverse audit environments. Methods of evaluating internal control are considered in light of the risks encountered in new ways of conducting business, such as e-commerce. Professional, ethical, and legal responsibilities, as shaped by the contemporary professional, legal, and regulatory environments, are examined as they relate to audit risk, risk assessment, and audit program planning. The use of audit reports and other services as tools to support management control and decision-making is considered.

ACCT 630 Fraud Examination (3)
Prerequisite: ACCT 610. A study of the nature and elements of fraud. Topics include fraud prevention, fraud detection, fraud investigation, use of controls to prevent fraud, and methods of fraud resolution. Emphasis is on the use of forensic accounting techniques to analyze what is behind the data generated by the accounting system, detect internal control weaknesses, and map out a fraud investigation program. Students may receive credit for only one of the following courses: ACCT 630 or ACCT 608.

ACCT 635 Accounting Ethics (3)
Prerequisite: ACCT 610. A study of ethics as a critical foundation for the accounting professional. Topics include the theories and bases of ethical reasoning, development of ethical standards, codes of professional conduct, professional responsibilities and judgment calls in accounting, and the evolution of ethics in the accounting profession. Students may receive credit for only one of the following courses: ACCT 635 or ACCT 608.

ACCT 640 International Accounting (3)
Prerequisite: ACCT 610. An exploration of international accounting and financial reporting. Focus is on evolving reporting requirements under International Financial Reporting Standards (IFRS). Accounting practices, as influenced by business operations, culture, and the inherent risk in international accounting environments, are compared. Students may receive credit for only one of the following courses: ACCT 640 or ACCT 665.

ACCT 645 Cyber Forensics in Accounting (3)
Prerequisites: ACCT 618, ACCT 628, and ACCT 630. An applied study of the tools, techniques, and technologies used in forensic accounting investigations, data analytics, and litigation. Focus is on disentangling obscure evidence discovered during fraud investigations using data analytics. Activities include conducting a forensic accounting investigation, performing analytical tests on financial data, preparing written forensic accounting reports for legal proceedings, and serving as an expert witness providing testimony supported by evidence and analytical tests.

ACCT 660 Information Technology Auditing (3)
(Formerly MSAS 670.) Prerequisites: ACCT 618, ACCT 628, ACCT 630, and INFA 610. A study of accounting and information systems that integrates subject matter from both disciplines. Advanced principles, techniques, and theories are applied through the analysis and presentation of case studies by student teams. Assignments include a research paper that comprehensively assesses an important current issue or emerging trend in the fields of accounting and information systems.

ACCT 670 Capstone in CyberAccounting: Risk Management (3)
Prerequisites: Completion of all program courses; may be taken concurrently with ACCT 635 or INFA 660. A capstone exploration of the principles of risk management as practiced by federal, state, and local entities. Discussion examines cyberaccounting risk management as promulgated by professional accounting organizations such as the AICPA. Risk management techniques are applied to cybersecurity issues confronting professional accounting service providers. Focus is on developing skills in assessing client risks, designing and developing cybersecurity controls to mitigate cyber attacks on client data, and conducting penetration tests to identify potential cyberaccounting vulnerabilities.

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Accounting and Financial Management

MSAF 670 Accounting and Financial Management Capstone (3)

Prerequisite: Completion of all program courses except FIN 645. A capstone study of accounting and financial management that integrates subject matter from both disciplines. Advanced principles, techniques, and theories are applied through the analysis and presentation of case studies by student teams. Assignments include a research paper that comprehensively assesses an important current issue or emerging trend in the fields of financial management and accounting.

Acquisition and Contract Management

ACM 610 Fundamentals of Acquisition Planning and Costs Price Analysis (6)

Prerequisite: DCL 600M. Serve as a contract manager and explore three major segments of the acquisition process—acquisition planning, acquisition management, and contract pricing—through pre-award, negotiation preparation, and post-award stages. Complete an acquisition plan using quantitative techniques to quantify and facilitate decision. Apply various cost analysis techniques and quantitative tools to evaluate a contractor's cost proposal and develop a negotiation range and objective.

ACM 620 Sourcing Decisions and Legal Considerations in Contracting (6)

Prerequisite: ACM 610. Serve as a contract manager and apply legal, administrative, and ethical requirements and principles to procurement and contract management. Explore a broad array of legal issues applicable to acquisition, as well as the Federal Acquisition Regulation and the American Bar Association model procurement code for state and local government.

ACM 630 Strategic Supplier Relations in Sustainable Supply Environments (6)

Prerequisite: ACM 620. Serve as an acquisitions manager and acquire techniques, methodologies, and strategies designed to enhance organizational procurement and acquisition efficiency and manage supply chain issues. Explore integrated supply chains, including the integration of information, supplies, and materials flows across multiple supply chain channels; the role of information systems and technology in supply chain management; e-commerce strategies; and the development and maintenance of supply chain partnerships and other relationships.

ACM 640 Performance Based Logistics and Asset Management (6)

Prerequisite: ACM 630. Serve as an acquisitions manager and explore logistical issues, techniques, methodologies, and strategies designed to enhance organizational efficiency with the acquisition life cycle. Apply specific concepts such as the total cost approach to logistics, planning and implementation, systems relationships and integration, and demand forecasting to solve logistical and asset management issues that arise within the acquisition life cycle.

ACM 670 Acquisition Continuous Improvement and Sustainment Management (6)

Prerequisite: ACM 640. Assume the role of an executive manager and create an acquisitions and contract management business continuity and disaster management plan. Make executive-level decisions to ensure adherence to all rules and regulations surrounding these areas. Develop long-term strategic plans for maintaining operations, reducing costs, evaluating supplier portfolios, and developing sustainable supply chains within the acquisition life cycle. Practice ethical decision-making and negotiation techniques in analyzing cases containing detailed cost and pricing data.

Bioinformatics

BIFS 613 Statistical Processes for Biotechnology (3)

Prerequisite: STAT 200. A study of statistical tools such as Bayesian statistics, Markov processes, and information theoretic indices and how they can be used to analyze sequence homology, the presence of motifs in sequences, gene expression, and gene regulation. Topics include information content, mutual information, long-range correlation, repeats, Fourier analysis, and linguistic methods.

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BIFS 614 Data Structures and Algorithms (3)
An introduction to the definitions, implementations, and applications of the most basic data structures used in bioinformatics. Basic formalism and concepts used in algorithm design and the analysis of algorithms are also introduced. The relative efficiency of algorithms is estimated by application of these concepts to biological data analysis. Algorithms and data structures discussed include those for database searches, motif finding, sequence alignment, gene prediction, and microarray analysis.

BIFS 617 Advanced Bioinformatics (3)
An overview of basic programming concepts for performing bioinformatics analyses of biological data. Topics include the software development life cycle, data types and data representation, arithmetic and logical operations, conditional execution, iteration, functions, and arrays. An overview of basic data structures is also provided. Emphasis is on bioinformatics pipeline development, automation of data analysis, and building of bioinformatics applications using a high-level programming language.

BIFS 618 Java for Biotechnology Applications (3)
Prerequisite: BIFS 617. A study of basic concepts in Java and object-oriented programming in bioinformatics application development. Emphasis is on web-based, graphical, and database-driven application design. Review covers the function and design of some Java-based bioinformatics tools. Some commonly used libraries in the BioJava project are introduced, and developments of reusable modular application objects are examined. Basic problem-solving skills in the field of biotechnology using Java programming are developed through practical projects.

BIFS 619 Systems Level Approaches in Bioinformatics (3)
Prerequisite: BIFS 617. A study of the bioinformatics techniques used in omics (genomics, proteomics, etc.) experiments. Focus is on analyzing experiment protocols, comparing the tools used for these experiments, and interpreting the data resulting from the experiments.

Biotechnology

BIOT 601 Introduction to Molecular Biology (3)
A thorough grounding in the fundamentals of biology, including a broad review of the life sciences with emphasis on molecular biology. Topics include the basic concepts and processes of cell biology, molecular biology, and immunology. The components of a cell, the processes occurring in a single cell, and the functioning of a multicellular organism are explained. Discussion also covers the use of model organisms to understand basic and applied biology.

BIOT 630 Introduction to Bioinformatics (3)
An introduction to bioinformatics. Emphasis is on the interpretation of data. Topics include new, sophisticated DNA, RNA, and protein sequence analyses and pattern recognition and DNA computing, as well as more traditional mathematical modeling (using Bayesian probability and basic algorithms, machine learning and neural networks, and Markov models and dynamic programming). Discussion also covers the analysis of tridimensional structures, phylogenic relationships, and genomic and proteomic data.

BIOT 640 Societal Issues in Biotechnology (3)
An examination of current societal issues in biotechnology from several perspectives. Topics include the commercialization of biotechnology; biohazards; managerial views of legal issues and bioethics; the need for public scrutiny; environmental and cultural issues; and the role of governmental regulatory agencies in researching, developing, and commercializing biotechnology. An overview of the early history and modern developments of biotechnology is provided.

BIOT 643 Techniques of Biotechnology (3)
A comprehensive review of current techniques in biotechnology research and applications. The development and use of some of the techniques are placed in historical context. Discussion covers techniques used in genomics, transcriptomics, and proteomics and the applications of these techniques. Current plant and animal transformation methods are explained. High throughput technologies, including sequencing, real-time RT-PCR, SAGE, and microarrays, are also explored. Topics also include therapeutic applications of biotechnology, such as gene therapy, stem cell technology, and RNA interference. Emerging technologies in this field are introduced.

BIOT 645 Bioprocessing and the Business of Biotechnology (3)
A detailed exploration of the business of biotechnology, its structure and operation, and the science on which this relatively new global industry sector was founded. Discussion covers a wide range of biotechnology applications, from biopharmaceuticals to biofuels, and the technical advances behind them. Focus is on methods and economics of bioprocessing and unique aspects of the funding, alliances, and global models used in the business of biotechnology.

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BIOT 670I Biotechnology Capstone: Bioinformatics (3)
(Open only to students in the bioinformatics specialization.) Prerequisite: Completion of 30 credits of program coursework, including all core courses. An in-depth exploration of the bioinformatics field. The objective is to apply knowledge of the field while demonstrating research, analytical, oral and written communication, teamwork, and leadership skills during a semester-long project. Projects are garnered from real world problems from industry, academic institutions, and government organizations. Students may receive credit for only one of the following courses: BIOT 670, BIOT 670I, BIOT 670M, BIOT 670R, or BIOT 670S.

BIOT 670M Biotechnology Capstone: Biotechnology Management (3)
(Open only to students in the biotechnology management specialization.) Prerequisite: Completion of 30 credits of program coursework, including all core courses. An in-depth exploration of the biotechnology management field. The objective is to apply knowledge of the field while demonstrating research, analytical, oral and written communication, teamwork, and leadership skills during a semester-long project. Projects are garnered from real world problems from industry, academic institutions, and government organizations. Students may receive credit for only one of the following courses: BIOT 670, BIOT 670I, BIOT 670M, BIOT 670R, or BIOT 670S.

BIOT 670R Biotechnology Capstone: Regulatory Affairs (3)
(Open only to students in the biotechnology regulatory affairs specialization.) Prerequisite: Completion of 30 credits of program coursework, including all core courses. An in-depth exploration of the biotechnology regulatory affairs field. The objective is to apply knowledge of the field while demonstrating research, analytical, oral and written communication, teamwork, and leadership skills during a semester-long project. Projects are garnered from real world problems from industry, academic institutions, and government organizations. Students may receive credit for only one of the following courses: BIOT 670, BIOT 670I, BIOT 670M, BIOT 670R, or BIOT 670S.

BIOT 670S Biotechnology Capstone: Biosecurity and Biodefense (3)
(Open only to students in the biosecurity and biodefense specialization.) Prerequisite: Completion of 30 credits of program coursework, including all core courses. An in-depth exploration of the biosecurity and biodefense field. The objective is to apply knowledge of the field while demonstrating research, analytical, oral and written communication, teamwork, and leadership skills during a semester-long project. Projects are garnered from real world problems from industry, academic institutions, and government organizations. Students may receive credit for only one of the following courses: BIOT 670, BIOT 670I, BIOT 670M, BIOT 670R, or BIOT 670S.

Biosecurity and Biodefense

BSBD 640 Agents of Bioterrorism (3)
An examination of the probable weapons of biowarfare, including biological, chemical, and nuclear weapons, from several perspectives. Topics include their mechanism of action, biological impact, detection and recognition, epidemiology, and treatment. Their potential dangers and effectiveness are evaluated, and strategies for defense against attacks by such weapons are investigated. Discussion covers the bioethical challenges of anti-bioterror research.

BSBD 641 Biosecurity and Bioterrorism (3)
A review of bioterrorism, biosecurity, and government biodefense strategy, including the history and science of biological agents in agriculture and society. Discussion covers surveillance; public health preparedness; response; and recovery at community, state, and federal government levels. Various aspects of the law, including the Posse Comitatus Act and federal and state quarantine powers, are introduced. The mental health consequences of bioterrorism are also discussed. A case study of a hypothetical biological attack is analyzed in detail.

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BSBD 642 Advanced Biosecurity and Bioterrorism (3)
Prerequisite: BSBD 641. A thorough examination of special and advanced topics in bioterrorism and biosecurity issues. Topics include the hidden biological warfare programs of the 20th century; advances in biotechnology and molecular microbiology and the dilemma of dual use research; domestic and foreign terrorist groups, including rogue states; state-of-the-art microbial forensics; ethics and civil rights; and current trends in policy development, consequence management, and public health responses to new threats to homeland security. Discussion also addresses special topics of the students' choice. Future challenges in biosecurity are discussed as part of a comprehensive bioterrorism exercise and the analysis of case studies of hypothetical threats.

BSBD 643 Strategies for Interagency Cooperation, Verification, and Global Countermeasures in Biodefense (6)
An in-depth study of the verification procedures used in global countermeasures and strategies. Global biosecurity and oversight are examined using real-world examples. Discussion covers the epidemiology of emerging infectious diseases as they relate to defense against threats from nonconventional sources. Topics also include the evolution and current status of the Biological Weapons Convention; the integration of responses from local, state, and multiple federal agencies; and other challenges facing public health departments, including the potential economic, political, and social impacts of bioterrorism.

Biotechnology Management

BTMN 632 Commercializing Biotechnology in Early-Stage Ventures (3)
(Formerly BIOT 641.) An overview of the methods for planning and organizing biotechnology ventures. The elements of a business plan are considered, as are methods for assessing various needs, such as capital, personnel, technology, and marketing. Emphasis is on approaches to marketing technology and developing joint ventures. The advantages and disadvantages of forming international ventures are weighed. Discussion also covers the importance of maintaining relations with external constituents and the need for managing public awareness.

BTMN 634 Selection and Evaluation of Biotechnology Projects (3)
A study of the applications of methodologies for technology forecasting, technology assessment, project management, and data auditing to the selection and evaluation of biotechnology projects. The underlying rationale, principles, procedures, and cost effectiveness of data auditing are examined. A systems approach to performance evaluation is presented.

BTMN 636 Biotechnology and the Regulatory Environment (3)
A comprehensive review of the role of regulation in biotechnology products and services development and commercialization. Emphasis is on the roles of the federal government, state government agencies, international bodies, and professional groups, especially the regulatory roles of the U.S. Environmental Protection Agency, Department of Agriculture, and Food and Drug Administration. Discussion covers human subject protection, good laboratory practices, and good manufacturing practices.

Biotechnology Regulatory Affairs

BTRA 640 Preclinical and Clinical Research Design (3)
An examination of preclinical and clinical research designs. Emphasis is on identifying and addressing challenges associated with elements of good laboratory and clinical practice and qualifying and managing a laboratory for a clinical trial. Discussion covers best practices for planning research and collecting, analyzing, and reporting data from drug/device development studies.

BTRA 641 Product Life Cycle Approval, Production, and Marketing for Devices and Drugs (3)
An in-depth study of the product life cycle for medical devices and implants and pharmaceuticals. Focus is on the various stages within the life cycle from conceptualization of a product pipeline in research and development through postmarket surveillance and production. Topics include regulatory submission, approval, production, and the postmarket environment for both drugs and devices. Challenges surrounding the approval and naming of follow-on biologics are addressed. Discussion also covers combination medicines, the stages of a drug pipeline and risk assessment at each stage, and the decreasing productivity of the drug pipeline. The role of a contract research organization in testing and approval is explained, and the nature of the support services they provide to the biotechnology and devices industry is explored.

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BTRA 642 Global Biotechnology Business Issues (3)
An examination of preclinical and clinical research designs. Emphasis is on identifying and addressing challenges associated with elements of good laboratory and clinical practice and qualifying and managing a laboratory for a clinical trial. Discussion covers best practices for planning research and collecting, analyzing, and reporting data from drug/device development studies.

BTRA 643 Practical Applications of Biotech Regulatory Affairs (6)
A capstone study of regulatory affairs related to the biotechnology industry that integrates knowledge and skills gained from previous study. Emphasis is on completion of a group project simulating the development of a drug or device through the product life cycle. The project is designed to demonstrate knowledge of international biotech business, ethics, and production issues and skills in making decisions regarding a wide range of regulatory issues and to provide a transition for applying these skills to applications in the biotechnology environment.

Business Administration—Doctoral Level

DBA 600 Foundations of Doctoral Studies (3)
(Required for full admission to the Doctor of Business Administration program.) Prerequisite: Department approval. Prepare for doctoral studies by developing foundational skills in evidence-based research and analytical writing. Engage in critical thinking, in-depth analysis, and research synthesis. Evaluate published scholarship. Assess personal readiness for doctoral study.

DBA 800 Interpreting and Translating Management Theory in Practice (6)
Prerequisite: DBA 600 and full admission to the DBA program. Evaluate management theories to explain organizational operations in relation to forces that act at the level of the individual, group, and society. Connect these explanations within practitioner systems and analyze and associate management theories with practical management strategies.

DBA 810 Research as a Tool for Management Decision-Making (6)
Develop the ability to review, evaluate, and perform management research for decision-making and critically interpret both qualitative and quantitative research methodologies. Apply tools of business research to advise an organization in decision-making. Refine skills to effectively communicate management research findings to practitioners.

DBA 820 Evidence-Based Research Methods (6)
Acquire and appraise evidence using sophisticated bibliographic search strategies to inform management decision-making. Defend qualitative data analysis research choices. Apply evidence-based solutions to an organization and assess their effectiveness. Develop a plan to use assessments to iteratively improve solutions.

DBA 830 Data Analytics in Practice (6)
Review and refine quantitative skills essential for analytical leadership. Explore methods of data mining, forecasting, and predictive models to inform and enable evidence-based decision-making and investigate the data environment in an organization. Assess an enterprise's current capabilities to develop recommendations for a stronger business intelligence climate.

DBA 840 Designing Evidence-Based Management Solutions (6)
Prepare advice for an organization seeking management solutions to a specific problem. Analyze and evaluate organizational context, select appropriate management tools, and develop solutions. Employ project management methods and collaborate effectively with the team face-to-face and online. Produce written and oral presentations of results and recommendations to organizational stakeholders.

DBA 850 Producing Original Management Ideas That Influence: Publishing and Conferencing (6)
Identify a management problem, create an evidence-based research approach to solve the problem, and execute it. Present results at a scholarly or practice conference and submit written results in the form of a professional-quality article to a scholarly or practice journal.

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DBA 860 Producing Actionable Knowledge: Dissertation Problem Statement and Literature Review (4)
Construct a framework for investigating a relevant management problem. Identify the scope of the problem, construct a suitable research question, and examine the scholarly literature that provides a credible and insightful explanation of the primary concepts and relationships surrounding the problem. Produce the dissertation problem statement and literature review chapter.

DBA 870 Producing Actionable Knowledge: Dissertation Methodology and Analysis (4)
Design an evidence-based research approach to investigate the dissertation management problem. Collect relevant data to answer the research question and analyze and interpret the data to consider how they inform the research question. Produce the dissertation methods and results chapters.

DBA 880 Producing Actionable Knowledge: Management Implications from Dissertation Research (4)
Complete the dissertation process. Formulate and explain the implications and value of the research findings for management practice and make specific recommendations to improve management practice. Present and defend the dissertation research successfully and publish it.

DBA 899 Continuing Doctoral Matriculation (1)
Continue dissertation work.

Business Administration—Master's Degree Level

MBA 610 Leading Organizations and People (6)
Assess and develop your leadership skills by creating a personal leadership and professional development plan that you will refine during the program. Develop a strategic understanding of your organization by analyzing its mission, vision, goals, and values. Evaluate your organization's culture, climate, and approach to decision-making and assess leadership effectiveness, governance structure, and processes. Explore how high-performing work teams can be a source of competitive advantage.

MBA 620 Financial Decision-Making (6)
Prerequisite: MBA 610. Apply concepts behind financial statements, pricing, cost analysis, and capital budgeting in decisions. Propose solutions in real-world scenarios by using published financial reports and data from well-known national and international brands. Apply concepts from managerial economics to make pricing decisions for a business. Review business performance by analyzing the cash flow statement, income statement, and balance sheet. Make cost allocation, financing, and investment decisions by applying knowledge of corporate valuation. Determine the cost of capital and make capital budgeting decisions.

MBA 630 Leading in the Multicultural Global Environment (6)
Prerequisite: MBA 620. Enhance cultural competence and evaluate opportunities and risks for operations in a global market. Expand the ability to apply ethical decision-making models. Assess issues of culture, business ethics, employment law, contracts, and criminal law in the context of a global business. Analyze political, legal, economic, and cultural forces that impact multinational businesses. Recommend the legal form and organizational structure of a business.

MBA 640 Innovation Through Marketing and Technology (6)
Prerequisite: MBA 630. Apply principles of market research and branding to innovative offering. Use web analytics to make decisions in digital marketing. Organize tasks in a marketing plan, assess market risk and opportunity, and collect data required to implement the marketing plan. Develop financial projections and suitable metrics for tracking the marketing plan.

MBA 670 Strategic Decision-Making (6)
Prerequisite: MBA 640. Assume the role of a strategy officer who reports to the CEO. Develop an understanding of strategic leadership. Identify activities in the value chain of an organization and propose a plan to relocate one or more activities to another geographical region. Prepare a project management plan for the opening of a facility in a new country. Develop a business plan that includes an entry strategy, marketing plan, competitive strategy, and financial statements.

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Cloud Computing Systems

Courses in cloud computing systems (designated CCS) have higher computing requirements than the minimum technical requirements stated on p. 26. They require an Intel Core i7 processor or higher, with speeds of 2GHz or faster, at least 6GB of available disk space, and at least 16GB RAM (32GB recommended). Display devices should have a resolution of 1920 X 1080 or better (PCs) or 1440 X 900 retina display (Mac).

CCS 610 Cloud Services and Technologies (6)
(Formerly CCA 610.) Prerequisite: DCL 600T. Master the concepts underlying cloud computing, cloud services, and cloud applications. Investigate and analyze the technologies and services of the cloud services industry and distinguish between different cloud development environments. Evaluate the risk and the legal and regulatory compliance issues associated with cloud adoption while identifying the benefits of cloud infrastructure for the organization. Students may receive credit for only one of the following courses: CCA 610 or CCS 610.

CCS 625 Network Engineering (6)
(Formerly CCA 625.) Prerequisite: CCS 610. Explore network engineering concepts, functions, applications, configurations, and hardware. Review network protocols and services that serve as the foundation to enable IT infrastructure and services. Evaluate network specifications and requirements using industry best practices and standards in designing network infrastructures to meet business needs. Students may receive credit for only one of the following courses: CCA 620, CCA 625, or CCS 625.

CCS 630 Cloud Infrastructure Planning, Design, and Configurations (6)
(Formerly CCA 630.) Prerequisite: CCS 625. Apply the underlying concepts, standards, and technologies of cloud computing (including virtualization, cloud data management, cloud programming models, cloud analytics applications, interoperability, and portability) to the planning, design, and configuration of a cloud infrastructure. Prepare policies and documents to plan and design a cloud infrastructure successfully, including a policy document, architecture plan, cloud deployment run book, and user training plan. Perform baseline configurations on the cloud environment to satisfy business requirements. Students may receive credit for only one of the following courses: CCA 630 or CCS 630.

CCS 640 Cloud Computing Implementations and Migrations (6)
(Formerly CCA 640.) Implement and configure a cloud environment based on specifications. Analyze current workloads, migrate existing IT systems to the cloud, and configure new systems or services to enhance business operations. Manage the implementation of the cloud to ensure successful deployment. Configure features for elasticity, availability, and scalability using industry-standard techniques, best practices, and tools. Students may receive credit for only one of the following courses: CCA 640 or CCS 640.

CCS 670 Cloud Computing Capstone (6)
(Formerly CCA 670.) Prerequisite: CCS 640. Assume the role of a cloud computing architect. Implement advanced features of the cloud platform, including auditing and logging, cloud orchestration, service catalog, and cloud metering and billing. Investigate, plan, and implement these features on a specific cloud platform. Prepare a cloud portfolio report based on cloud migrations and implementations completed in the program. Students may receive credit for only one of the following courses: CCA 670 or CCS 670.

Community College Policy and Management

CCPA 800A Foundations of Management (3)
A comprehensive foundation in the history of management and the structure and function of organizations. The objective is to develop a new way of understanding and managing operational and strategic issues in public and private organizations in the face of accelerating social, economic, and technological changes. Topics include organizational theory, strategic thinking and strategic management, theories of decision-making, leadership, organizational culture, and management in a post-industrial society. Emphasis is on using problem-solving, application, and evaluation skills to analyze the theories and practices of current and emerging organizational challenges and opportunities, critically assess the ideas of others, and defend one's own ideas through the application of scholarship. Students may receive credit for only one of the following courses: CCPA 800A or DMCC 800.

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CCPA 800B Foundations of Management (3)
A comprehensive foundation in the history of management and the structure and function of organizations. The objective is to develop a new way of understanding and managing operational and strategic issues in public and private organizations in the face of accelerating social, economic, and technological changes. Topics include organizational theory, strategic thinking and strategic management, theories of decision-making, leadership, organizational culture, and management in a post-industrial society. Emphasis is on using problem-solving, application, and evaluation skills to analyze the theories and practices of current and emerging organizational challenges and opportunities, critically assess the ideas of others, and defend one's own ideas through the application of scholarship. Students may receive credit for only one of the following courses: CCPA 800B or DMCC 800.

CCPA 810A Leadership and Change (3)
A study of leadership not just for survival but for sustainability in environments where external pressure for change is the dominant feature. The objective is to examine change and leadership issues in varied industries and one's own organization by identifying and analyzing theories and concepts, assessing the applicability of classic works and current perspectives, testing ideas using case studies, and developing various scenarios and strategies. Topics include the knowledge and abilities, such as improvisation and reinvention, needed for managing change; the roles and skills needed at all levels for leading in new organizational models involving virtual teams; and the impact of change (particularly frequent change) on individuals and organizations. Emphasis is on recognizing the link between leadership, change, and organizational resilience and applying the lessons. Students may receive credit for only one of the following courses: CCPA 810A and DMCC 810.

CCPA 810B Leadership and Change (3)
A study of leadership not just for survival but for sustainability in environments where external pressure for change is the dominant feature. The objective is to examine change and leadership issues in varied industries and one's own organization by identifying and analyzing theories and concepts, assessing the applicability of classic works and current perspectives, testing ideas using case studies, and developing various scenarios and strategies. Topics include the knowledge and abilities, such as improvisation and reinvention, needed for managing change; the roles and skills needed at all levels for leading in new organizational models involving virtual teams; and the impact of change (particularly frequent change) on individuals and organizations. Emphasis is on recognizing the link between leadership, change, and organizational resilience and applying the lessons. Students may receive credit for only one of the following courses: CCPA 810B and DMCC 810.

CCPA 821A Higher Education Policy (3)
An examination of national, state, and local education policy formation and an analysis of the educational policy process, including antecedents, the framing of problems and solutions within policies, policy implementation, and policy consequences in the context of the community college environment. Topics may include the education ecosystem, external stakeholder relationships, educational outcomes, labor market-driven innovation and change, workforce education, organizational development, student-centric culture, and technology leadership. The goal is to develop key leadership competencies, including strategic planning, decision-making, resource management, communication, collaboration, and advocacy as they support effective policy development. Students may receive credit for only one of the following courses: CCPA 821A and DMCC 821.

CCPA 821B Higher Education Policy (3)
An examination of national, state, and local education policy formation and an analysis of the educational policy process, including antecedents, the framing of problems and solutions within policies, policy implementation, and policy consequences in the context of the community college environment. Topics may include the education ecosystem, external stakeholder relationships, educational outcomes, labor market-driven innovation and change, workforce education, organizational development, student-centric culture, and technology leadership. The goal is to develop key leadership competencies, including strategic planning, decision-making, resource management, communication, collaboration, and advocacy as they support effective policy development. Students may receive credit for only one of the following courses: CCPA 821B and DMCC 821.

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CCPA 830A Research Methods (3)
An applied study of how to design, interpret, and critique both quantitative and qualitative research. The application of methods grounded in the philosophy of science provides a solid foundation that supports the identification and analysis of researchable questions and includes one qualitative and one quantitative methodology. Assignments include short analyses representative of the different methodological traditions. Students may receive credit for only one of the following courses: CCPA 830A and DMCC 830.

CCPA 830B Research Methods (3)
Prerequisite: CCPA 830A. An applied study of how to design, interpret, and critique both quantitative and qualitative research. The application of methods grounded in the philosophy of science provides a solid foundation that supports the identification and analysis of researchable questions and includes one qualitative and one quantitative methodology. Assignments include short analyses representative of the different methodological traditions. Students may receive credit for only one of the following courses: CCPA 830B and DMCC 830.

CCPA 841A Institutional Assessment in the Community College Environment (3)
An exploration of the criteria, indicators, and processes by which institutions define and evaluate their effectiveness and use data to improve the quality of programs and services. Emphasis is on the assessment of student learning outcomes, measurement of student success (e.g., progress through developmental courses, persistence, transfer, and graduation), program evaluations, and the role of regional accreditation. Topics include ways in which community college leaders can engage in a broad array of organizational and administrative activities to build cultures of evidence. Students may receive credit for only one of the following courses: CCPA 841A and DMCC 841.

CCPA 841B Institutional Assessment in the Community College Environment (3)
An exploration of the criteria, indicators, and processes by which institutions define and evaluate their effectiveness and use data to improve the quality of programs and services. Emphasis is on the assessment of student learning outcomes, measurement of student success (e.g., progress through developmental courses, persistence, transfer, and graduation), program evaluations, and the role of regional accreditation. Topics include ways in which community college leaders can engage in a broad array of organizational and administrative activities to build cultures of evidence. Students may receive credit for only one of the following courses: CCPA 841B and DMCC 841.

CCPA 851A Community College Advocacy, Resource Development, and Strategic Allocation (3)
An exploration of the process by which community college leaders advocate for their students and organization in the face of the challenges and opportunities in higher education today and the skills needed for successful advocacy. Topics include the use of argumentation, data, and presentation skills to develop and effectively present cases for support at local, state, and federal levels. Discussion covers the world of community college fundraising and the potential of entrepreneurial ventures to help close the funding gap. Both sides of the finance equation, including resource development and strategic allocation, are explored in depth. The goal is to develop an understanding of community college revenue sources (state funds, local funds, tuition, and other), define the role of entrepreneurship, philanthropy, and bonds in expanding college revenue, and apply financial analytics to define a healthy institution. Focus is on developing the skills to advocate and find support for equity and student success, building a capacity to allocate college resources to improve equitable student outcomes, and understanding the budget as a moral document for the college. Students may receive credit for only one of the following courses: CCPA 851A and DMCC 851.

CCPA 851B Community College Advocacy, Resource Development, and Strategic Allocation (3)
An exploration of the process by which community college leaders advocate for their students and organization in the face of the challenges and opportunities in higher education today and the skills needed for successful advocacy. Topics include the use of argumentation, data, and presentation skills to develop and effectively present cases for support at local, state, and federal levels. Discussion covers the world of community college fundraising and the potential of entrepreneurial ventures to help close the funding gap. Both sides of the finance equation, including resource development and strategic allocation, are explored in depth. The goal is to develop an understanding of community college revenue sources (state funds, local funds, tuition, and other), define the role of entrepreneurship, philanthropy, and bonds in expanding college revenue, and apply financial analytics to define a healthy institution. Focus is on developing the skills to advocate and find support for equity and student success, building a capacity to allocate college resources to improve equitable student outcomes, and understanding the budget as a moral document for the college. Students may receive credit for only one of the following courses: CCPA 851B and DMCC 851.

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CCPA 861A Special Topics in Policy and Administration (3)
A survey of significant topics in community college policy and administration. The aim is to explore the history and modern mission of community colleges as engines of equity and economic mobility, the structure of community college systems across the United States, and key differences in governance, funding, and centralization of authority. Topics include the development of the student success movement, state and national issues, and the critical role of governance and governing boards in the effective management. Emphasis is on developing an understanding of principles of good governance (e.g., policy governance, the board/CEO relationship, board stewardship and education, rogue board members, and other governance issues) and the ability to lead with board support.

CCPA 861B Special Topics in Policy and Administration (3)
A survey of significant topics in community college policy and administration. The aim is to explore the history and modern mission of community colleges as engines of equity and economic mobility, the structure of community college systems across the United States, and key differences in governance, funding, and centralization of authority. Topics include the development of the student success movement, state and national issues, and the critical role of governance and governing boards in the effective management. Emphasis is on developing an understanding of principles of good governance (e.g., policy governance, the board/CEO relationship, board stewardship and education, rogue board members, and other governance issues) and the ability to lead with board support.

CCPA 880 Independent Doctoral Study (3)
Prerequisite: Permission of the department. Supervised study of policy and administration topics in doctoral studies. May be repeated to a maximum of 12 credits.

CCPA 890 Dissertation Part I (3)
The identification and refinement of the dissertation topic. The objective is to research questions relevant to the chosen topic, conduct a review of the literature on that topic, and develop a conceptual model and associated hypotheses. Students may receive credit for only one of the following courses: CCPA 890 and DMCC 890

CCPA 891 Dissertation Part II (3)
The identification of an appropriate dissertation methodology. The goal is to select the dissertation research methodology that will be utilized to evaluate the conceptual model and hypotheses. The dissertation proposal is defended. Students may receive credit for only one of the following courses: CCPA 891 and DMCC 891

CCPA 892 Dissertation Part III (3)
Development of dissertation content. The aim is to identify appropriate sources of data, collect and analyze the data in the context of the chosen methodology, and draw conclusions regarding the conceptual model and associated hypotheses. Students may receive credit for only one of the following courses: CCPA 892 and DMCC 892

CCPA 893 Dissertation Part IV (3)
Finalization of dissertation content. The objective is to revise and complete the dissertation. Steps covered include developing all necessary supplemental materials, proofing and formatting the dissertation, and gaining faculty approval for final submission and final defense.

CCPA 899 Continuing Doctoral Matriculation (1)
Continued dissertation work.

Criminal Justice Management

CJMS 600 Critical Analysis of the Criminal Justice System (3)
An analysis of the U.S. criminal justice system. Topics include the role of criminal justice agencies and personnel in the prevention and response to crime and interagency cooperation and coalition building from a manager's perspective.

CJMS 610 Perspectives in Law Enforcement Management (3)
A study of law-enforcement philosophies and techniques to reduce crime commonly applied at the organizational level. Topics include the politics of policing, police/community relations, police research, professionalization of personnel, and emerging problems in policing from a domestic and international perspective.

CJMS 620 Issues in Correctional Administration (3)
Prerequisites: CJMS 600 and CJMS 610. An in-depth study of current challenges for managers in correctional environments. Topics include the privatization of corrections, intelligence sharing, re-entry and community corrections, security threat groups, assessment techniques and empirical evaluations of treatment methods, special populations, growth rates, the political environment, and interagency and community cooperation.

CJMS 630 Seminar in Security Management (3)
Prerequisites: CJMS 600 and CJMS 610. A study of the management of security operations within a private setting. Discussion covers vulnerability assessment; emergency planning; interagency cooperation; threat assessment; use of technology; and information gathering, sharing, and storing. Topics also include personnel management, budgeting, reporting requirements, and current trends.

CJMS 640 Criminal Justice Intelligence Systems and Approaches (3)
Prerequisites: CJMS 600 and CJMS 610. An in-depth examination of the principles that guide the gathering and sharing of intelligence in the United States. Emphasis is on the interoperability between crime-fighting agencies within the criminal justice system. Topics include analytic methodologies, interview and interrogation techniques, open-source and proprietary data sources, criminal organization analysis, criminal conspiracy, enterprise theory, trial testimony, and witness protection.

CJMS 650 Legal Aspects within the Criminal Justice System (3)
Prerequisites: CJMS 600 and CJMS 610. An introduction to the impact of constitutional and criminal law on managerial responsibilities within the criminal justice system. Topics include pivotal historic and current legal cases and their application to methods of prevention, as well as reaction to crime in the United States.

CJMS 660 Issues in Criminal Justice Leadership (3)
Prerequisite: 30 credits of program coursework, including all core and specialization courses except MGMT 670. A discussion of case studies involving successful leaders in the criminal justice system. Analysis covers the various characteristics and leadership styles that have proven most effective in the profession. Various theories, models, historical examples, and practical applications are reviewed. Senior criminal justice leaders discuss issues via videoconferencing. Topics include ethics and virtue in criminal justice; navigating the political environment (e.g., being politically savvy without being political); staff development; and labor relations, media relations, and working effectively with various advocacy groups.

Cyber Communication and Leadership

CBR 600 Communicating, Problem-Solving, and Leading in Cybersecurity (6)
Make yourself more valuable to an employer by gaining and improving skills in communication and problem-solving. Explore the field of cybersecurity by developing connections to your career aspirations, creating a professional social network presence, and using critical thinking to inform decisions. Improve and refine your skills in communication, critical thinking, quantitative reasoning, and team leadership. Hone your professional writing and oral communication skills to produce effective presentations and become proficient with current technology. Students may receive credit for only one of the following courses: CBR 600, DCL 600M, DCL 600T, or PRO 600.

Cyber Operations

Courses in cyber operations (designated COP) have higher computing requirements than the minimum technical requirements stated on p. 26. They require an Intel Core i7 processor or higher, with speeds of 2GHz or faster, at least 6GB of available disk space, and at least 16GB RAM (32GB recommended). Display devices should have a resolution of 1920 X 1080 or better (PCs) or 1440 X 900 retina display (Mac).

COP 610 Foundations of Cyber Operations (6)
Prerequisite: DCL 600T. Gain the foundational information security knowledge and skills needed to work in cyber operations, including security first principles, access control, and layered defense. Apply risk analysis of information and information systems, integrate cryptographic techniques for protecting information, and crack codes through the use of cryptanalysis.

COP 620 Cybersecurity Defense (6)
Prerequisite: COP 610. Master the application of defense-in-depth architecture in system design and counteract threats and vulnerabilities in networks, devices, operating systems, data management systems, and applications. Identify cloud and virtualization security issues and respond to them using their countermeasures. Apply intrusion, cyber defense, and attack detection techniques in a laboratory.

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COP 630 Cyber Law and Digital Forensics (6)
Prerequisite: COP 620. Explore U.S. and international laws governing cyber operations and digital evidence. Design a cyber offense campaign that complies with U.S laws and apply digital forensics tools and techniques for network, media, and RAM of common operating systems and devices in a virtual environment.

COP 640 Secure Software (6)
Prerequisite: COP 630. Master secure design and operation principles by examining classes of well-known defects that lead to security vulnerabilities and utilize both static and dynamic analysis tools to find those vulnerabilities. Apply secure design principles in a virtual environment.

COP 670 Cyber Operations Capstone (6)
Prerequisite: COP 640. Assume the role of a cyber warrior. Apply reverse engineering techniques to analyze malware and system software and implement cyber offense techniques in a laboratory to penetrate and infect a system that lacks cyber defenses.

Cybersecurity

CYB 670 Cybersecurity Capstone (6)
Prerequisite: CST 640, DFC 640, or CMP 640. Assume the role of a cybersecurity professional by examining current issues in cybersecurity management, including enterprise risk management, vulnerability assessment, threat analysis, crisis management, security architecture, security models, security policy development and implementation, security compliance, information privacy, identity management, incident response, disaster recovery, and business continuity planning, particularly in the health, banking, and finance sectors.

Cybersecurity Management and Policy

CMP 610 Foundations in Cybersecurity Management (6)
Prerequisite: CBR 600. Apply the principles of cybersecurity management. Analyze and draft cybersecurity policies; create practical approaches to risk analysis; practice techniques to prevent intrusions and attacks that threaten organizational data; and participate in exercises in cryptography, ethical hacking, and crisis management.

CMP 620 Cybersecurity Governance (6)
Prerequisite: CMP 610. Examine important human aspects of cybersecurity, such as the motivations for cybercrimes, including hacker psychology and hacker culture. Explore the legal and regulatory environments related to local, state, national, and international cybersecurity concerns. Formulate policy and conduct analysis for the prevention of intrusions, attacks, and threats to organizational data.

CMP 630 Risk Management and Organizational Resilience (6)
Prerequisite: CMP 620. Apply critical thinking and analysis to determine potential risks to the enterprise. Investigate the application of systems, tools, and concepts to minimize risk in an organization's cyberspace initiatives. Explore how to identify threats, conduct vulnerability assessments, and perform risk assessment and management. Examine system development and application assurance from a holistic viewpoint that spans the cyberspace landscapes. Gain an understanding of the value provided by regulatory, policy, and compliance guidelines in addition to pure technology options.

CMP 640 Cybersecurity Program Development (6)
Prerequisite: CMP 630. Create a cybersecurity program using the enterprise as a framework. Examine the role of architectural methodology as part of the complete cybersecurity program. Consider the cyber threat landscape and the strategies related to incident response, awareness, and the mobile environment and its impact on government and industry. Explore identity theft, network security, cyber strategy development, and mobile device management.

Cybersecurity Technology

CST 610 Cyberspace and Cybersecurity Foundations (6)
Gain knowledge of the foundations of cybersecurity and apply cyber methodologies to cyber architectures, services, protocols, algorithms, hardware and software components, and programming languages. Become familiar with the important role that business continuity planning, security management practices, security architecture, operations security, and physical security play in cybersecurity. Explore the impact of cyber terrorism and national security on cybersecurity. Gain hands-on, real-world experience with state-of-the-art tools and technologies in a lab-intensive environment. Students may receive credit for only one of the following courses: CST 610 or DFC 610.

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CST 620 Prevention of Cyber Attack Methodologies (6)
Prerequisite: CST 610. Explore the theories and practices related to the prevention of cyber attacks. Design, apply, and analyze technological solutions that address countermeasures, encryption, network access control methods, firewalls, intrusion detection/prevention, and secure systems development. Practice techniques such as software assurance, verification, and validation; virtual network and cloud computing security techniques; and physical security techniques. Examine the nation's complex critical infrastructure industries. Use state-of-the-art tools and technologies in a lab-intensive environment that provides hands-on, real-world experience.

CST 630 Advanced Cyber Exploitation and Mitigation Methodologies (6)
Prerequisite: CST 620. Practice intrusion detection and prevention, exploitation, and mitigation in cyberspace. Employ technological solutions that identify, resolve, prevent, and mitigate cyber attacks. Utilize network security techniques, monitoring, auditing, intrusion detection and prevention, and ethical penetration testing. Use state-of-the-art tools and technologies in a lab-intensive environment that provides hands-on, real-world experience.

CST 640 Digital Forensics Technology and Practices (6)
Prerequisite: CST 630. Gain proficiency with the tools and technologies commonly used in forensic examinations and utilize best practices. Explore procedures for securing and validating evidence, including digital media and physical memory, as well as for recovering artifacts and analyzing, reporting, and presenting results in both criminal and civil situations. Gain experience with mobile forensic analysis. Students may receive credit for only one of the following courses: CST 640 or DFC 620.

Data Analytics

DATA 610 Decision Management Systems (6)
An examination of the process of decision-making in large organizations and the technologies that can be used to enhance data-driven decision-making. Focus is on the underlying framework of good decision-making, featuring operational decisions as reusable assets that can be automated through the creation of business rules. How data can add analytic insight to improve decisions is explored. Discussion covers best practices for long-term success of an analytics project in terms of project management and communications with an emphasis on the Cross-Industry Standard Process for Data Mining (CRISP-DM) methodology.

DATA 620 Data Management and Visualization (6)
Prerequisite: DATA 610. A presentation of the fundamental concepts and techniques in managing and presenting data for effective data-driven decision-making. Topics in data management and design include data design approaches for performance and availability, such as data storage and indexing strategies; data warehousing, such as requirement analysis, dimensional modeling, and ETL (extract, transform, load) processing; and metadata management. Topics in data visualization include data types; data dimensionalities, such as time-series and geospatial data; forms of data visualization, including heat maps and infographs; and best practices for usable, consumable, and actionable data/results presentation.

DATA 630 Machine Learning (6)
Prerequisite: DATA 620. A practical survey of several modern machine learning techniques that can be applied to make informed business decisions. Discussion covers supervised and unsupervised learning techniques, including naïve Bayes, regression, decision trees, neural networks, nearest neighbor, and cluster analysis. How each of these methods learns from past data to find underlying patterns useful for prediction, classification, and exploratory data analysis is examined. Discussion covers significant tasks in real-world applications, including handling of missing data, evaluating classifiers, and measuring precision. Major software tools are used to apply machine learning methods in a wide range of domains such as healthcare, finance, marketing, and government.

DATA 640 Predictive Modeling (6)
Prerequisite: DATA 630. An introduction to advanced concepts in predictive modeling and techniques to discover patterns in data, identify variables with the most predictive power, and develop predictive models. Advanced statistical and machine learning algorithms such as support vector machines (SVM), regression, deep learning, and ensemble models are used to develop, assess, compare, and explain complex predictive models. Topics include high-performance modeling, genetic algorithms, and best practices for selecting methods and tools to build predictive models. Major software tools are used to apply predictive modeling in a wide range of domains for improved decision-making in real business situations.

DATA 650 Big Data Analytics (6)
Prerequisite: DATA 640. An introduction to concepts, approaches, and techniques in managing and analyzing large data sets for improved decision-making in real business situations. Topics include text analytics, sentiment analysis, stream analytics, AI, and cognitive computing. Discussion also covers how to identify the kinds of analyses to use with big data and how to interpret the results. Advanced tools and basic approaches are used to query and explore data using the Hadoop platform and in-memory analytical tools like Spark ML.

DATA 670 Data Analytics Capstone (6)
Prerequisite: DATA 650. Completion of a major analytics project designed to integrate knowledge and skills gained from previous coursework and provide a complete analytics experience, including problem scoping (framing), data set preparation, comprehensive data analysis and visualization, and predictive model development. Several peer-reviewed presentations are included to enhance the ability to "tell the story" and explain project approach and results. Projects are selected from student organizations, special government agency requests, or other faculty-approved sources. The project culminates in a complete analytics report and presentation.

Database Systems Technology

DBST 651 Relational Database Systems (3)
An introduction to relational databases, one of the most pervasive technologies today. Presentation covers fundamental concepts necessary for the design, use, and implementation of relational database systems. Focus is on basic concepts of database modeling and design, the languages and facilities provided by database management systems, and techniques for implementing relational database systems. Topics include implementation concepts and techniques for database design, query optimization, concurrency control, recovery, and integrity. A foundation for managing databases in important environments is provided. Assignments require use of a remote access laboratory.

DBST 652 Advanced Relational/Object-Relational Database Systems (3)
Prerequisite: DBST 651. A continuation of the study of relational database systems, exploring advanced concepts. Topics include logical design, physical design, performance, architecture, data distribution, and data sharing in relational databases. The concepts of object-relational design and implementation are introduced and developed. Assignments require the use of a remote access laboratory.

DBST 660 Advanced Data Modeling (3)
Prerequisite: DBST 651. An introduction to fundamental concepts and techniques for successfully designing databases for structured and unstructured data. Topics include database quality techniques and relational, dimensional, and NoSQL modeling, as well as best practices for selecting methods and modeling tools to design the database models (relational, dimensional, wide column, document, and graph/RDF). Assignments require the use of a remote access laboratory.

DBST 663 Distributed Database Management Systems (3)
Prerequisite: DBST 651. An introduction to the development of distributed database management, focusing on concepts and technical issues. Survey covers distributed database management systems, including architecture, distributed database design, query processing and optimization, distributed transaction management and concurrency control, distributed and heterogeneous object management systems, and database inoperability.

DBST 665 Data Warehouse Technologies (3)
Prerequisite: DBST 651. An introduction to technology approaches for successfully designing and implementing a data warehouse for structured and unstructured data. Topics include data modeling techniques; extraction, transformation, and loading of data; performance challenges; and system tradeoffs in the development of the warehouse environment. Assignments require use of a remote access laboratory.

DBST 667 Data Mining (3)
Prerequisite: DBST 651. An overview of the data mining component of the knowledge discovery process. Data mining applications are introduced, and algorithms and techniques useful for solving different problems are identified. Topics include the application of well-known statistical, machine learning, and database algorithms, including decision trees, similarity measures, regression, Bayes theorem, nearest neighbor, neural networks, and genetic algorithms. Discussion also covers researching data mining applications and integrating data mining with data warehouses.

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DBST 668 Database Security (3)
Prerequisite: DBST 651. An overview of both the theory of and applications for providing effective security in database management systems. Topics include conceptual frameworks for discretionary and mandatory access control, data integrity, availability and performance, secure database design, data aggregation, data inference, secure concurrency control, and secure transactions processing. Models for multilevel secure databases for both relational and object-relational databases are analyzed. Assignments focus on database security concepts and require use of a remote access laboratory.

DBST 670 Database Systems Technology Capstone (3)
Prerequisites: 30 credits of program coursework, including all core courses. An introduction to the knowledge, skills, and tools needed to successfully administer operational database systems. The conceptual and operational tools for analysis and resolution of problems such as performance, recovery, design, and technical issues are provided. Tools used to assist in the administration process are also included.

Decisive Communication and Leadership

DCL 600M Decisive Thinking, Communicating, and Leading in Multidisciplinary Fields (6)
(Applicable to the Acquisition and Contract Management, Learning Design and Technology, Strategic Communications, and Transformational Leadership programs). Prepare for academic and professional success by developing skills that employers want in their employees. Explore your area of study to learn how it connects with your career aspirations, create a professional social network presence, and use critical thinking to inform decisions. Improve and refine your skills in communication, critical thinking, quantitative reasoning, and team leadership. Hone your professional writing and oral communication skills to produce effective presentations, and become proficient with spreadsheets, collaboration tools, and other professional software. Students may receive credit for only one of the following courses: CBR 600, DCL 600M, DCL 600T, or PRO 600.

DCL 600T Decisive Thinking, Communicating, and Leading in Technology Fields (6)
(Applicable to the Cloud Computing Systems and Cyber Operations programs). Prepare for academic and professional success by developing skills that employers want in their employees. Explore your area of study to learn how it connects with your career aspirations, create a professional social network presence, and use critical thinking to inform decisions. Improve and refine your skills in communication, critical thinking, quantitative reasoning, and team leadership. Hone your professional writing and oral communication skills to produce effective presentations, and become proficient with spreadsheets, collaboration tools, and other professional software. Students may receive credit for only one of the following courses: CBR 600, DCL 600M, DCL 600T, or PRO 600.

Digital Forensics and Cyber Investigations

Courses in digital forensics and cyber investigation (designated DFC) have higher computing requirements than the minimum technical requirements stated on p. 26. They require an Intel Core i7 processor or higher, with speeds of 2GHz or faster, at least 6GB of available disk space, and at least 16GB RAM (32GB recommended). Display devices should have a resolution of 1920 X 1080 or better (PCs) or 1440 X 900 retina display (Mac).

DFC 610 Cyberspace and Cybersecurity Foundations (6)
Prerequisite: CBR 600. Gain knowledge of the foundations of cybersecurity, and apply cyber methodologies to cyber architectures, services, protocols, algorithms, hardware and software components, and programming languages. Become familiar with the important role that business continuity planning, security management practices, security architecture, operations security, and physical security play in cybersecurity. Explore the impact of cyber terrorism and national security on cybersecurity. Gain hands-on, real-world experience with state-of-the-art tools and technologies in a lab-intensive environment. Students may receive credit for only one of the following courses: DFC 610 or CST 610.

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DFC 620 Digital Forensics Technology and Practices (6)
Prerequisite: DFC 610. Gain proficiency with the tools and technologies commonly used in forensic examinations and utilize best practices. Explore procedures for securing and validating evidence, including digital media and physical memory, as well as recovering artifacts and analyzing, reporting, and presenting results in both criminal and civil situations. Gain experience with mobile forensic analysis. Students may receive credit for only one of the following courses: CST 640 or DFC 620.

DFC 630 Digital Forensic Response and Analysis (6)
Prerequisite: DFC 620. Utilize tools and techniques in digital forensic investigations involving workstation and mobile platforms. Practice forensic artifact reconstruction and recovery from the file systems of different operating systems, including Windows, Linux, and Macintosh.

DFC 640 Advanced Forensics (6)
Prerequisite: DFC 630. Assume the role of a digital forensics professional. Collect and preserve network, server, and cloud-based evidence, and apply analysis techniques. Solve technical challenges such as evidentiary volume and encryption, as well as nontechnical challenges such as jurisdiction and distance in situation-based response scenarios and activities.

Distance Education

OMDE 601 Foundations of Distance Education and E-Learning (3)
A study of the history and evolution of distance education. Social and political/economic factors, theories, learning and teaching models, technology and media innovations, institutions and systems, and major writers that have shaped the development of the field are critically examined. A variety of technologies are used to support the development of foundational skills that are integral to current practice.

OMDE 603 Technology in Distance Education and E-Learning (3)
Prerequisites: OMDE 601 and OMDE 610. A review of the history and the terminology of technology used in distance education. The basic technology building blocks of hardware, networks, and software are identified. Analysis covers the characteristics of asynchronous and synchronous technologies and tools used in teaching and learning, as well as the administration of distance education. The relationship between technology and the goals of the educational/training organization are critically examined. The relationship between information technology (especially online technology) and distance education is explored. Topics include the criteria and guidelines for selecting technologies for distance education and the future directions of technology in distance education.

OMDE 606 Costs and Economics of Distance Education and E-Learning (3)
Prerequisites: OMDE 603 and OMDE 608. A study of the economics of distance education in the larger context of the economics of education. A variety of methodological approaches (including cost/benefit and cost/effectiveness analyses) are applied to the distance education context. A variety of costing techniques and economic models are explored and applied to different institutional forms and levels of distance education.

OMDE 608 Learner Support in Distance Education and Training (3)
An introduction to the theories and concepts of support for learners in distance education and training. Various types of learner support, including tutoring and teaching; advising and counseling; and library, registrar, and other administrative services, are examined. Discussion addresses management issues, such as planning, organizational models, staffing and staff development, designing services to meet learner needs, serving special groups, and evaluation and applied research.

OMDE 610 Teaching and Learning in Online Distance Education (3)
An exploration of the online teaching and learning dynamic, including its theoretical foundation and best practices. The themes that shape the online teaching/learning relationship are addressed through individual and collaborative projects. Topics include philosophical frameworks; instructional, social, and cognitive presence; interaction, collaboration, and participation; community and engagement; and administration and management.

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OMDE 670 Portfolio and Research Project in Distance Education and E-Learning (3)
Prerequisites: DEPM 604 and DETT 621. A capstone study of distance education and training designed to demonstrate cumulative knowledge and skills through two major projects: an electronic portfolio and a case study. The personal e-portfolio documents credentials and accomplishments to date and also serves as an ongoing resource and record of continuing professional development. The case study, which focuses on a distance education/training program or organization, involves in-depth analysis of the setting and application of concepts and strategies to enhance practice and performance in distance education and training.

Distance Education Policy and Management

DEPM 604 Management and Leadership in Distance Education and E-Learning (3)
Prerequisites: DETT 607 and DETC 620. An introduction to the organization, management, and administration of distance education and e-learning training programs and systems. Topics include management theory and practice, organizational behavior and change, leadership roles and styles, and planning and policy. Discussion covers education and training in academic and corporate settings and the knowledge and skills necessary for a distance education practitioner to function effectively in either type of organizational environment. Assignments include individual and group case-study analyses, brief essays, and literature searches related to distance education and e-learning leadership.

DEPM 609 Distance Education and E-Learning Systems (3)
Prerequisite: OMDE 601, OMDE 603, and OMDE 608. An introduction to frameworks for analyzing the nature of distance education from a functionalist, interpretive, or emancipatory systems approach. Appropriate diagramming techniques are used as a means to examine the organization and management of distance education systems.

DEPM 622 The Business of Distance Education and E-Learning (3)
Prerequisites: DEPM 604 and DETT 621. An examination of the highly competitive global business environment for distance education and training. Topics include the supply and demand of education services in emerging and existing markets, the competitive positioning of organizations, and increasing reliance on collaborations. Emphasis is on the skills distance education managers need in planning and developing programs, products, and services that are targeted to specific markets and cost-effective.

DEPM 625 Global Strategies, Perspectives, and Practices for Open and Distance Education (3)
A study of the development and current landscape of global, open, and distance education across developed and developing countries. Topics include cross-border partnerships, emerging business models, academic quality, cultural and linguistic opportunities and challenges, and innovative packaging of content (including MOOCs and open educational resources). Global professional and international associations (e.g., UNESCO, ICDE, AAOU, OECD, EDEN, USDLA, and the World Bank); resources offered by these organizations; and their diverse roles in promoting internationalism, global trade, and quality assurance and management of global educational services are compared and contrasted. Examples and case studies are provided for comparative analyses among a variety of open and distance learning providers, representing single- and dual-mode institutions and open and distance learning universities and organizations from developed and developing countries, as well as private-sector providers and government agencies.

DEPM 650 Practitioner Research in Distance Education and E-Learning (3)
Prerequisites: OMDE 601, OMDE 603, and OMDE 608. An introduction to a variety of quantitative and qualitative research methods used in the social sciences as applied in distance education and e-learning. Emphasis is on planning and designing research and evaluation projects, including choosing appropriate methods of investigation and learning the practical aspects of quantitative and qualitative data collection and analysis. Major research paradigms are explored, and an overview of the various research fields in distance education and e-learning is provided. The Statistical Package for the Social Sciences (SPSS) is used to manage and analyze data. Skills in collecting quantitative and qualitative data and in analyzing, interpreting, and reporting the results of empirical investigations are developed.

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Distance Education Teaching and Training

DETT 607 Instructional Design and Course Development in Distance Education and E-Learning (3)
Prerequisites: OMDE 606 and DETT 611. An examination of the instructional design process, its history and place in today's course development efforts, and the use of instructional design components in practice. Emphasis is on the nature of learning and the requirements for effective instructional design in online and blended environments. The theoretical underpinnings of learning are explored and applied to the design of a prototype classroom. Management issues surrounding course and curriculum development efforts are discussed, and a comprehensive project plan is developed for design implementation.

DETT 611 Library and Intellectual Property Issues in Distance Education and E-Learning (3)
Prerequisites: OMDE 603 and OMDE 608. An overview of the development and delivery of digital resources for distance education. Discussion covers the intellectual property issues affecting the use of copyrighted works in distance education, developing and delivering library resources online to a faculty and student population, and the future of digital information delivery and the impact of digital rights management (DRM) technologies and social networking.

DETT 621 Online Learning and Development in the Workplace (3)
Prerequisites: DETT 607 and DETC 620. An examination of distance learning and professional development in the business sector. Discussion covers various issues, problems, and solutions related to distance learning and professional development in the workplace. Topics include knowledge management, performance improvement, delivery of learning and development, and evaluating learning and development.

Distance Education Technology

DETC 620 Training and Learning with Multimedia (3)
Prerequisites: OMDE 606 and DETT 611. An overview of the use of digital media in a variety of educational settings, designed to identify properties, strengths, and weaknesses of multimedia in different learning contexts. The basic psychological processes of perception, understanding, and learning with multimedia are introduced. Focus is on multimedia and instructional design for online learning systems, such as learning management systems or stand-alone learning objects. Hands-on experience with several multimedia applications is provided. Topics include collaborative learning technologies, open educational resources, the impact of multimedia on learning outcomes, methods of multimedia evaluation, quality assurance, and project management of e-learning initiatives.

DETC 630 Emerging Technology Trends and Issues in Distance Education and E-Learning (3)
An examination of emerging and advanced technologies that affect teaching and learning, as well as areas of support and management, in the field of distance education. Topics include emerging synchronous and asynchronous technology functions, mobile technologies, and social media tools for development and delivery, as well as technologies used in providing learner, faculty, and managerial support to distance education. Technologies are explored critically in both a theoretical and applied contexts. Analysis covers trends and critical issues associated with the adoption of such technologies.

Education: Teacher Preparation

EDTP 600 Foundations of Teaching for Learning (6)
Preparation for effective entry into the classroom as a teacher. Topics include teaching in the contemporary school; human development; approaches to learning, diversity, and collaboration beyond the classroom; learners with exceptional needs; curriculum, instruction, and assessment; teaching in the content area; and synthesis and application. Course materials and assignments focus on documents created and/or typically utilized by school systems and incorporate current school district initiatives. School district personnel may participate as guests.

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EDTP 635 Adolescent Development and Learning Needs (6)
Prerequisite or corequisite: EDTP 600. Preparation to support the unique development of adolescents from various backgrounds, with varying beliefs and abilities. Learners are examined from the standpoint of developmental characteristics; social, cultural, racial, and gender affiliation; socioeconomic status; religious influences; learning styles; special needs; and exceptionality. Adolescents are also examined from biological, psychological, cognitive, and social perspectives; within the tapestry of their family and community; and through the influences of societal and cultural norms. Discussion covers theories and concepts associated with human growth and development across the lifespan, focusing on the typical and atypical development of the adolescent.

EDTP 639 Reading and Multiple Literacies (6)
(Formerly EDRS 610.) Prerequisites: EDTP 600 and EDTP 635. A study of the essentials of literacy for middle and high school classrooms, including design principles for guided inquiry, self-directed learning, collaboration, and effective use of media to meet the needs of diverse learners in the 21st century. Discussion covers purposes and types of reading, assessment, cognitive strategies in reading, reading strategy instruction for constructing meaning from text, and intrinsic and extrinsic motivational strategies. Topics include essential competencies for teaching and learning content area reading and the new literacies and for applying and adapting them to diverse learners and learners with exceptionalities. Competencies developed include use of evidence-based instructional strategies, formative and summative assessment, critical thinking, technology as a tool for learning, and literate environments. Focus is on the importance of research, collaboration, and self-assessment for the professional development of teachers.

EDTP 645 Subject Methods and Assessment (6)
(Only available in spring and fall terms.) Prerequisites: EDTP 600 and EDTP 635. An introduction to instructional strategies and curriculum for teaching secondary content that emphasizes effective instruction based on understanding assessment and how assessment informs effective instruction. Topics include development of comprehensive assessment strategies and their interrelationships with the creation of learning objectives, selection of instructional techniques, and preparation of instructional plans. Current trends in secondary school structures, issues of traditional and authentic assessments, and teacher effect on student achievement are explored. Focus is on meeting individual needs and using content knowledge to inform instructional practice by drawing on knowledge gained through previous study and knowledge bases that reflect current research and best practices in secondary content areas.

EDTP 650 Professional Internship and Seminar (6)
Prerequisites: EDTP 600, EDTP 635, EDTP 645, and EDTP 639. An opportunity to apply the concepts, techniques, methods, and theories learned in previous coursework and field-based experiences through a professional internship. Internship activities require completing observations, activities, and clinical practice in an approved secondary classroom appropriate for the selected content area certification, under the supervision of a school-based mentor teacher and a university field supervisor. An ongoing seminar establishes a learning community that ensures a continuing support system and provides a forum for feedback and discussion of common readings, experiences, questions, and issues. An electronic portfolio is completed.

EDTP 650A Continuing Professional Internship and Seminar (1)
Prerequisites: EDTP 600, EDTP 635, EDTP 639, and EDTP 645 and department approval. An additional opportunity to complete seminar requirements and the professional internship for the Master of Arts in Teaching. May be repeated to a maximum of 3 credits.

Emergency Management

EMAN 600 Comprehensive Crisis and Emergency Management (3)
An analysis of all hazards, phases (mitigation, preparedness, response, and recovery), and actors involved in crisis and emergency management. Discussion covers the definition of crises, emergencies, and disasters and concepts and issues in crisis and emergency management. Focus is on developing crisis, contingency, and incident management plans. Current frameworks, management systems, and command systems for organizing a response, deploying resources, managing the response organization, supporting crisis communication, and making decisions in a turbulent environment are examined. Topics are discussed from U.S. and international perspectives.

EMAN 610 Hazard Risk and Vulnerability Assessment (3)
An examination of risk, hazard, and vulnerability. Topics include systematic hazard risk assessment, risk mitigation (reduction), risk transfer, and risk analysis. Discussion covers contemporary approaches to risk assessment and management of naturally or technologically induced hazards. Environmental hazard assessment is also examined. Seminal works published in the area are reviewed.

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EMAN 620 Information Technology in Emergency Management (3)
An overview of the role of information in crisis and response management. Discussion covers disaster and crisis information requirements; information technologies and decision support tools applied to crisis, disaster, and emergency management; and information problems encountered during emergencies. Tools used include the global positioning system (GPS), geographical information systems (GIS), UAS (drones), and hazard and emergency management-related software packages, as well as decision analysis methods. Assignments include practical case studies.

EMAN 630 Crisis Communication for Emergency Managers (3)
An exploration of current strategies and tactics for managing the range of communication responsibilities and issues that arise during a variety of crisis situations. Traditional and new media methods for analyzing crisis and communications management issues (including the use of current technologies) are applied using relevant public relations research, theory, and case examples. A strategic approach is used to better identify issues, goals, stakeholders, messaging, and other aspects involved in developing community-specific public responses to crisis situations.

EMAN 670 Seminar in Emergency Management Leadership (3)
Prerequisite: 30 credits, including all core and specialization courses except MGMT 670. An examination of the role, mission, and functional skills of the emergency manager that compares and contrasts current aspects with evolving trends. Factors that affect successful leadership in emergency management such as managing crises, disasters, and emergencies are explored through discussion of key issues and analysis of selected case studies. Discussion covers the evolving multidisciplinary nature of the emergency manager's job and characteristics and leadership styles most effective in emergency management. Summary reviews of various theories, models, historical examples, and practical applications are used to reflect the central activities of emergency managers and gain a better perspective on the emergency manager's job. Topics include planning, risk assessment, crisis communications, organizational and operational issues, problem-solving, overcoming bureaucratic barriers to effective performance, promoting a culture of disaster prevention and preparedness, advising on business continuity strategies, acquiring resources, staff training, and emergency exercises. Ethics and legal issues in emergency management, the procurement of facilities, staff management, and controversies are also examined.

Environmental Management

ENVM 600 Fundamentals of Environmental Systems (3)
An introduction to the basics of natural environmental systems and human disruptions to and their influences on environmental systems. The aim is to explore Earth's systems, including the biosphere, hydrosphere, atmosphere, and lithosphere, and how the processes of these systems interact to support life in the Anthropocene. Topics include basic scientific principles in chemistry, physics, geology, and ecology and concepts related to the environmental field, including risk.

ENVM 610 Environmental/Energy Law and Policy (3)
Prerequisite or corequisite: ENVM 600. An introduction to environmental/energy law and policy. The goal is to gain a deeper understanding of the current environmental landscape and provide a pathway for continual improvement with critical use of available environmental/energy law and policy resources. A critical systems-thinking approach to environmental/energy law and policy is used. Discussion explores how legislation and policies form society and, with the use of models, examines changes that can be implemented for a more sustainable future. Topics include the history of U.S. environmental/energy law and policy, the legislative process, the administrative process, use of policy memos, modeling, and key pieces of energy and environmental legislation.

ENVM 641 Environmental Auditing (3)
Prerequisite or corequisite: ENVM 615. An examination of methods for attaining statutory, regulatory, and permitting compliance. The protection of workers and other stakeholders is also examined in the context of organizational, budgetary, and other constraints. Emphasis is on methods of defining auditing objectives to meet organizational goals and of designing auditing programs for effective compliance under each of the 12 major environmental statutes, including air, water, solid, and hazardous waste management laws and pollution prevention initiatives.

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ENVM 643 Environmental Communications and Reporting (3)

Prerequisite or corequisite: ENVM 615. An intensive examination of environmental communications and reporting, focusing on building the communication skills needed by environmental managers. The goal is to communicate ethically, effectively, and with cultural competence with diverse environmental stakeholders. Discussion covers how history, ethics, justice, diverse perspectives, and reflexivity relate to environmental communication; environmental reporting; and science, public health, risk, and climate communications. Emphasis is on developing key professional skills, including scientific literacy and numeracy, power and reflexivity, public speaking, data design and visualization, meeting hosting and facilitation, and writing and editing technical products.

ENVM 647 Environmental Risk Assessment (3)

Prerequisite or corequisite: ENVM 615. An examination of the general concepts of risk assessment as applied to human and environmental health. The goal is to incorporate environmental justice considerations, regulatory compliance, and best practices into risk assessment and mitigation recommendations for sustainable and ethical environmental management. Topics include ecological and human risk assessment; risk perception and communication; regulatory requirements; and the application of databases, models, and tools to characterize risk. Discussions support the development of skill sets in performing human health and ecological risk assessments.

ENVM 649 Principles and Practices of Waste Management (3)

Prerequisite: ENVM 615. An examination of the principles and practices of waste management, especially as they apply to the United States. The goal is to incorporate environmental justice considerations, regulatory compliance, and best practices toward integrative waste management. Topics include history of waste management, options, and hierarchy for municipal waste management in the United States, basics of technological options for waste management, and U.S. policies that oversee municipal waste and hazardous waste. Focus is on applying waste management principles to viable integrated waste management solutions and applying the skills and knowledge needed for a career in environmental management.

ENVM 650 Environmental and Natural Resources Economics (3)

Prerequisite: ENVM 615. An introduction to environmental and resource economics. The goal is to grasp the basics of microeconomics and apply the subfields of environmental economics and natural resource economics to an integrative approach to environmental issues today. Topics include microeconomics and the subfields of environmental economics and natural resource economics, their evaluation tools and techniques, and policy approaches and considerations to their applications. Activities incorporate team building and project management skills to work on projects based on these topics.

ENVM 651 Water Resources Management (3)

Prerequisite: ENVM 615. A comprehensive examination of integrated water resource management in the 21st century. Focus is on how to holistically manage watersheds, such as the Chesapeake Bay, Colorado River, or Mississippi River Basins. The objective is to build practical skills and dispositions, including developing viable management solutions to water quality, quantity, use, and access challenges; integrating multidisciplinary data; communicating with stakeholders and policymakers; and applying environmental justice practices. Topics include water governance, policy, markets, and institutions; history of water and land use decisions; indigenous and local community engagement; and the impact of global climate change on water resources.

ENVM 652 Principles of Air Quality Management (3)

Prerequisite: ENVM 615. A comprehensive examination of the dynamics and challenges of air quality management in the 21st century. Focus is on applying criteria and hazardous air pollutants regulations in your locality, analyzing the identified differences in local air quality issues, and examining global and local air quality, especially for regulated air pollutants. The goals are to explore the disparities resulting from differing criteria pollutants and hazardous air pollutants and to design and implement viable indoor and outdoor air quality management solutions. Topics include global CO_2 emissions, global climate change, and viable air quality management solutions.

ENVM 653 Land Use Management (3)
Prerequisite: ENVM 615. An overview of land use management and its application to specific locations. The goal is to apply a foundational understanding of ecosystems and environmental/energy law and policy to land use concepts and management authorities on land use. Discussions explore land use concepts and encourage the sharing of local issues in a global context. Topics include the history of land use management, decision-making processes related to land use, and climate adaptation and mitigation plans. Land use issues are explored using Geographic Information System (GIS) software and other tools.

ENVM 670 Capstone Study in Environmental Management (3)
Prerequisite: Completion of 27 credits of program coursework. An intensive hands-on study of an environmental management issue in partnership with an environmental organization. The goals are to demonstrate knowledge, skills, abilities, and dispositions gained from previous. Topics vary from semester to semester, depending on the sponsor environmental organization. Activities involve group participation in a real-life practicum with the sponsor organization and focus on solving a part of a larger environmental issue. Discussions support content learning, project management, and team building, using reflexivity exercises.

Financial Management

FIN 605 Fintech and Decision-Making (3)
An examination of financial decision-making, core finance principles, and objectives of financial management. Discussion covers prerequisites for making effective financial decisions, including financial reporting systems (balance sheets, profit and loss statements, and cash flow statements), costing and budgeting, and cost-volume-profit (CVP) analysis. Topics also include techniques for and approaches to new technologies (AI, deep learning, blockchain technology, open APIs) that are disrupting the financial services industry, supply chain management, and costing practices. Financial sectors are examined for specific opportunities, such as payments, credit, and risk management.

FIN 610 Financial Management in Organizations (3)
An investigation of financial management theory and applications in organizations. Discounted cash flow and rate-of-return analyses are used to evaluate projects and financial instruments. Discussion covers the role of the cost of capital and the Capital Asset Pricing Model (CAPM) in capital investment analysis and selection. Capital budgeting, stock, and bond valuation, break-even analysis, capital market efficiency, real options, short-term financial management, and international finance are introduced.

FIN 615 Financial Analysis and Modeling (3)
Prerequisite: FIN 610. An exploration of how financial managers use financial modeling, analysis, and research to build forecasts and projections, evaluate financial alternatives, and support financial decision-making in both operational and strategic contexts. Models are developed using Microsoft Excel; exercises and extended case studies are utilized to interpret and employ results. Topics include financial statements and ratio analysis, cash flow forecasting, operations budgeting, breakeven and leverage analysis, time value of money applications, and capital budgeting and risk assessment.

FIN 620 Long-Term Financial Management (3)
Prerequisite: FIN 610. An exploration of the long-term financial needs of an organization and the roles of capital markets. Topics include the financial environment of organizations, options and futures instruments, long-term financing, the capital budgeting decision process, capital structure management, dividend and share repurchase policy, and investment banking and restructuring. Various types of long-term funding sources—including term loans, derivatives, debt and equity securities, and leasing—are analyzed. Alternate policies with regard to financial leverage, capital structure, dividends, and the issuance of preferred stock are evaluated. Mergers, leveraged buyouts, and divestitures are examined as special situations to create value.

FIN 630 Investment Valuation (3)
Prerequisite: FIN 610. An in-depth exploration and application of valuation models to support managerial decision-making in a strategic framework. The theory, concepts, and principles underlying the valuation of firms, business/product lines, and mergers and acquisitions are addressed using extended exercises and applications. The discounted cash flow model is used as a tool. Discussion covers the financial drivers of value, including assessing and determining risk, competitive advantage period, and sales and earnings growth estimates. Other valuation techniques using earnings, revenues, and price/earnings multiples are also discussed and applied in selected examples.

FIN 640 Multinational Financial Management (3)
Prerequisite: FIN 610. A study of financial management issues in multinational organizations. Topics include the environment of international financial management, foreign exchange markets, risk management, multinational working capital management, and foreign investment analysis. The financing of foreign operations, international banking, and the role of financial management in maintaining global competitiveness are also considered.

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FIN 645 Behavioral Finance (3)
Prerequisite: FIN 610. A study of the key psychological obstacles to value-maximizing behavior and steps that managers can take to mitigate their effects, using the traditional tools of corporate finance. Focus is on understanding the underlying factors and processes that result in nonoptimal decision-making by financial managers. Topics include perceptions about risk and reward and financial decision-making in the areas of investing, trading, valuation, capital budgeting, capital structure, dividend policy, agency conflicts, corporate governance, and mergers and acquisitions. The key role played by emotions and recent findings from neuroscience are explored.

FIN 660 Strategic Financial Management (3)
Prerequisite: FIN 610. An integrative study of financial management through applied problems and case studies. Topics reflect the changing environment of financial management in organizations and include capital investment decision-making, the role of intangibles in value creation, financial performance metrics, strategic financial planning and control, strategic valuation decisions, growth strategies for increasing value, the restructuring of financial processes, corporate governance and ethics, value-based management, strategic cost management, and the impact of information technology on the organization's financial systems. A finance simulation is used as an integrating mechanism.

Global Health Management

GHMT 620 National and International Approaches to Health Care Delivery (3)
(For students in the Global Health Management certificate program.) A project-based application of the concepts, theories, and principles of global health to the practical challenges facing global health professionals. Assignments focus on a specific global health priority for a given national or geopolitically defined population. Needs assessment methodologies—including epidemiological methods; mapping local, national, and global policy processes; identifying strategies for building infrastructure and workforce capacity; analyzing financial opportunities and limitations; and assessing the impact of macro changes in the global economy, political environment, and human rights and legal systems—are applied. Findings regarding the scope, options, and outcomes of these assessments, as well as a recommended action plan for improving the health status of the population group of interest, are summarized in the final project.

GHMT 640 Strategic Management of Global Health Services (6)
(For students in the Global Health Management certificate program.) The development of strategic management skills for growing and operating health organizations and health systems in low- and middle-resourced countries. Focus is on building strategies for organizing global health prevention, treatment, care, and capacity-building initiatives. Strategic management skills are applied to create global health missions and goals, core functions and organizational structures, clinical and administrative workforces, budgets and financing, and communication messages.

Healthcare Administration

HCAD 600 Introduction to Healthcare Administration (3)
An introduction to the principles of management and leadership as the foundations for the administration of healthcare products and service delivery. A comprehensive examination of the complex, dynamic, rapidly changing healthcare system in the United States is provided. Topics include the healthcare system's major components and their characteristics. Emphasis is on current problems in healthcare financing and delivery. Social, economic, and political forces that have shaped and continue to influence the system are traced. The healthcare system in the United States is compared with systems in industrialized and developing nations. Analysis covers current trends in healthcare and prospects for the future.

HCAD 610 Information Technology for Healthcare Administration (3)
An overview of information technology (IT) from a managerial perspective and how healthcare administrators can use IT to maximize organizational performance. Fundamental principles of IT and data management and their implications for healthcare administrators are reviewed. Discussion explores the use of technology, databases, and other analytical tools to structure, analyze, and present information related to healthcare management and problem-solving. Current applications, such as patient care, administrative and strategic decision support, managed health, health information networks, and the internet, are examined to determine how they may be used to meet the challenges facing healthcare administrators today and in the future.

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HCAD 620 The U.S. Healthcare System (3)

A comprehensive examination of the complex, dynamic, rapidly changing healthcare system in the United States. The healthcare system in the United States is compared with systems in industrialized and developing nations. Analysis covers current trends in healthcare and prospects for the future. Ethics, beliefs, and values related to healthcare are discussed. Managerial functions and their effectiveness for health outcomes and organizational performance are investigated and evaluated. Marketing, quality of care, and effective decision-making are explored.

HCAD 625 The Business of Healthcare (3)

Prerequisite: HCAD 620. A detailed exploration of operational issues unique to the dynamic and highly regulated realm of healthcare. Discussion covers challenges presented by regulatory mandates, market forces, and multiple interconnected matrix organizations, as well as defining and meeting the needs of the community.

HCAD 630 Public Health Administration (3)

An in-depth study of the field of public health, emphasizing leadership and management. Current U.S. and global public health systems are analyzed, focusing on public health entities and their management issues. Topics include the history and current status of public health, core functions, legislation, ethics, accountability (including assessment and evaluation), and the politics and financing of public health, particularly in light of the increased utilization of evidence-based budgeting. Global health security, governance, and diplomacy are discussed in detail as they apply to public health issues and global community collaboration. Structural determinants of health are examined in terms of their influence on healthcare delivery and public health issues.

HCAD 635 Long-Term Care Administration (3)

A study of the different components of the long-term care service delivery system. Topics include residential settings (such as skilled nursing facilities, assisted living facilities, and continuing care retirement communities) as well as home care services, community-based service programs, and hospice care. The goal is to apply contemporary management theory, concepts, and models to the entities that make up the long-term care service delivery system. The specifics of long-term care management and leadership are discussed. Societal trends in attitudes and approaches to long-term care are defined and evaluated.

HCAD 640 Financial Management for Healthcare Organizations (3)

An in-depth study of healthcare economics and the financial management of healthcare organizations. The economic principles underlying the American healthcare market and the financial management of health services organizations within that market are examined. Analysis covers healthcare industry regulation, licensure, and certification and various coverage and healthcare payment mechanisms. Topics also include reimbursement mechanisms and their effect on healthcare provider organizations, managed care, capitation, and per case or per diagnosis payment, as well as how these financial strategies are utilized by third-party payers. Focus is on financial challenges, such as uncompensated care, cost increases, increased competition, and increased regulation, and how healthcare providers should respond to them. Ratio analysis, cost analysis, and other financial management techniques are also explored.

HCAD 645 Strategic Financial Management in Healthcare (3)

Prerequisite: HCAD 640. An in-depth study of the concepts and competencies needed to plan the usage and management of enterprise financial resources to achieve long-term organizational objectives and return maximum value in a volatile healthcare finance environment. Emphasis is on identifying and quantifying available or potential resources, devising a plan for utilizing finances and other capital resources to achieve goals, and capital budgeting and management. Topics also include risk analysis, multiple financing methods, supply chain costs, valuation, and mergers and acquisitions. Current accounts and working capital management are explored, as are strategic planning and financial forecasting. Macroeconomic principles are investigated as they relate to the healthcare system. Analysis covers free market and mixed market economies, barriers to free market economies, and the application of macroeconomics as an analytical tool to craft economic and fiscal policy.

HCAD 650 Legal Aspects of Healthcare Administration (3)

A comprehensive overview of the intersection of law, ethics, health information technology, and bioethics in various contexts. The principles of healthcare law are examined in the areas of privacy, information security, contracts, torts, the liability of healthcare providers, the rights of patients, employment law and labor relations, and administrative law for healthcare organizations, among others. The managerial function of compliance is explored as it applies to the law and ethics, and specific tools and strategies are defined and discussed.

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HCAD 660 Healthcare Institutional Organization and Management (3)
A study of the nature of management and how it is applied in various healthcare settings. Contemporary theories, critical perspectives, models, and best practices designed to foster performance excellence in the highly competitive healthcare environment are examined. Discussion covers principles of organizational behavior and culture development and adaptation. Consumer behavior and its influence on institutional sustainability are evaluated. Strategies for quality assurance and institutional change are explored.

HCAD 665 Strategic Issues in Healthcare Leadership (3)
Prerequisite: HCAD 660. An examination of strategic issues driving the future of healthcare. Focus is on identifying trends and preparing competent leaders to meet the needs of changing communities, integrating rapid technological and scientific advances, and ensuring health care institutional viability. Topics include development and dissemination of strategic goals and shaping organizational values, the effect of ethics and power on leadership decision-making, shared governance and collaboration, and change and performance management.

HCAD 670 Healthcare Administration Capstone (3)
Prerequisite: Completion of 36 credits of program coursework. A capstone study of healthcare administration that integrates knowledge and skills gained from previous study in the development of a systems approach to healthcare administration. Focus is on public and private healthcare delivery systems, alliances with internal and external environments, and strategic decision-making and implementation in the rapidly evolving global arena of healthcare administration.

Health Informatics Administration

HIMS 645 Healthcare Databases and Medical Technology Integration (3)
An introduction to various forms of healthcare data and data collection techniques, as well as different types of databases and development methods for using databases in small to medium-size healthcare facilities. The objective is to develop flat file and relational databases using Microsoft Access and Microsoft Excel, demonstrate familiarity with SQL (Structured Query Language), Python language, and RStudio program; and design queries applicable for the decision-making process. Topics include principles of integrating medical and biomedical engineering equipment within healthcare facilities for automatic and secure data collection.

HIMS 650 Health Informatics and Data Analytics (3)
The application of basic statistics and research methods in health information management. Focus is on the analysis of clinical and administrative data to assist in healthcare decision-making, planning, policy development, and state- and national-level reporting. Topics include compilation and analysis of healthcare data; identification of data sources, data collection methods, analytical and visualization techniques; data mining; and clinical and biomedical research and its implications for healthcare quality. Students may receive credit for only one of the following courses: HAIN 650 or HIMS 650.

HIMS 655 Health Data Management (3)
(Formerly HAIN 655.) A foundational overview of health informatics/information management as a profession and as a subset of the healthcare delivery system. Health informatics/information principles and practices are explored as they relate to the application, analysis, management, and architecture of health data. Topics include data mapping, data structures, clinical terminology, and classification systems. Discussion also covers ICD-10, health record content, documentation standards, data management policies and procedures, meaningful use, data sources, and information governance.

HIMS 661 The Application of Information Technology in Healthcare Administration (3)
Prerequisite: HCAD 610 and HIMS 655. An overview of historical, current, and emerging health information systems and technologies. Focus is on applying a system life-cycle process to the adoption of an electronic health record system. Discussion covers various ways that information technology can aid in operations management and the strategic decision-making process. Topics include project management, clinical and decision support systems, report generation, data analytics, workflow processes, health information exchange, enterprise information management, training and development, data quality, user interfaces, data capturing technologies, personal health records, population health, data safeguards, business intelligence, and artificial intelligence.

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HIMS 670 Health Information Management and Technology Capstone (3)
Prerequisite: Completion of 30 credits of program coursework, including HIMS 650, HIMS 655, and HIMS 661. A study of health information management and technology that focuses on the application of skills acquired through previous coursework. The aim is to examine effective and efficient management of healthcare organizations, health information usage compliance, and health information technology. Topics include the U.S. healthcare delivery systems, health information management, health technology, privacy and security of data collection and utilization, and project management. Activities include participating in a health information technology-relevant project.

History

HIST 602 Military Leadership: Principles of War (1)
(Open only to graduate ROTC students.) A study of the nine classic principles of war, which guide the conduct of war at strategic, operational, and tactical levels and form the foundation of the art and science of the military profession. The aim is to use primary and secondary historical resources to explore how past theory and practice have shaped the underlying policy, strategic planning, and operational procedures of today's military and national security agencies.

Homeland Security Management

HSMN 610 Concepts in Homeland Security (3)
An overview of the basic concepts of homeland security, including infrastructure protection, jurisdiction, and issues in technical areas such as interconnectivity and interoperability. The nation's telecommunications and information technology networks are examined as both vulnerable assets and critical solutions.

HSMN 625 Critical Infrastructures (3)
Prerequisite: HSMN 610. An introduction to critical infrastructure assurance as a policy field. Review covers the concept of critical infrastructures and their interdependencies. Topics include the development of modern critical infrastructures, the reasons they have become central elements of 21st-century societies, efforts being made to safeguard them, and potential threats to their continued effective operation.

HSMN 630 Resilience Planning and Preparedness for Disaster Response and Recovery (3)
An in-depth examination of managerial strategies for developing and maintaining resilience in communities, the private sector, and the nation in the face of human-made, natural, and technological disruptions or catastrophes. Emphasis is on the importance of advanced planning. Techniques for performing risk assessments and potential impact analyses and for selecting appropriate risk treatments are explored. Discussion covers preparing to handle adverse events, responding to them, and recovering from them. Resilience management is explored within the context of a life cycle that includes programmatic review and continuous improvement planning. Actual and hypothetical cases are analyzed.

HSMN 640 Energy Infrastructure Security (3)
Prerequisite: HSMN 610. An in-depth exploration of the energy sector and homeland security, including resources, critical infrastructure protection, and vulnerabilities. The goal is to understand risk methodologies as applied to the energy industry. Topics include pipeline security, security of the electrical grid, cyber-dependence and SCADA systems. Energy is evaluated as a national security issue.

HSMN 670 Seminar in Homeland Security (3)
Prerequisite: Completion of 24 credits of program coursework, including HSMN 610, HSMN 625, HSMN 630, EMAN 620, INFA 660, and BSBD 641. An up-to-date evaluation of vulnerabilities and protective countermeasures regarding various aspects of the nation's critical infrastructure, with emphasis on the food and water supply. Topics include various threat profiles and actions by government, industry, independent institutions, and private citizens that might prevent attack from domestic or foreign sources and mitigate harmful consequences should such an attack occur. Discussion reviews the federal government's organization and management of food and water security and explores what further efforts might be made, building on the nation's health system and engaging government at all levels. The singularly important roles of first responders are also analyzed.

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Human Resource Management

HRMD 610 Issues and Practices in Human Resource Management (3)

(Strongly recommended as the first course in the human resources management specialization.) An overview of the human resource management profession, including the theories, research, and issues related to human resource management within modern organizations. The roles, responsibilities, relationships, functions, and processes of human resource management are discussed from a systems perspective. Expectations of various stakeholders, such as government, employees, labor organizations, staff/line management, and executive management, are explored. Particular attention is given to the general legal principles and provisions that govern human resource activities. The specialty areas of employee relations—staffing, human resource development, compensation, and organizational development—are described. Current topics, such as human resource information systems and globalization, are addressed.

HRMD 620 Employee and Labor Relations (3)

An investigation of the rights and responsibilities of employees and organizations in union and nonunion environments in the United States. The federal legal framework for collective bargaining is reviewed. Topics include common employment contract trends, topics, and issues, as well as all phases of unionization, from organizing through contract maintenance. Emphasis is on conflict management, negotiation, and alternate dispute resolution.

HRMD 630 Recruitment and Selection (3)

An examination of the initial phases of staffing, focusing on the hiring process. The contemporary roles, relationships, and processes of recruitment and selection in the human resource management system are investigated. Emphasis is on productivity factors (such as the use of technology) and quality factors (such as legal, ethical, and validity issues). Topics include international as well as domestic concerns and consideration of multiple staffing levels (such as executive managers and temporary employees). Current issues in private, not-for-profit, and/or public sectors are discussed.

HRMD 640 Job Analysis, Assessment, and Compensation (3)

A study of the interrelated aspects of human resource management, including job design, job analysis, job evaluation, employee compensation, incentives to productivity, employee motivation, and performance appraisal. A variety of approaches for analyzing, weighing, and specifying the detailed elements of positions within modern organizations are presented. Discussion covers techniques for identifying and classifying the critical components of a job, defining the observable standards and measures, preparing and determining the job description and job worth, establishing equitable compensation for job performance, and developing an executive compensation program. The interaction of compensation, worker motivation, performance appraisal, and level of worker performance within the organization is examined.

HRMD 650 Organizational Development and Change (3)

A study of the issues, theories, and methodologies associated with organizational development and the management of change, with a major emphasis on organizational culture and organizational change processes. Topics include the diagnostic process, intervention strategies, and overcoming resistance to change. Techniques such as goal setting, team-development procedures, productivity and strategy interventions, and interpersonal-change models are examined.

HRMD 651 Current Perspectives in Training and Development (3)

An examination of the theories, research, skills, and issues related to one major aspect of human resource development, the management of organizational training services. The role of training in the workplace and adult learning models are investigated. Topics include curriculum management, program development, and operation management with an emphasis on design and delivery issues. The impact of technology, the global environment, and modern organizational structures are considered. Ethical issues are also discussed. Assignments include the development of training proposals or programs.

HRMD 665 Managing Virtual and Global Teams (3)

(Not open to students who have completed HRMD 621, HRMD 652, or HRMD 660.) An investigation of the foundations of team development and performance from human resource management and organizational behavior perspectives. Focus is on maximizing the effectiveness and efficiency of global and virtual teams in organizations. Topics include the impact of global diversity and use of technology on intergroup development, communication, and outcomes. Scholarly research and field literature are examined and the implications of the findings for applied management are discussed.

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Informatics

IMAT 637 IT Acquisitions Management (3)
A study of management practices related to the acquisition of IT systems, components, and services. Emphasis is on the importance of enterprise strategic planning and the concomitant IT strategic planning. Issues related to the development of the IT acquisition plan, financial planning and budgeting, integration of the proposed acquisition within the overall goals of the enterprise, and related IT program management are examined in the context of overarching management challenges. Federal IT systems, contract and procurement policies, and procedures provide examples for analysis of concepts with wider relevance.

IMAT 639 Internet Multimedia Applications (3)
A study of multimedia presentations as essential, strategic components of an organization's competitive web presence. Established principles of software development, aesthetics of typography and layout, benchmarking, and usability engineering are used to analyze websites and write successful site development plans. Emphasis is on basic web page design techniques. Topics include standards for representing common media formats, compression algorithms, file format translation tools, hardware requirements and standards, system constraints, Java, CGI scripts, and virtual reality. Assignments require building a portfolio of rich media content.

IMAT 670 Informatics Capstone (3)
Prerequisite: 30 credits of program coursework. A capstone study of emerging and current technologies, as well as some eternal verities in IT management, that integrates, and augments concepts previously studied. Topics vary and may include aligning IT with the strategic goals of the enterprise, leadership in IT, software psychology in the design of user interfaces, geographical information systems, building and managing internet communities, technology to ameliorate the digital divide, managing an enterprise's IT portfolio, and the social impact of information policy decisions.

Information Assurance

INFA 610 Foundations of Information Security and Assurance (3)
(To be taken as the first course in the program.) An overview of techniques for ensuring and managing information security. Topics include administrative and technical security controls to prevent, detect, respond to, and recover from cyber attacks; risk and vulnerability analysis to select security controls; security planning; security architecture; security evaluation and assessment; and legal, ethical, and privacy aspects of information assurance. Discussion also covers information security fundamentals, such as cryptography, authentication, and access control techniques, and their use in network, operating system, database, and application layers. Emphasis is on security issues of current importance.

INFA 620 Network and Internet Security (3)
An introduction to the security concepts needed for the design, use, and implementation of secure voice and data communications networks, including the internet. A brief review of networking technology and standards (including an introduction to internet communication protocols) is provided. Security subjects addressed include defense models, security policy development, authentication and authorization controls, firewalls, packet filtering, virtual private networks (VPNs), and wireless network security. A project on network security in a hypothetical scenario based on inputs from government agencies and commercial organizations is assessed by a team of experts who are working in the field.

INFA 630 Intrusion Detection and Intrusion Prevention (3)
An exploration of the theory and implementation of intrusion detection and intrusion prevention. Topics include network-based, host-based, and hybrid intrusion detection; intrusion prevention; attack pattern identification; deployment; response; surveillance; damage assessment; data forensics; data mining; attack tracing; system recovery; and continuity of operation. A project on intrusion detection and intrusion prevention in a hypothetical scenario based on input from government agencies and commercial organizations is assessed by a team of experts who are working in the field.

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INFA 640 Cryptology and Data Protection (3)
An overview of the theory of encryption using symmetric and asymmetric keys, current protocols for exchanging secure data (including the Data Encryption Standard and the Advanced Encryption Standard), and secure communication techniques. A review of the historical development of cryptographic methods and cryptanalysis tools is provided. Public Key Infrastructure and the use of digital signatures and certificates for protecting and validating data are examined. Strategies for the physical protection of information assets are explored.

INFA 650 Computer Forensics (3)
An introduction to the fundamental concepts behind the collection and analysis of the digital evidence left behind in a digital crime scene. Topics include the identification, preservation, collection, examination, analysis, and presentation of evidence for prosecution purposes. Discussion also covers the laws and ethics related to computer forensics and challenges in computer forensics. Network forensics is briefly explored. A project on computer forensics or network forensics in a hypothetical scenario based on input from government agencies and commercial organizations is assessed by a team of experts who are working in the field.

INFA 660 The Law, Regulation and Ethics of Information Assurance (3)
An overview of the legal, regulatory, and ethical issues related to cyberspace. Emphasis is on developing skills in spotting ethical and legal issues and navigating through the complex and changing legal and regulatory environment as it applies to behavior in cyberspace. Various resources and materials related to the ethical and legal operation of modern computer systems, applications, and networks are presented.

INFA 670 Information Assurance Capstone (3)
Prerequisites: INFA 610, INFA 620, INFA 630, INFA 640, INFA 650, and INFA 660 (3 credits may be taken concurrently). A study of information assurance that integrates and applies concepts previously studied. Best practices and appropriate technologies to design, implement, manage, evaluate, and further improve information security are explored. Emerging trends are analyzed to understand their potential effect on information security and assurance.

Intelligence Management

INMS 600 Managing Intelligence Activities (3)
An introduction to management issues associated with the national intelligence community and activities in national and homeland security, law enforcement, and the private sector. Intelligence is evaluated from the perspectives of its consumers in government and business. Topics include the historical issues that led to extensive oversight of intelligence agencies and laws restricting their activities. Discussion also covers recent changes in national intelligence and current issues, such as the debate over security versus civil liberties and how to protect America from foreign espionage and exploitation.

INMS 610 Intelligence Collection: Sources and Challenges (3)
A study of the management challenges related to collecting all-source intelligence for national security, counterterrorism, and business purposes through case-study analysis and planning exercises. The fundamentals of multisource intelligence—human source intelligence; open source intelligence; signals intelligence; geospatial intelligence; technical intelligence; cyber intelligence and persistent intelligence, surveillance, and reconnaissance (ISR) collection—are assessed. Discussion covers innovative collection methods, access to denied environments, agile architectures, the impact of artificial intelligence and machine learning, sensor data fusion, and the integration of multisource intelligence. Topics include how requirements drive collection efforts, the relationship between collection and analysis, and the costs associated with collection of intelligence.

INMS 620 Intelligence Analysis: Consumers, Uses, and Issues (3)
Prerequisites: INMS 600 and INMS 610. An examination of the intelligence requirements of various clients in government and the private sector. The various purposes of analysis, such as warning, policy planning, research and development, systems or product planning, support for law enforcement and correctional agencies, support for operational activities, and investment, are examined. Discussion covers managing analytical methodologies and techniques and dissent in analyses, adapting cutting-edge machine learning techniques, and understanding the reasons for failures. Case studies illustrate issues in analysis management and critical thinking. The conflict between intelligence analysts and decision makers at national and local levels is explored.

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INMS 630 Counterintelligence (3)
An examination of the vulnerabilities of the United States, allied countries, and private businesses to espionage and how counterintelligence can reduce the threat. Discussion covers case studies of espionage against America, including insider threats, cyber and economic espionage against U.S. technology and business. Topics include the roles, missions, and espionage activities of foreign intelligence services. Major threat groups are assessed, and management issues related to countering these threats are evaluated. U.S. policy issues and the management challenges of interagency cooperation among local, state, and international sources and public/private partnerships are explored.

INMS 640 Intelligence-Led Enforcement (3)
An evaluation of management approaches and assessment of issues associated with intelligence support for crime prevention and law and regulation enforcement. Topics include the issue of public-private cooperation, domestic counterterrorism, drug law enforcement, and actions to counter financial crimes. Interagency cooperation and intelligence sharing with state, local, and tribal agencies and laws and executive orders related to intelligence promulgated since 9/11 are examined. The roles of intelligence in fighting transnational crime and cybercrime is also covered in this course. Assignments include case-study analysis and original research.

INMS 650 Intelligence Management and Oversight (3)
Prerequisites: INMS 600 and INMS 610. An examination of the relationships among intelligence organizations at federal, state, and local levels, as well as with private corporations. Strategies for the management and control of intelligence activities, including establishing policies, setting budgets, and conducting reviews, are examined. Discussion covers how intelligence oversight (including the roles and responsibilities of the executive, legislative, and judicial branches of government) works and how business intelligence activities are managed and overseen in the private sector.

INMS 660 Leadership Seminar (3)
Prerequisite: Completion of 30 credits of program coursework, including all core and specialization courses (except MGMT 670). An analysis and assessment of leadership challenges within intelligence environments. Key leadership and management principles in dealing with intelligence situations, scenarios, and issues are applied to real-world intelligence situations, such as handling insider threats; augmenting intelligence collection; planning intelligence, surveillance, and reconnaissance (ISR) operations; establishing and expanding foreign intelligence partnerships; prioritizing budgets; responding to intelligence oversight inquiries; infusing advanced technologies; coordinating intelligence and cyber operations; or assessing counterintelligence, counterterrorism, and nation-state security threats.

Information Systems and Services

ISAS 600 Information Systems for Managers (3)
(Designed for managers without a technical background in computers and information systems.) Prerequisite: Basic microcomputer skills. An investigation of different types of hardware and software and their application in organizations from a systems perspective. Case studies are used to reveal technical and organizational issues, along with operational considerations. Emphasis is on determining managers' needs for information and procuring and using appropriate computer systems.

ISAS 610 Information Systems Management and Integration (3)
A study of the life cycle of the information system, from inception, through systems development and integration, to system operation and maintenance. Emphasis is on the integration of information systems with management systems of an organization. Major phases, procedures, policies, and techniques in the information system life cycle are discussed in detail.

ISAS 620 Information Systems Sourcing Management (3)
A study of how best to make and implement appropriate decisions in providing information systems to an organization, as well as how to manage the outcomes of such decisions. Focus is on the frameworks, tools, and techniques for making sourcing decisions. Topics include "make or buy" decisions, the use of off-the-shelf package software (including enterprise resource planning software), various models of outsourcing, and the outsourcing of entire business processes. The implications of whether to source domestically or offshore are evaluated. Discussion also covers contemporary issues related to cloud computing and the options it offers.

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ISAS 630 Systems Analysis and Design (3)
A study of current techniques and practices in requirements specification, software application selection, project management, and analysis and design of information system applications. Emphasis is on a management perspective in the specification of the information system's logical and physical analysis and design.

ISAS 640 Decision Support Systems and Expert Systems (3)
An investigation of computer applications for management support. The technologies of decision support systems and expert systems and the organizational factors leading to the success or failure of such systems are introduced. Topics also include group decision support systems, integration and implementation issues, and related advanced technologies such as neural networks.

ISAS 650 Information Technology, the CIO, and Organizational Transformation (3)
An examination of how information technology can affect the strategic direction of an organization, how IT enables new ways of operating, and how the chief information officer can serve as a trusted member of the organization's top management team to help it exploit information technology effectively.

Information Technology

ITEC 610 Information Technology Foundations (3)
A fundamental study of technology and its applications, as well as the economic and social issues they have raised. Topics include computers, peripherals, databases, and networks; operations (of business, government, and other enterprises), decision support systems, and acquisition of information technology resources; and information security, productivity, equitable access by users, intellectual property rights, and global reach. Discussion also covers current and future developments in the field and their implications.

ITEC 625 Computer Systems Architecture (3)
An introduction to the evolution of computer systems design and hardware and software architectures. Focus is on computer organization (classical and advanced architectures), operating systems, and applications development. Emerging developments in computer systems architecture are also examined.

ITEC 626 Information Systems Infrastructure (3)
An introduction to information systems infrastructure. Focus is on data communications and networks. Discussion covers layered network architectures and communication hardware. Emerging technologies such as social media, mobile computing, cloud computing, big data, and the Internet of Things are also examined.

ITEC 630 Information Systems Analysis, Modeling, and Design (3)
A study of systems analysis and design, using selected engineering and management science techniques and practices. Topics include requirements determination, modeling, decision-making, and proposal development. The System Development Life Cycle Model, including system implementation and postimplementation activities, is examined. Emphasis is on the specification of the information system's logical and physical analysis and design from a management perspective. Research and project assignments related to information systems analysis, design, implementation, and/or project planning and control, require individual and group work.

ITEC 640 Information Technology Project Management (3)
An examination of the fundamental principles and practice of managing programs and projects in an information processing and high-tech environment. The dynamic nature of IT and the effect of life cycles are explored. The fundamental building blocks of high-tech management styles (including project planning, organizational structure, team building, and effective control mechanisms) are addressed. Discussion covers the effect of product and project life cycles in delivering a successful IT project, considering the obsolescence factors in procurement/stakeholder contracts. The goal is to gain a solid foundation to successfully manage each phase of the project life cycle, work within organizational and cost constraints, set goals linked directly to stakeholder needs, and utilize proven management tools to execute a dynamic project on time and within budget. Emphasis is on how to apply the essential concepts, processes, and techniques in the management of large-scale governmental or commercial programs. Topics also include the need for global vision, strong planning techniques, appropriate training before introducing any IT product into the market, and discipline in executing tasks.

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Instructional Technology

INST 600 Technology Integration in the Contemporary Classroom (3)
An introductory study of current trends in educational technology. The objective is to use International Society for Technology in Education (ISTE) standards to explore current trends in educational technology, study learning theory, and apply instructional technology integration models to the design of standards-based lesson plans. Discussion covers technology-infused lesson plans and digital tools and resources. Activities include development of a professional portfolio, and creation of a professional growth plan. Students may receive credit for only one of the following courses: EDTC 600 or INST 600.

INST 605 Designing Learner-Centered Environments (3)
Prerequisite or corequisite: INST 600. A study of contemporary learning models that facilitate authentic, technology-rich learning experiences to promote student autonomy. The objective is to use learning science to investigate contemporary learning models and frameworks in depth. Topics include the design of lessons and learning activities that facilitate collaboration, critical thinking, creativity, and communication and the design of flexible, accessible, active learning spaces.

INST 610 Digital Identity and Critical Media Analysis (3)
Prerequisite or corequisite: INST 605. A comprehensive examination of the responsibility that educators have to protect learners from cyber threats. The objective is to apply best practices for protecting student privacy; promoting safe, ethical, and legal behavior online; and teaching critical analysis and design of media. Activities include designing instructional materials to support students, parents, and other educators in making informed decisions to safeguard personal privacy and digital identity and to apply critical media analysis in the development of online content. Students may receive credit for only one of the following courses: EDTC 605 or INST 610.

INST 615 Learning Analytics and Adaptation (3)
Prerequisite or corequisite: INST 610. An exploration of learning analytics. The objective is to better target students' individual learning needs through deeper insight into their performance. Topics include data literacy, differentiation, ADA compliance, and personalized learning, as well as designing a rich variety of formative and summative assessments, using student data, and learning analytics to inform the design of technology-enhanced lessons, and selecting assistive technologies. Students may receive credit for only one of the following courses: EDTC 615 or INST 615.

INST 620 Transforming Education Online (3)
Prerequisite or corequisite: INST 615. An exploration of online learning. The objective is to apply instructional design theories, models, and frameworks to develop learning experiences for digital platforms. Topics include developing a needs assessment, writing learning objectives, consulting digital rights and ADA guidelines in the development of interactive instructional materials and OERs, creating supporting materials and assessments, and evaluating the success of design projects. Students may receive credit for only one of the following courses: EDTC 610 or INST 620.

INST 625 Leading Change and Innovation in Educational Environments (3)
Prerequisite or corequisite: INST 620. A comprehensive study of change management. The objective is to lead change efforts by investigating issues that affect technology adoption in schools, exploring notable change management theories, and developing strategies to mitigate fear and resistance. Topics include developing a change management plan for school or district improvement that is informed by mission, vision, goals, and culture and establishing oneself as a thought leader in the field by creating a professional online presence.

INST 630 Coaching for Instructional Innovation (3)
Prerequisite or corequisite: INST 625. A detailed exploration of coaching about instructional technology. The objective is to demonstrate coaching skills, such as facilitating learning and growth, encouraging risk taking, facilitating deep reflection, and providing meaningful feedback. Topics include relationship building with other educators to create a supportive and productive culture conducive to the coaching process.

INST 640 Designing for Professional Development and Growth (3)
Prerequisite or corequisite: INST 630. A comprehensive study of effective professional development planning efforts that support the development and growth of teachers across the entire professional continuum. The objective is to apply research-based adult learning principles to support the specific learning, cultural, and social-emotional needs of educators to increase their ability to effectively integrate technology in the classroom. Topics include emerging trends, best practices, and contemporary professional development models. Students may receive credit for only one of the following courses: EDTC 640 or INST 640.

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INST 645 Strategic Technology Planning (3)
Prerequisite or corequisite: INST 640. An investigation of strategic planning efforts in modern school districts. The objective is to engage in a strategic planning process to implement new technology by collaborating with stakeholders to develop a shared vision, writing goals and objectives, creating an action plan with communication strategies and criteria for evaluation, and mobilizing resources. Topics include developing a strategic plan for a technology integration initiative, developing funding proposals, and writing professional recommendations for new digital resources and technology tools. Students may receive credit for only one of the following courses: EDTC 630 or INST 645.

INST 650 Integrative Capstone I (3)
Prerequisite or corequisite: INST 645. A thorough review of the instructional technology concepts and skills acquired through previous coursework. The objective is to work collaboratively with a teacher or group of teachers to identify instructional challenges, select a technology-based solution, set goals, engage in collaborative learning, provide coaching and feedback, collect data, and reflect on success. Activities include identifying a teacher or group of teachers to work with, analyzing available data, identifying an instructional challenge, and developing a coaching plan.

INST 670 Integrative Capstone II (3)
Prerequisite: INST 650. Continued review of the instructional technology concepts and skills acquired through previous coursework. The objective is to work collaboratively with a teacher or group of teachers to identify instructional challenges, select a technology-based solution, set goals, engage in collaborative learning, provide coaching and feedback, collect data, and reflect on your success. Activities include implementing the coaching plan, collecting data, and analyzing it.

Learning Design and Technology

LDT 610 Learning Design and Digital Pedagogy (6)
Prerequisite: DCL 600M. Gain the foundational knowledge, skills, and dispositions needed in the field of learning design. Explore the history of online learning and design; current learning design models; foundational theories and principles of distance learning, adult learning, collaborative and social learning, and computer-mediated learning; and technology tools and applications to support online interactions.

LDT 620 Learning Design, Media, and Emerging Technologies (6)
Prerequisite: LDT 610. Develop skills in the design, development, and integration of digital media to enhance the learning experience. Investigate how media, emerging and mobile tools, and online applications impact technology-mediated learning environments. Explore media and visual literacy, graphic design for online and mobile environments, the use and design of open educational resources, emerging technologies, and trends in technology such as mobile learning environments, gaming, and augmented reality.

LDT 630 Learning Design and Data Analytics (6)
Prerequisite: LDT 620. Investigate advanced learning design concepts and apply data analytics to assess the impact of design and technology on learning. Implement a systems thinking approach and digital tools to evaluate and support online learners and learning programs. Explore the assessment of online learning and interactions, data analytic tools and techniques, ways to support user experiences, human/computer interface design, and data visualization.

LDT 640 Advanced Practicum in Learning Design (6)
Prerequisite: LDT 630. Examine and evaluate leadership and change models to advance learning design projects. Identify and research legal issues associated with online teaching and learning. Examine leadership and project management techniques associated with learning design projects, evaluate learning management systems, and identify a project and develop a learning design seminar proposal.

LDT 670 Learning Design Seminar (6)
Prerequisite: LDT 640. Assume the role of an instructional designer and apply learning design knowledge, skills, and dispositions to create and assess an authentic online learning program. Complete the design, implementation, and analysis of a learning design project. Develop a professional portfolio and present the project and reflective analysis online.

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Management

MGMT 610 Organizational Theory (3)
An overview of the fundamental concepts of organizational theory and design in the context of organizational efficiency and managerial roles. The objective is to analyze organizational theory concepts and the history of management thought and its relevance for managers today, evaluate how organizational structure and culture impact decision-making and workflow, analyze how systems thinking and external and internal factors affect contemporary organizational structure, and use organizational theory concepts to design strategic plans to meet organizational needs. Discussion covers essential concepts in organizational theory and design, including measures of effectiveness, organizational life cycles, options for organizational structure, the learning organization, effective decision-making, and the manager's role in developing and maintaining the organizational structure. Topics include the appropriateness of organizational structures and design to meet the needs of the organization, organizational ethics and social responsibility, global issues, organizational effectiveness, and the challenges of managing in today's complex and rapidly changing environment.

MGMT 615 Organizational Behavior (3)
A study of organizational culture and the management of individual and team behaviors that contribute to an organization's sustainability. The objective is to analyze the role of management in creating and sustaining an organizational culture that promotes the organization's purpose and vision and to apply the communication, management, and relationship-building skills crucial to the success of the manager within the workplace. Focus is on the human skills that are relevant to the success of the manager within the workplace. Topics include the impact that individual characteristics, team dynamics, organizational communication, and culture have on employee performance and commitment.

MGMT 630 Organizational Theory and Behavior (6)
(Not open to students who have completed MGMT 610 or MGMT 615.) An overview of the fundamental concepts of organizational theory and behavior. The goal is to evaluate management theories relevant to a manager's role, design organizational structure to maximize decision-making, and recognize the significance of systems thinking to the contemporary organization. Topics include the human skills that are relevant to the success of the manager within the workplace. Discussion covers the impact that individual characteristics, team dynamics, communication, and organizational culture have on developing effective and committed employee performance. Students who receive credit for MGMT 630 may not receive credit for MGMT 610 or MGMT 615.

MGMT 640 Financial Decision-Making for Managers (3)
An exploration of contemporary managerial practices related to financial decision-making in business, government, and not-for-profit organizations. Emphasis is on fundamental concepts of financial accounting and economics, including opportunity cost, the time value of money, and financial analysis. The objective is to apply financial and nonfinancial information to a wide range of management decisions, from product pricing and budgeting to project analysis and performance measurement. Topics include decision-making tools such as break-even analysis, activity-based costing procedures, and discounted cash flow techniques. Activities require extensive use of Microsoft Excel.

MGMT 650 Statistics for Managerial Decision-Making (3)
Prerequisite: Knowledge of the fundamentals of statistical methods, techniques, and tools. An examination of how managers organize, analyze, and interpret data for decision-making. Focus is on developing skills in using statistical tools to make effective business decisions in all areas of public- and private-sector decision-making, including accounting, finance, marketing, production management, and human resource management. Topics include collecting data; describing, sampling, and presenting data; probability; statistical inference; regression analysis; forecasting; and risk analysis. Microsoft Excel is used extensively for organizing, analyzing, and presenting data.

MGMT 670 Strategic Management Capstone (3)
Prerequisite: Completion of 24 credits of program coursework, including all core courses. A capstone investigation of how strategy interacts with and guides an organization within its internal and external environments. Focus is on corporate- and business unit–level strategy, strategy development, strategy implementation, and the overall strategic management process. Topics include organizational mission, vision, goal setting, environmental assessment, and strategic decision-making. Techniques such as industry analysis, competitive analysis, and portfolio analysis are presented. Discussion covers strategic implementation as it relates to organizational structure, policy, leadership, and evaluation issues. The ability to think strategically and to weigh things from the perspective of the total enterprise operating in an increasingly global market environment is emphasized. Case analyses and text material are used to integrate knowledge and skills gained through previous study.

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Marketing

MRKT 600 Marketing Management (3)
An introduction to marketing management techniques. Emphasis is on achieving an organization's marketing objectives by creating value for individual consumers and organizational customers. Discussion covers planning, decision-making, marketing goals, and metrics. Topics also include consumer behavior, competitive strategies, marketing communications (e.g., advertising, digital marketing), marketing research, pricing, and distribution.

MRKT 601 Legal and Ethical Issues in Marketing (3)
An overview of the legal and ethical environment of marketing. Topics include consumer privacy, ethical responsibilities, fair advertising, free speech, global marketing, intellectual property, and regulatory issues.

MRKT 602 Consumer Behavior (3)
A study of the cognitive and behavioral bases underlying consumers' buying preferences and decision processes, intended for managers and administrators who have to evaluate the efficacy of the firm's marketing plan. Emphasis is on the role of the communications strategy (for example, advertising, promotion, public relations) in achieving the overall marketing objectives.

MRKT 603 Brand Management (3)
A presentation of the concepts and techniques for creating and selecting marketing strategies for an organizational unit that survives on its ability to provide products and services to other organizations. Discussion covers trends toward a "marketing culture" in both public and private institutions and the implications that this change has for all managers and administrators. Emphasis is on the role of brand equity in achieving a sustainable competitive advantage.

MRKT 604 Marketing Research and Analytics (3)
Prerequisite: MGMT 650. A study of marketing research methods. Focus is on identifying marketing problems and opportunities and developing data-based approaches to generate, refine, and evaluate marketing actions. Topics include designing market research strategies, understanding customer data analysis techniques and their application to real-world marketing problems, and evaluating the managerial implications of analytical results.

MRKT 605 International Marketing Management (3)
An overview of the fundamentals of marketing and marketing management, presented in the context of competitive global environments and diverse national economies. Topics include demand analysis, product development, product pricing, marketing organization, foreign representation and distribution systems, promotion, advertising, and sales and service. Review also covers regulatory issues as they relate to international marketing.

MRKT 606 Digital and Direct Marketing (3)
Prerequisite: MGMT 650. A study of various methods and techniques used in digital and direct marketing. Focus is on assessing customer needs to better use social and digital techniques and other tools in the context of a comprehensive digital marketing strategy. Discussion covers digital analytics concepts and their role in developing optimized digital insight-driven marketing strategies and traditional direct marketing methods to promote customer engagement and the deployment of multiple marketing channels to enhance customer relationships. Topics include search engine marketing, digital content marketing, mobile marketing, database marketing, direct mail, telemarketing, and email marketing.

MRKT 620 Marketing Management, Legal, and Ethical Issues (6)
An introduction to marketing management techniques and the legal and ethical environment of marketing. Discussion covers planning, decision-making, marketing goals, and metrics. Emphasis is on achieving an organization's marketing objectives by creating value for individual consumers and organizational customers. Topics include consumer behavior, competitive strategies, marketing communications (e.g., advertising, digital marketing), marketing research, pricing, and distribution. Legal and ethical topics include consumer privacy, ethical responsibilities, fair advertising, free speech, global marketing, intellectual property, and regulatory issues. Students who receive credit for MRKT 620 may not receive credit for MRKT 600 or MRKT 601

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Nonprofit Management

NPMN 600 Nonprofit and Association Organizations and Issues (3)

A presentation of a framework outlining the roles and functions of the principal types of nonprofit organizations. Characteristics that distinguish nonprofit organizations from their counterparts in the private and public sectors are introduced. The challenges, opportunities, and common issues facing managers of nonprofit organizations are explored. These issues include administrative cost control, preserving the organization's legal status and revenue base, staffing and organizing in response to client needs, and ethical considerations. Specific laws, regulations, policies, and court rulings that affect the nonprofit sector are examined.

NPMN 610 Nonprofit and Association Law and Governance (3)

A study of current ideas and approaches related to nonprofit law, governance, and mission. Discussion covers distinctions between nonprofit, educational, charitable, social action, membership, cultural, scientific, environmental, and trade associations as they relate to incorporation, legal standing, tax-exempt status, and governance. Topics include nonprofit governance and trustee issues, as well as lobbying and advocacy, nonprofit liability, personnel, and unrelated business income tax. Special attention is paid to the relationship of governance and ethics in nonprofit management.

NPMN 620 Nonprofit and Association Financial Management (3)

A detailed study of theories and practices of nonprofit financial management and decision-making, including budgeting, reporting requirements, nonprofit accounting, and financial standards. Focus is on the role of financial management in maintaining the fiscal health and legal status of the nonprofit organization. Topics include budgeting, fund accounting, cash flow analysis, expenditure control, long-range financial planning, audits, and grant and contract management. Discussion also covers compliance with nonprofit accounting and financial management principles in reference to maintaining public access and ethical standards.

NPMN 640 Marketing, Development, and Public Relations in Nonprofit Organizations and Associations (3)

A study of the principles and practices required to develop and promote the products, services, positions, and image of nonprofit organizations. Focus is on fundraising and membership recruitment issues. Topics include the design of a marketing strategy and marketing mix, pricing issues, alternative revenue-generating mechanisms, and customer service. Discussion also explores use of the media; advertising and promotion methods; and relationships with business, government, and the community. The integration of sponsors, members, and chapters in the total marketing effort is examined.

NPMN 650 Fundamentals of Association Management (3)

A study of the unique and important niche of associations within the nonprofit sector. Analysis covers the history of associations, political groups, trade lobbying groups, and foundations in relation to their varying missions, internal capacity, shifting environments, and legal status. Associations also are assessed in terms of their wider environment, including the extent of their labor force and command of capital resources. Discussion covers the wider influence of associations on U.S. economy and policy.

NPMN 655 Process and Outcome Evaluation for Nonprofit Organizations (3)

An examination of the growing importance of process and outcome evaluation to nonprofit organizations in supporting their missions. Various quantitative and qualitative evaluation strategies, as well as quality and process-improvement methodologies, are explored. Topics include important evaluation concepts such as validity and reliability of various data collection tools, various approaches to sampling, and precision of results.

NPMN 660 Strategic Management in Nonprofit Organizations and Associations (3)

A study of the integration and application of strategic management principles, concepts, and practices in nonprofit organizations. Topics include the development of mission statements, goal-setting concepts, and strategy formulation and implementation approaches. Assignments focus on designing organizational plans and strategies relevant to the specific needs of organizations.

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Project Management

PMAN 634 Foundations of Project Management (3)
An overview of the theory and practice of managing projects in any organization or industry using traditional, agile, and hybrid methodologies. All three skill sets of the Project Management Institute Talent Triangle—technical project management, leadership, and strategic and business management—are addressed and provide a foundational project management knowledge and skill base that is highly relevant to workplace project challenges. Emphasis is on blending hard and soft skills to realize superior project outcomes. Skills associated with harnessing diversity; building, leading, and motivating project teams; communications; conflict management; and emotional intelligence are intertwined with tools and techniques drawn from all ten of the project management knowledge areas—integration, scope, schedule, cost, quality, resource, communication, risk, procurement, and stakeholder—with emphasis on integration management and scope management. These skills and techniques are contextualized to predictive (traditional) and adaptive (agile) life cycles and to the initiation, planning, executing, monitoring/control, and closure of a project. Emphasis is on the need to constantly align projects with value creation using practices and approaches that are tailored to mission, vision, and strategy of an organization; to the needs and priorities of stakeholders; and to organizational culture and mores.

PMAN 635 Project Schedule, Cost, and Resource Management (3)
Prerequisite: PMAN 634. An in-depth coverage of the logical and conceptual progression of a project from scope to schedule and budget, developed in the context of traditional project management and then adapted to agile and hybrid approaches. Aspects of resource management that relate to schedule and cost are also addressed. Emphasis is on cultivating practical and workplace-relevant skills, tools, and techniques essential for effectively estimating, modeling, and managing schedule and budget and for addressing the associated uncertainties, imperatives, and challenges encountered in real-life projects. Project management software is used to develop actionable reports and dashboards that provide a realistic and well-informed depiction of the schedule and budget, so that stakeholders can effectively engage with and support the project, make informed decisions, and assist in narrowing the gap between plan and actual performance. Applications extend learning from projects to programs and portfolios and develop the leadership skills and insights required to ensure their alignment with organizational mission, strategy, and goals.

PMAN 637 Project Risk Management (3)
Prerequisite: PMAN 635. An in-depth analysis of risk management methods and cases and project management risk monitoring from strategic, applied perspectives. State-of-the-art tools and techniques for identifying, ranking, and monitoring risks in the project management environment are examined and utilized. Both qualitative and quantitative risk analyses are conducted, and strategies for proactive risk mitigation are developed. Focus is on how a comprehensive risk management approach can enable a project team to proactively manage issues that adversely impact the successful scope, scheduling, control, and completion of a project.

PMAN 638 Project Communications Management (3)
Prerequisite: PMAN 634. An overview of conflict resolution processes and methods and the skills needed to manage the human elements within project management—a task as challenging as managing the technical aspects. Topics include critical communication and conflict resolution issues faced by project workers in today's global corporate environment. Innovative approaches to successfully negotiating and resolving conflicts among team members, colleagues, managers, and stakeholders are introduced and practiced. Proven techniques to make conflict a constructive rather than a destructive experience are analyzed. Emphasis is on case study analysis, effective communication behaviors, negotiation skills, and virtual team processes to successfully lead both domestic and global projects.

PMAN 639 Project Quality Management (3)
Prerequisite: PMAN 634. An applied study of the quality management policies, processes, and procedures required to ensure that projects satisfy the objectives for which they were undertaken. Process improvement and quality planning, assurance, and control are emphasized, with a focus on effectively managing customer satisfaction, promoting prevention over inspection, and facilitating continuous improvement. Activities associated with determining quality objectives, policies, and responsibilities are evaluated and implemented in the context of quality management principles, practices, and standards. Contemporary project quality management processes, tools, and applications are spotlighted and appraised for potential application to a project, with particular emphasis on the most widely used high-flier tools and techniques, such as benchmarking, cost of quality analysis, trend charts, histograms, control charts, cause and effect diagrams, Pareto charts, and Six Sigma. The need to mold the quality management approach to resonate with organizational priorities, objectives, and challenges is continually underscored.

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PMAN 641 Project Procurement Management (3)
Prerequisite: PMAN 634. An examination of the tools needed for project procurement management. Focus is on determining what needs to be purchased or acquired and determining when and how to acquire it. Topics include planning the contracting efforts (documenting products and services and identifying potential sellers); requesting sellers' responses (obtaining information, quotes bids, offers, or proposals); selecting the seller (receiving and reviewing offers, selecting among those potential offers, and negotiating a contract); administering contracts (managing the relationship between buyers and sellers, including documentation, corrective actions, and contract changes); and closing contracts (completing the contract and settling all open issues).

PMAN 650 Financial and Strategic Management of Projects (3)
Prerequisites: PMAN 634 and PMAN 635. An investigation of financial and strategic decision-making in the management of projects. Topics include estimating project costs from work breakdown structure; formulating, monitoring, and controlling project budgets; monitoring, evaluating, and forecasting project costs, schedule, results, and performance using earned value management; and deriving project cash flows. Discussion also covers the impact of project scope, schedule, and changes; management reserves to cover risks and contingencies; top-down and bottom-up budgeting; investment project analysis; discounted cash flow, internal rate of return, and net present value methodologies; cost of capital; and capital budgeting. Broader issues (such as links between project and corporate financial performance, business ethics, corporate social responsibility, project and organizational culture, information flow, and project sustainability) are also examined.

Software Engineering

SWEN 603 Modern Software Methodologies (3)
An in-depth overview of widely used modern software development methodologies. Historical software development methods are introduced. Topics include rapid application development and agile development, Scrum, Extreme Programming (XP), Unified Process, EVO (Evolutionary Project Management), lean software development, test-driven development, feature-driven development, Crystal solutions, Rational Unified Process, and other Unified Process methods. Discussion also covers advantages and drawbacks of using each method.

SWEN 645 Software Requirements (3)
An examination of major models of software requirements and specifications, existing software standards and practices, and formal methods of software development. Topics include writing system and software requirements, formal specification analysis, formal description reasoning, models of "standard" paradigms, and translations of such models into formal notations.

SWEN 646 Software Design and Implementation (3)
An exploration of modern software development techniques, tools, and technologies for building large, complex systems. Topics include software development processes and the role of design in those processes. Discussion also covers major design methods, available computer-aided software engineering (CASE) tools, the proper application of design methods, and techniques for estimating the magnitude of the development effort. Object-oriented programming is presented. Focus is on building software products using these technologies.

SWEN 647 Software Verification and Validation (3)
A study of methods for evaluating software for correctness, efficiency, performance, and reliability. Skills covered include program proving, code inspection, unit-level testing, and system-level analysis. The difficulty and cost of some types of analysis and the need for automation of tedious tasks are examined. Emphasis is on problem-solving skills, especially in analyzing code.

SWEN 651 Usability Engineering (3)
A study of the theory and practice of designing user interfaces for interactive systems. Topics include the principles of usability engineering and basic rules for usable design. User interfaces are evaluated using techniques such as contextual inquiry, task analysis, and usability testing. Discussion also covers when these techniques are most appropriate.

SWEN 656 Advanced Software Design and Implementation (3)
Prerequisite: SWEN 646. An exploration of software design and implementation for reducing complexity of systems. Topics include software design patterns, object-oriented programming, and aspect-oriented programming design. Focus is on building software products using these technologies.

SWEN 661 User Interface Implementation (3)
Prerequisite: SWEN 651. An examination of all types of user interfaces. Topics include developing user interfaces using mobile, desktop, and web technologies. Focus is on building user interfaces using these technologies.

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SWEN 670 Software Engineering Capstone (3)
Prerequisite: 30 credits of program coursework, including all core courses. A comprehensive examination of the tools, skills, and techniques of software engineering and their application. Completion of a major team project is designed to integrate knowledge and skills gained through previous study and provide experience of the constraints commonly experienced in industry (scheduling, vagueness of clients). Project requires forming teams (organization) and scheduling work to meet the deadlines imposed by the contract (syllabus).

Special Topics

UCSP 615 Orientation to Graduate Studies at UMGC (0)
(Required within the first 6 credits of graduate study for all new graduate students, except those in programs requiring CBR or DCL 600.) An overview of the skills needed for academic and professional success. Focus is on enhancing communication and critical thinking skills. Assignments provide familiarity with tools such as library and information resources. APA style and resources are also addressed.

Strategic Communications

MSC 610 Foundations of Strategic Communications (6)
Prerequisite: DCL 600M. Acquire foundational skills in strategic communications, including effective writing targeted to different audiences and media; fundamental research; and the planning, execution, and assessment of a communications plan. Become familiar with the public relations, marketing, and advertising industries and their practices; theoretical and ethical foundations; and the role of strategic communications in each.

MSC 620 Communications Techniques and Tactics (6)
Prerequisite: MSC 610. Develop internal and external communications strategies and select and produce appropriate communications tactics to execute them. Create internal communications that focus on employee engagement, leadership, and change management. Exercise best practices in media relations and social media product development.

MSC 630 Communications Leadership and Management (6)
Prerequisite: MSC 620. Practice advanced strategic communications decision-making in both national and international contexts. Coordinate public relations efforts internally, particularly between marketing and advertising departments. Master fundamental financial accounting and budgeting concepts required for many communications campaigns in business, government, and the nonprofit sectors. Align communications campaigns with organizational objectives. Follow global strategic communications trends and legal and ethical issues.

MSC 640 Crisis Communications Management (6)
Prerequisite: MSC 630. Develop strategic responses, including crisis definition, issue management, and crisis communications management, to crisis situations. Apply crisis communication theory and implement risk communication and reputation and image restoration best practices. Utilize appropriate research methods to inform a crisis communications plan.

MSC 670 Capstone: Communications Campaigns (6)
Prerequisite: MSC 640. Assume the role of a corporate communications director and create a communications plan to support an organizational strategy for an existing organization. Conduct research; develop a problem statement; and identify campaign goals and objectives, audience segments, and messaging targeted to those segments. Create a communications strategy with tactics and timelines, evaluation plans, and a realistic budget.

Systems Engineering

SYSE 610 Systems Engineering Overview (3)
An introduction to systems engineering using examples of manufacturing, information, and mechanical systems that involve the integration of different technologies. Emphasis is on the role of the systems engineer. Systems thinking principles and complex systems and system-of-systems theory are reviewed. Discussion covers various approaches to system dynamics modeling. An overview of the system life cycle through conception, design and development, integration and testing, and deployment and support is provided.

SYSE 620 Requirements Engineering (3)
An in-depth examination of the various techniques used in establishing and specifying system requirements, both physical and functional. Topics include system decomposition, requirements traceability, configuration management, and requirements validation. Several U.S. and international standards are examined as examples of requirements specification.

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SYSE 625 Model-Based Systems Engineering (3)
Prerequisite: SYSE 610. An introduction to formal system modeling and simulation methods using software-based approaches, which are replacing more traditional document-based descriptive modeling methods. Discussion covers the trend in industry toward standardized modeling techniques using software, especially SysML (Systems Modeling Language) computer packages, allowing greater consistency in system model representations between technologies, across industries, and even across language barriers. Topics include ways that computers can represent system models in detail and provide complex system simulations with minimum effort using several different system modeling and simulation software platforms. The objective is to be able to determine when and how model-based systems engineering (MBSE) approaches are useful, which tools to use, and which data to use as input to the MBSE tools and how to use the results from the tools in decision-making.

SYSE 630 System Design and Development (3)
Prerequisites: SYSE 610 and SYSE 620. A detailed exploration of the design and development phases of the system life cycle. Discussion covers several tools used for systems simulation and computer-aided design. Topics also include methods and policies for change control and the principles of quality assurance as an underlying concept in systems design.

SYSE 640 System Integration and Test (3)
Prerequisites: SYSE 610 and SYSE 620. A review of various strategies used to integrate system components and verify satisfaction of requirements at both subsystem and overall system levels. The concept of formal verification, validation, and accreditation (VV&A) is discussed. Examples of automated software testing tools are also examined.

SYSE 650 Design Considerations (3)
Prerequisites: SYSE 610 and SYSE 620. An introduction to system engineering subdisciplines that are critical in system design and deployment. Discussion covers reliability, availability, and maintainability (RAM) factors. Concepts in human factors engineering, system safety, and quality assurance are also reviewed.

SYSE 660 Systems Engineering Management (3)
Prerequisites: SYSE 630 and SYSE 640. An examination of the role played by the systems engineer as liaison between technical specialists, business managers, and internal users or external customers. Discussion covers the traditional systems development life cycle, domestic and internal standards, and the evolving emphasis on agile methods and adaptive processes. Topics also include risk management and organizational considerations in outsourcing.

SYSE 670 Systems Engineering Capstone (3)
Prerequisites: SYSE 640 and SYSE 650. A project-based capstone study of systems engineering designed to integrate knowledge and skills gained in previous study. Both individual projects and a group project focus on demonstrating the ability to construct a system design and develop a plan for a system's development and support.

Transformational Leadership

TLP 610 Repositioning Your Leadership Skills (6)
Prerequisite: DCL 600M. Master the ways in which leadership takes place within organizations and the most effective leadership styles for directing individuals, projects, and groups to success. Demonstrate the differences between managing and leading, focusing on motivating and inspiring individuals in preparation for future challenges and opportunities. Explore the various roles that leaders take on in domestic and global markets and the ways leaders influence events that can drive success through individual and collaborative efforts. Create your own personal brand as you begin a journey to becoming a transformational leader.

TLP 620 Leading in the Organization (6)
Prerequisite: TLP 610. Analyze the dynamics involved in leading a workforce of multigenerational and diverse talent. Develop strategies for facilitating an inclusive work culture and maximizing the varied skill sets and experiences of employees. Weigh the impact of workforce change on organizations and consider the potential challenges that run counter to respectful, civil, and ethical work environments. Create retention and succession planning strategies and techniques for coaching and mentoring emerging leaders.

TLP 630 Leading with Strategy and Performance Measures (6)
Prerequisite: TLP 620. Gain the tools to assess the organization's bottom line and action steps for growth and sustainability. Apply strategic management theories and practice to measure and motivate organizational performance, identify trends, and direct the different stages of the organization's life cycle. Become proficient using tools to review and interpret analytics, market research, and financial data that can drive short- and long-range strategic decisions and identify potential deficiencies that run counter to the organization's mission and goals.

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TLP 640 Leading Through Change and Uncertainty (6)
Prerequisite: TLP 630. Apply change management techniques for leading and maintaining stability during unplanned, turbulent events within the organization. Analyze and implement strategic planning and decision-making approaches to diagnose the symptoms and predictors of organizational challenges and obstacles to change. Use change management models to assess organizational performance and process reengineering and to forecast outcomes and resistance to change at the individual, group, and organization levels.

TLP 670 Leadership Capstone (6)
Prerequisite: TLP 640. Lead a real-world consulting project. Apply the techniques of project management as you collaborate with a partnering organization to develop a strategic and financial plan to address an organizational issue. Use client-relationship management, organizational diagnosis models, and coaching and presentation skills to complete your consulting project and showcase your solutions and plans to your partner organization.

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