2026–2027

CATALOG UPDATE

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UNIVERSITY OF MARYLAND GLOBAL CAMPUS

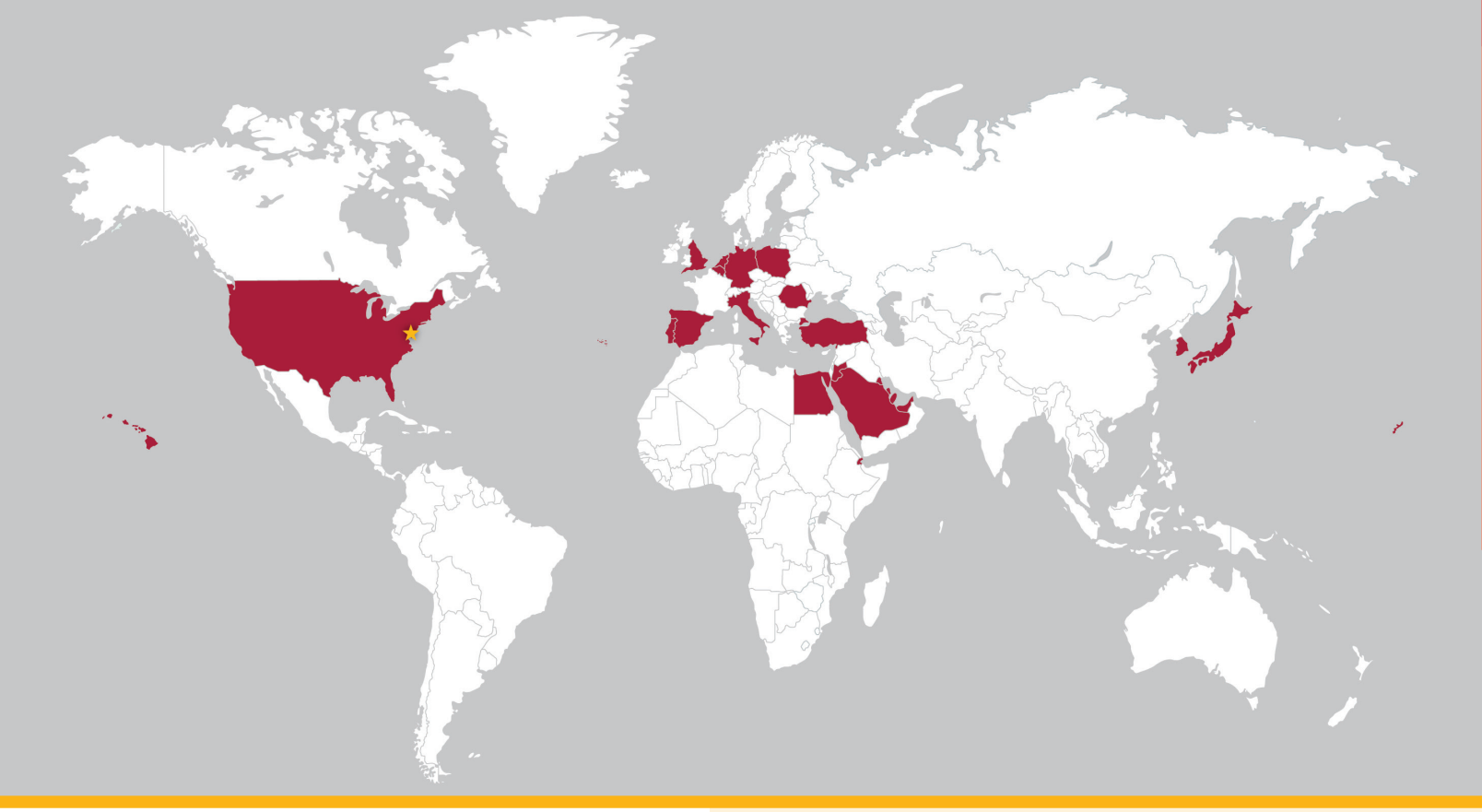


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The following information is an update to the 2026–2027 UMGC catalog and represents changes and additions made after original publication. Refer to the 2026–2027 catalog for information on all other programs, services, and policies.

MISSION

The mission of UMGC is to inspire hope, empower dreams, and transform lives . . . one student at a time. We accomplish this by

- Operating as Maryland's open university, serving working adults, military servicemen and servicewomen and their families, and veterans who reside in Maryland, across the United States, and around the world
- Providing our students with affordable, open access to valued, quality higher education
- Serving as a recognized leader in career-relevant education, embracing innovation and change aligned with our purpose, and sharing our perspectives and expertise

VISION

The vision of UMGC is to be the school of choice for adults and business because we are learner-centric, data-driven, and skills-based.

VALUES

The core values of UMGC support its institutional vision for the future of learning and ensure the fidelity of the university's commitment to its learners and community.

- **Celebrate Diversity:** Our welcoming of diverse perspectives and ideas differentiates us and drives innovation
- **Optimize Agility:** Curiosity and adaptability—informed and guided by data—drive continuous improvement and transformation
- **Reach Beyond:** Courage and willingness to challenge boundaries lead to transformative solutions, for our institution and our learners alike
- **Embrace Collaboration:** Teamwork, effective communication, and clarity of purpose drive success

SUMMARY OF CHANGES

- The accelerated pathways available to UMGC students with a major in artificial intelligence now also include an option to reduce your total coursework for the MS in Applied Artificial Intelligence by 6 credits (two courses).

  To be eligible for the pathway, you must complete the bachelor's degree with a cumulative GPA of 3.0 or higher.

  For the pathway to the MS in Applied Artificial Intelligence, you may be awarded credit for ARIN 615 AI Ethics and DATA 645 Machine Learning.

  See p. 21 of the 2026–2027 UMGC catalog for more information on accelerated pathways.
- For the accelerated pathway in homeland security (described on p. 23 of the catalog), credit awarded to the MS in Homeland Security Leadership is applied to electives, not to core requirements.
- For the major in accounting, BMGT 110 Introduction to Business and Management may not be applied to business core requirements.
- For the major in business administration and management, the business core requires MRKT 210 Marketing Principles; no other MRKT course fulfills the requirement.
- The consumer disclosures available online (listed on p. 357 of the catalog) include program length among other institutional information.
- New programs and related courses are detailed on the following pages.

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Extended Reality Design

Available spring 2027.

You may seek an academic major in extended reality design.

Bachelor of Science in Extended Reality Design

The major in extended reality design offers you the opportunity to acquire the technical and creative skills needed to design immersive virtual, augmented, and mixed reality experiences. Through hands-on projects, you can learn 3D modeling, interaction design, spatial computing, storytelling, and XR development. Emphasizing user-centered design, ethical practices, and industry tools, the program is designed to prepare you to apply XR development and simulation to careers in education, healthcare, entertainment, and other fields, with a strong portfolio that showcases your expertise in immersive media.

What You'll Learn

Through your coursework, you'll learn how to

- Design intuitive, user-centered XR experiences by applying principles of human/computer interaction, interaction design, and immersive storytelling
- Develop functional XR applications using industry-standard tools, programming languages (e.g., Unity, Unreal, C#, and C++), and XR hardware across platforms such as augmented, virtual, and mixed reality
- Integrate visual, spatial, and audio design elements, including 3D modeling, animation, and sound, into immersive, interactive digital environments
- Evaluate user experiences through usability testing, performance optimization, iterative design, and data-driven decision-making
- Demonstrate ethical, inclusive, and professional practices by addressing issues such as accessibility, representation, data privacy, intellectual property, and communication with stakeholders
- Apply spatial computing and emerging technologies to design innovative, future-ready XR experiences across sectors such as gaming, education, healthcare, and manufacturing
- Assemble a diverse portfolio of XR projects that reflects technical proficiency, creativity, and readiness for careers in immersive media and related industries

Industry Certifications

This program is designed to help prepare you for the following certification exams, listed in alphabetical order:

- Google UX Design Professional Certificate
- Unity Certified User: Artist
- Unity Certified User: VR Developer

Degree Requirements

See pp. 32–34 of the 2026–2027 UMGC catalog for information on major, general education, and elective requirements, as well as overall requirements for completing a bachelor's degree.

BS IN EXTENDED REALITY DESIGN

	Credits
Required Major Core Courses	30
Required Major Capstone Course	3
Required Related Course	3
Remaining General Education and Elective Courses	84
Total	120

Major Requirements

To complete a major in extended reality design, you must take a total of 36 credits in required coursework, as follows:

REQUIRED MAJOR CORE COURSES (30 CREDITS)

WDDE 290	Introduction to Interactive Design (3)
WDDE 295	Fundamentals of Digital Design (3)
WDDE 360	User Experience and Interface Design (3)
WDDE 365	Principles of Web Design and Technology (3)
WDDE 395	Fundamentals of JavaScript (3)
XRDE 310	3D Modeling (3)
XRDE 315	Game Design I (3)
XRDE 330	Virtual Reality Design I (3)
XRDE 335	Augmented Reality Design I (3)
XRDE 490	Virtual World-Building (3)

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REQUIRED MAJOR CAPSTONE COURSE (3 CREDITS)

XRDE 495 Extended Reality Design Capstone (3)

REQUIRED RELATED COURSE (3 CREDITS)

The following required course may be applied to general education requirements.

CIFS 200 Concepts and Applications of Information Technology (3)

Course Sequencing

The following table is designed to provide an optimal order for taking both required and recommended general education, major, and elective courses for this program. Your plan will be unique to you, based on your previous education. Contact an advisor or a success coach if you have any questions about your academic advisement report.

Major core, track, capstone, and related requirements are listed in **bold**.

BS IN EXTENDED REALITY DESIGN	
Recommended and Required Courses	**Requirement(s) Fulfilled**
PACE 111T Program and Career Exploration in Technology (3)	General education/research and computing literacy
LIBS 150 Introduction to Research (1)	General education/research and computing literacy
WRTG 111 Foundations of Writing and Communication (3)	General education/communications
CIFS 200 Concepts and Applications of Information Technology (3)	**Related** and general education/ research and computing literacy
NUTR 100 Elements of Nutrition (3)	General education/biological and physical sciences
WDDE 290 Introduction to Interactive Design (3)	**Major**
SPCH 100 Foundations of Oral Communication (3)	General education/communications
STAT 200 Introduction to Statistics (3)	General education/mathematics
WRTG 112 Applied Writing and Communication (3)	General education/communications
WWDE 295 Fundamentals of Digital Design (3)	**Major**
HIST 125 Technological Transformations (3)	General education/arts and humanities
BIOL 103 Introduction to Biology (4)	General education/biological and physical sciences
BEHS 103 Technology in Contemporary Society (3)	General education/behavioral and social sciences
ARTH 334 Understanding Movies (3)	General education/arts and humanities
Elective (3)	Elective
ECON 103 Economics in the Information Age (3)	General education/behavioral and social sciences
Elective (3)	Elective
WWDE 360 User Experience and Interface Design (3)	**Major**
Elective (3)	Elective
Elective (3)	Elective
WWDE 365 Principles of Web Design and Technology I (3)	**Major**
Elective (3)	Elective
WWDE 395 Fundamentals of JavaScript (3)	**Major**
WRTG 393 Advanced Technical Writing (3)	General education/ communications
XRDE 310 3D Modeling (3)	**Major**
Elective (3)	Elective
XRDE 315 Game Design I (3)	**Major**
XRDE 330 Virtual Reality Design I (3)	**Major**
Elective (3)	Elective
XRDE 335 Augmented Reality Design I (3)	**Major**
Elective (3)	Elective
XRDE 490 Virtual World-Building (3)	**Major**
Elective (3)	Elective
Elective (3)	Elective
Elective (3)	Elective
Elective (3)	Elective
Elective (3)	Elective
Elective (3)	Elective
Elective (3)	Elective
XRDE 495 Extended Reality Design Capstone (3)	**Major/capstone**
CAPL 398A Career Planning Management (1)	Elective

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Applied Artificial Intelligence

Available spring 2027.

You may earn a Master of Science in Applied Artificial Intelligence.

Master of Science in Applied Artificial Intelligence

The graduate program in applied artificial intelligence is designed to offer you comprehensive technical and strategic foundations in AI while emphasizing ethical AI development and practical applications. Core coursework covers mathematics, machine learning, deep learning, data engineering, and systems design. Through your choice of coursework, you can tailor your AI expertise to specific industry needs, making the degree relevant for you whether you're a technical professional or a business leader seeking to drive AI transformation in your organization.

What You'll Learn

Through your coursework, you will learn how to

- Analyze the foundational concepts and principles of data-driven AI in the context of real-world applications and case studies
- Evaluate the potential applications and implications of AI in various industries, identifying strategic opportunities and risks
- Design and implement appropriate data, technology, and AI-driven processes and techniques to extract insights from data; address business challenges; and achieve desired outcomes within a range of sectors, including finance, healthcare, marketing, and cybersecurity
- Analyze the ethical, global, and human-centered implications of AI technologies to promote responsible design, development, and use
- Develop specialized knowledge, skills, and capabilities regarding artificial intelligence in functional areas such as healthcare, cybersecurity, finance and accounting, human resources, marketing, AI leadership and business transformation, systems engineering, sourcing and procurement, and public policy
- Communicate clearly in various forms, meeting expectations for content, purpose, organization, audience, and format

Accelerated Pathway

If you completed your undergraduate degree at UMGC with a major in artificial intelligence, an accelerated pathway between UMGC's undergraduate and graduate degree programs allows you to reduce your total coursework for the MS in Applied Artificial Intelligence by 6 credits (two courses). Details are on p. 1 of this addendum.

Degree Requirements

MS IN APPLIED ARTIFICIAL INTELLIGENCE

	Credits
Required Core Courses	**9**
Required Capstone Courses	**3**
Elective Courses	**18**
Total	**30**

REQUIRED CORE COURSES

ARIN 610	Introduction to Artificial Intelligence (3)
ARIN 615	AI Ethics (3)
ARIN 620	Contemporary Topics in AI (3)

REQUIRED CAPSTONE COURSE

ARIN 690B	AI Cybersecurity Capstone (3)

ELECTIVE COURSES*

Take six 3-credit courses from the following:

DATA 645	Machine Learning (3)
CYOP 605	Introduction to Cyber Operations (3)
CLCS 615	Cloud Services and Technologies (3)
ARIN 655	Deep Learning and Neural Networks (3)
CYOP 655	AI-Enabled Cyber Operations (3)
CLCS 660	AI-Based Cloud Automation and Scripting (3)

*Currently available courses reflect an elective area of AI cybersecurity. An elective area in AI engineering will be available fall 2027.

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Computer Information Systems

CIFS 200 Concepts and Applications of Information Technology (3)

(Formerly IFSM 201. 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 arises 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, CIFS 200, CMST 300, IFSM 201, or TMGT 201.

Extended Realty Design

XRDE 310 3D Modeling (3)

(Formerly CMST 390.) 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, CMST 429, or XRDE 310.

XRDE 315 Game Design I (3)

(Formerly CMST 315.) 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. Students may receive credit for only one of the following courses: CMST 315 or XRDE 315.

XRDE 330 Virtual Reality Design I (3)

(Formerly CMST 330.) Prerequisite: XRDE 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. Students may receive credit for only one of the following courses: CMST 330 or XRDE 330.

XRDE 335 Augmented Reality Design I (3)

(Formerly CMST 331.) Prerequisite: XRDE 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 AR 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. Students may receive credit for only one of the following courses: CMST 331 or XRDE 335.

XRDE 490 Virtual World-Building (3)

(Formerly CMST 490.) Prerequisite: XRDE 315. A comprehensive, project-focused exploration of the techniques, tools, workflows, and industry best practices used in virtual reality (VR) metaverse world-building. The goal is to create immersive and engaging virtual spaces and environments. Topics include 3D modeling, user interaction design and experience, aesthetics, narrative crafting, spatial audio effects, lighting, accessibility, and performance optimization. Students may receive credit for only one of the following courses: CMST 490 or XRDE 490.

XRDE 495 Extended Reality Design Capstone (3)

Prerequisites: 24 credits of major coursework. An overview of current trends, technologies, theories, and practices in the extended reality design field. The aim is to integrate concepts, practical applications, and critical thinking acquired through previous study and apply them to professional and postgraduate objectives. Analysis covers innovative and emerging issues in extended reality design. Assignments include industry analysis, résumé design, and portfolio creation.

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Web and Digital Design

WDDE 290 Introduction to Interactive Design (3)
(Formerly CMST 290.) 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 and conducting a usability review. Students may receive credit for only one of the following courses: CMST 290 or WDDE 290.

WDDE 295 Fundamentals of Digital Design (3)
(Formerly CMST 295.) 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. Students may receive credit for only one of the following courses: CMST 295 or WDDE 295.

WDDE 360 User Experience and Interface Design (3)
(Formerly CMST 308.) A hands-on, project-based introduction to design thinking and the basic practices of user experience (UX), user interface (UI), and interaction design. Focus is on 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, user research, and career paths, as well as measuring and evaluating interface quality, wireframing, prototyping, designing virtual experiences, and storyboarding. Students may receive credit for only one of the following courses: CMST 308 or WDDE 360.

WDDE 365 Principles of Web Design and Technology I (3)
(Formerly CMST 385.) 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, CMST 385, or WDDE 365.

WDDE 395 Fundamentals of JavaScript (3)
(Formerly CMST 388.) Prerequisite: WDDE 365. 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, CMST 398J, or WDDE 395.

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Artificial Intelligence

ARIN 610 Introduction to Artificial Intelligence (3)
(Designed for students from diverse backgrounds.) A comprehensive introduction to the foundational principles, terminology, and concepts of artificial intelligence (AI). Emphasis is on the knowledge and skills needed to understand, evaluate, and collaborate effectively on AI initiatives within an organization. Topics include machine learning, deep learning, foundation models, and generative AI, as well as their applications in different domain areas.

ARIN 615 AI Ethics (3)
(Formerly DATA 615.) An overview of current ethical issues in artificial intelligence (AI) and data science arising throughout the analytics life cycle. The goal is to create ethically driven and responsible AI solutions that enhance human problem-solving and decision-making, identify the sources of bias and discrimination in machine learning, and build models that promote trust in data. Topics include established and emerging guiding principles for AI ethics, such as explainability, fairness, robustness, transparency, accountability, inclusiveness, and privacy. Students may receive credit for only one of the following courses: ARIN 615 or DATA 615.

ARIN 620 Contemporary Topics in AI (3)
A project-based study of cutting-edge concepts, tools, and techniques, as well as the latest trends and innovations, in the rapidly evolving field of artificial intelligence. Emphasis is on hands-on projects for real-world applications, responsible development, and interdisciplinary use cases across industries. Topics include generative AI, foundation models, multimodal learning, AI ethics and governance, autonomous systems, edge AI, and advancements in natural language processing and computer vision.

ARIN 655 Deep Learning and Neural Networks (3)
(Formerly DATA 655.) Prerequisite: DATA 645. A practical exploration of the fundamental concepts, architectures, and applications of deep learning in the field of artificial intelligence. The goal is to develop deep learning models and apply them to solve real-world problems in a wide range of domains, such as healthcare, finance, marketing, and cybersecurity. Topics include backpropagation, convolutional networks, recurrent networks, and generative adversarial networks and their applications. Students may receive credit for only one of the following courses: ARIN 655 or DATA 655.

ARIN 690B AI Cybersecurity Capstone (3)
Prerequisites: ARIN 610, ARIN 615, ARIN 620, and CYOP 655. A comprehensive, project-driven exploration of artificial intelligence applications in cybersecurity. The goal is to integrate knowledge and skills gained from previous study to address real-world challenges, demonstrating one's ability to apply AI techniques to enhance the security of information systems and to safeguard AI-driven systems. Emphasis is on practical implementation, critical thinking, and aligning solutions with organizational security needs and objectives.

Cloud Computing Systems

CLCS 615 Cloud Services and Technologies (3)
A comprehensive exploration of cloud computing concepts, platforms, and technologies. Discussion covers the fundamental principles, benefits, and challenges associated with cloud-based solutions. Topics also include key cloud technologies such as cloud storage, networking, security, and databases. Hands-on exercises and experience with popular cloud platforms reinforce theoretical concepts and provide practice for real-world applications. Students may receive credit for only one of the following courses: CCS 610 or CLCS 615.

CLCS 660 AI-Based Cloud Automation and Scripting (3)
A study of the automation of cloud infrastructure and processes using scripting languages. The objective is to leverage scripting to streamline tasks, improve efficiency, and reduce manual errors. Topics include popular scripting languages (e.g., Python, Bash), cloud application programming interfaces (APIs), AI, and automation tools. Hands-on labs provide practical experience in automating cloud resource provisioning, configuration management, and deployment pipelines. Students may receive credit for only one of the following courses: CLCS 640 or CLCS 660.

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Cyber Operations

CYOP 605 Introduction to Cyber Operations (3)
A hands-on introduction to the strategies, principles, and technologies essential to defending modern networks and information systems. The objective is to evaluate and maintain systems that are resilient and trustworthy in a dynamic threat landscape and to meet specific mission security objectives. An overview of cyber defense is provided. Topics include fundamental principles of cybersecurity and vulnerabilities and risk management of information systems. Students may receive credit for only one of the following courses: COP 610 or CYOP 605.

CYOP 655 AI-Enabled Cyber Operations (3)
A hands-on introduction to the integration of artificial intelligence (AI) in cyber operations to enhance both defensive and offensive cybersecurity processes. The aim is to demonstrate expertise in using AI tools and techniques to identify vulnerabilities, analyze threats, and mitigate risks. Discussion covers the technical, ethical, and legal dimensions of AI-driven cybersecurity, including the automation of threat detection, response, and anomaly analysis within a security operations center (SOC) environment. Emphasis is on the development of practical skills in implementing secure network protocols; conducting compliance checks; and utilizing AI to automate tasks, such as log analysis, threat intelligence, and risk management. Topics also include the impact of AI on cyber threat intelligence; vulnerability identification; and the development of offensive and defensive tactics, techniques, and procedures (TTPs), as well as the implications of cloud computing environments on AI-enabled cyber operations. Students may receive credit for only one of the following courses: COP 630 or CYOP 655.

Data Analytics

DATA 645 Machine Learning (3)
A project-based study of the fundamental concepts and algorithms of machine learning. The aim is to evaluate different algorithms and methods and build models that learn from past data to find underlying patterns useful for prediction, classification, and exploratory data analysis and that can be applied to make informed business decisions. Topics include supervised and unsupervised machine learning techniques, naïve Bayes classifiers, regression, decision trees, and cluster analysis. Discussion explores significant tasks in real-world applications, including handling 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.

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University System of Maryland

UMGC is a constituent institution of the University System of Maryland and is governed by the USM Board of Regents.

ACCREDITATION

University of Maryland Global Campus (UMGC) is accredited by the Middle States Commission on Higher Education (MSCHE). MSCHE is recognized by the U.S. Secretary of Education to conduct accreditation and pre-accreditation activities for institutions of higher education, including distance, correspondence education, and direct assessment programs, throughout the United States. MSCHE's most recent action for UMGC was a reaffirmation of accreditation status on November 20, 2025.

ABOUT UMGC

University of Maryland Global Campus was founded more than 75 years ago specifically to serve the higher education needs of working adults and military servicemembers. Today, UMGC is the largest provider of postsecondary education in Maryland and continues its global tradition with online and hybrid courses, more than 175 classroom and service locations worldwide, and more than 100 degrees and certificates backed by the reputation of a state university and the University System of Maryland. For more information, visit *umgc.edu*.

Visit UMGC on the web at **umgc.edu**.

To speak with an advisor or a success coach, call **800-888-8682** or send an email to **studentsfirst@umgc.edu.**

UNIVERSITY OF MARYLAND
GLOBAL CAMPUS

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