GEORGE MASON UNIVERSITY | Department of Information Sciences and Technology

Master of Science, Applied Information Technology
(2021-2022 catalog)

The MS in Applied Information Technology is the very best graduate education in IT for high-potential leaders, especially those working on IT solutions that affect the federal government, industry or non-profit. Its objective is to graduate individuals of competence and character who can lead multidisciplinary teams in the design, justification, development, management, and sustainment of mega-systems from data to decision in the private and federal sectors. The MS in AIT provides a high quality curricula for students seeking to pursue their careers in the leading IT areas including Cyber Security, Big Data Analytics, Knowledge Mining, Data Analytics in Social Media, and Cyber-Human Interaction.

The MS AIT program offers the Cyber Security concentration fully online. For the online program, courses are offered in a condensed 8-week format, with students taking one course at a time. Content of courses, objectives, evaluation methods, and outcomes are identical to those for the on-campus program. Only the delivery format is different. The online program is intended to be completed in about 2.5 years. Request additional information for the online program, learn more, or apply.

At the doctoral level, the department offers a concentration in the College of Engineering and Computing School's PhD in IT program.

Admissions Requirements:
Applicants must have completed a baccalaureate degree from an accredited program with a reputation for high academic standards and an earned GPA of 3.00 or better in their 60 highest-level credits. They must be experienced in the fundamentals of IT and quantitative methods. In addition, applicants must:

- Provide two letters of recommendation, preferably from academic references or references in industry or government who are familiar with the applicant's professional accomplishments.
- Provide a resume and detailed statement of career goals and professional aspirations.
- Have achieved a satisfactory score on the TOEFL examination for non-native English speakers.

A high-achieving Mason Engineering alum who has shown exemplary work in an undergraduate degree may consider our Fast-Track graduate admission process which requires fewer supplementary admission materials.

Degree Requirements:
Completion of the MS program requires a minimum of 30 approved graduate credits (10 courses). To provide a common background in the fundamentals of information sciences and technology, all students are required to complete four core courses. In addition to the core courses, students must choose a concentration within the program by taking six courses from one of the concentration areas listed below.

Students interested in the PhD in IT program must pursue the Cyber Security, Data Analytics and Intelligence Methods, or Cyber-Human Systems concentrations. They are required to meet with an advisor before applying to the program. In addition, students must take AIT 602 and one of the following courses: AIT 699, AIT 799, or AIT 796, while they are completing their MS AIT degree.

Students in all concentrations may take other CEC graduate-level courses not listed below as part of their MS technical electives subject to prior advisor approval.

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Core courses:

For students in all CYBR, DAIN, CBHS concentrations	For students in ITMG concentration
AIT 512 *Algorithms and Data Structures Essentials*	AIT 580 *Analytics: Big Data to Information*
AIT 524 *Database Management Systems*	AIT 524 *Database Management Systems*
AIT 542 *Fundamentals of Computing Platforms*	AIT 542 *Fundamentals of Computing Platforms*
AIT 664 *Information: Representation, Processing and Visualization*	AIT 664 *Information: Representation, Processing and Visualization*

Cyber Security (CYBR):

Cyber-Human Systems (CBHS):

Foundation: Select 4 courses from:	Foundation:
AIT 660 *Cyber Security Fundamentals*	AIT 582 *Metadata Analytics for Big Data*
AIT 670 *Cloud Computing Security*	AIT 602 *Introduction to Research in Applied Information Technology*
AIT 681 *Secure Software Development*	AIT 716 *Human Computer Interaction*
AIT 682 *Network and Systems Security*	AIT 724 *Data Analytics in Social Media*
AIT 702 *Incident Handling and Penetration Testing*	
Electives: Select two from the following:	**Electives: Select two from the following:**
AIT 590 *Topics in Applied Information Technology*	AIT 526 *Introduction to Natural Language Processing*
AIT 602 *Introduction to Research in Applied Information Technology*	AIT 590 *Topics in Applied Information Technology*
AIT 636 *Interpretable Machine Learning*	AIT 614 *Big Data Essentials*
AIT 672 *Identity and Access Management*	AIT 624 *Knowledge Mining from Big-Data*
AIT 690 *Advanced Topics in Applied Information Technology*	AIT 636 *Interpretable Machine Learning*
AIT 699 *Research Project*	AIT 684 *Interactive Visualization and Data Analytics*
AIT 701 *Cyber Security: Emerging Threats and Countermeasures*	AIT 690 *Advanced Topics in Applied Information Technology*
AIT 712 *Applied Biometric Technologies*	AIT 699 *Research Project*
AIT 736 *Applied Machine Learning*	AIT 711 *Rapid Development of Scalable Applications*
AIT 746 *Advanced Applied Machine Learning*	AIT 722 *Theories and Models in Geo-Social Data Analytics*
AIT 790 *Advanced Special Topics in Applied Information Technology*	AIT 726 *Natural Language Processing with Deep Learning*
AIT 799 *Master's Thesis*	AIT 734 *Advanced Web Analytics Using Semantics*
	AIT 736 *Applied Machine Learning*
	AIT 746 *Advanced Applied Machine Learning*
	AIT 790 *Advanced Special Topics in Applied Information Technology*
	AIT 799 *Master's Thesis*

Data Analytics and Intelligence Methods (DAIN)

IT Management (ITMG):

Foundation: Select 4 courses from:	Select six courses from the list below:
AIT 580 *Analytics: Big Data to Information*	AIT 582 *Metadata Analytics for Big Data*
AIT 582 *Metadata Analytics for Big Data*	AIT 590 *Topics in Applied Information Technology*
AIT 614 *Big Data Essentials*	AIT 614 *Big Data Essentials*
AIT 677 *Intelligence Analysis Methods*	AIT 622 *Determining Needs for Complex Big Data Systems*
AIT 724 *Data Analytics in Social Media*	AIT 655 Applied Project Management for IT Professional
	AIT 660 *Cyber Security Fundamentals*
Electives: Select two from the following:	AIT 665 *Managing Information Technology Programs in the Federal Sector*
AIT 526 *Introduction to Natural Language Processing*	AIT 670 *Cloud Computing Security*
AIT 590 *Topics in Applied Information Technology*	AIT 672 *Identity and Access Management*
AIT 602 *Introduction to Research in Applied Information Technology*	AIT 677 *Intelligence Analysis Methods*
AIT 624 *Knowledge Mining from Big-Data*	AIT 678 *National Security Challenges*
AIT 636 *Interpretable Machine Learning*	AIT 679 *National Security Challenges*
AIT 684 *Interactive Visualization and Data Analytics*	AIT 685 *Capstone Seminar*
AIT 690 *Advanced Topics in Applied Information Technology*	AIT 690 *Advanced Topics in Applied Information Technology*
AIT 699 *Research Project*	AIT 697 *Leading Organizations Through Change*
AIT 711 *Rapid Development of Scalable Applications*	AIT 701 *Cyber Security: Emerging Threats and Countermeasures*
AIT 716 *Human Computer Interaction*	
AIT 722 *Theories and Models in Geo-Social Data Analytics*	
AIT 726 *Natural Language Processing with Deep Learning*	
AIT 734 *Advanced Web Analytics Using Semantics*	
AIT 736 *Applied Machine Learning*	
AIT 746 *Advanced Applied Machine Learning*	
AIT 790 *Advanced Special Topics in Applied Information Technology*	
AIT 799 *Master's Thesis*	