Department of Information Technology

The Master of Science in Applied Engineering (MSAE) degree program at Georgia Southern integrates state-of-the-art technology and interdisciplinary and conceptual science with hands-on, operational skills preparation. Graduates gain valuable knowledge and are placed in a unique position to make an immediate impact on their career and their employers. The Information Technology concentration in the MSAE program embraces the constantly changing IT industry, prepares graduates to analyze and manage IT networks and systems. Thesis or Non-thesis tracks are available within the program. Courses include IT management, data analytics, networking, data management and storage, and network security. Research conducted through the thesis or independent study project provides opportunity for individualized in-depth study within the concentration.

Information Technology Degrees

• Applied Engineering M.S.A.E. (Information Technology Concentration)  
(http://catalog.georgiasouthern.edu/graduate/Allen-e-Paulson-engineering-information-technology/information-technology/applied-engineering-msae-information-technology-concentration)

IT 5090G Selected Topics in Information Technology  
3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.
Provides an opportunity for in-depth study of selected topics or emerging areas in information technology. Graduate students will be given an extra assignment determined by the instructor that undergraduates will not be required to do.
Prerequisite(s): Permission of Instructor.
Cross Listing(s): IT 5090.

IT 5135G Data Analytics  
3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.
This course covers the basic issues involved in building and populating a data mart to support the planning, designing and building of business intelligence applications and data analytics. Core concepts related to business intelligence and analytics are covered. For graduate students a significant research project will be assigned as a culminating experience.
Prerequisite(s): A minimum grade of "C" in IT 3233 or BUSA 3131 and CISM 4134.
Cross Listing(s): IT 5135.

IT 5233G Web and Mobile Security Fundamentals  
3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.
Cybersecurity is a cornerstone of web-based solutions for mobile applications, networks, and e-commerce. IT professionals must learn to predict, prepare for, and defend against cyber attacks from a myriad of sources if they are to build and support the next generation of business solutions. In this course, you will learn the principles of designing, building, and testing secure web-based solutions. You will also learn how to identify and prevent common security vulnerabilities. Graduate students will be required to complete individual advanced level research in an area beyond the scope of the undergraduate requirements that demonstrates a higher level of mastery in the subject matter with additional required deliverable representative of graduate level work, as determined by the instructor.
Prerequisite(s): Permission of instructor.
Cross Listing(s): IT 5233.

IT 5235G Advanced Web Interfaces  
3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.
This course provides an introduction and application of human-computer interaction theories to web-based applications. It covers the evaluation of user interfaces using various techniques including heuristic evaluation and user testing. For graduate students a significant research project will be assigned as a culminating experience.
Prerequisite(s): A minimum grade of "C" in IT 2430 or IT 3130 and IT 3132.
Cross Listing(s): IT 5235, IT 5235H.

IT 5236G Interactive Web Design and Development  
3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.
This course explores the infrastructure which forms the basis of commercial, web-enabled applications on mobile and small devices, as well as personal computers. The course will focus on designing mobile web applications that provide a high level of security, reliability, scalability, and availability. Through this course, students will develop proficiencies in current web technologies employed by businesses. Graduate students will be required to complete individual advanced level research in an area beyond the scope of the undergraduate requirements that demonstrates a higher level of mastery in the subject matter with additional required deliverables representative of graduate level work, as determined by the instructor.
Prerequisite(s): A minimum grade of "C" in IT 2431 or IT 3131.
Cross Listing(s): IT 5236.

IT 5343G Information Storage and Management  
3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.
This course covers modern storage infrastructure technology and management including; challenges and solutions for data storage and data management, intelligent storage systems, storage networking, backup, recovery, and archive, business continuity and disaster recovery, security and virtualization, managing and monitoring the storage infrastructure. Best practices for security policies of cloud resources including permissions, privileges and storage management are analyzed and performed. For graduate students a significant research project will be assigned as a culminating experience.
Prerequisite(s): A minimum grade of "C" in CISM 3134 and IT 2333.
Cross Listing(s): IT 5433.

IT 5434G Network Security Fundamentals  
3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.
This course is intended to serve the needs of individuals interested in understanding the field of network security and how it relates to other areas of information technology. The course will take a broad look at network security and provide the knowledge necessary to prepare students for further study in specialized security areas or used as a capstone course to those interested in acquiring a general knowledge of the field. Graduate students will be required to complete individual advanced level research in an area beyond the scope of the undergraduate requirements that demonstrates a higher level of mastery in the subject matter with additional required deliverables representative of graduate level work, as determined by the instructor.
Prerequisite(s): Permission of instructor.
Cross Listing(s): IT 5434.

IT 6130 Theoretical Foundations for Network Analysis  
3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.
This course will provide a detailed review of fundamental relevant to the study of telecommunications, and data communications. Topics covered will include Shannon's Theorem, elements of Graph theory, Queueing Theory, Probability, Number Systems, Matrices and more. Students will complete several exercises using MATLAB and Microsoft Excel to reinforce topics covered in lecture by solving network related problems. Discrete event simulations software (OPNET) will also be used to observe and analyze concepts and behaviors in communications networks.
IT 7090  Selected Topics in Information Technology  
1-3 Credit Hours.  0 Lecture Hours.  0 Lab Hours.  
This course provides the student with an opportunity for in-depth study of selected topics in information technology.  
Prerequisite(s): Permission of Instructor.  

IT 7130  IT Governance  
3 Credit Hours.  3 Lecture Hours.  0 Lab Hours.  
This course presents a holistic approach to integrating the information technology services with the organization. It focuses on strategy, design, implementation, operations and continual improvement of information technology. IT Governance addresses how an organization maintains flexibility through the use of Information Technology, assuring the IT organization aligns its strategies with those of the organization it supports. This course looks at multiple IT Governance structures and looks at the data that is collected in these structures.  

IT 7131  Data Science Methods  
3 Credit Hours.  3 Lecture Hours.  0 Lab Hours.  
This course introduces the concepts and techniques of Data Science and covers decision making support systems, business intelligence and analytics, data science positions and roles in business firms. Topics include data extraction from homogeneous and heterogeneous data sources, data processing and file types, data manipulation, conversion, and integration. Students will use software for statistical analysis and interpretation, predictive analytics, machine learning, and the fundamentals of big data technologies. Students will examine and critique current research in the field.  

IT 7133  Digital Security and Forensics Investigation  
3 Credit Hours.  3 Lecture Hours.  0 Lab Hours.  
This course explores the logical weapons and tools utilized in computer network exploitation, attacks and defenses. It also covers the digital forensics process, tools and methods for the detection and recovery of information on hardware or hidden within other formats. Topics also include cryptographic analysis, password recovery, the bypassing of specific target operating systems, and obtaining data from a digital device that has been destroyed on various platforms. This course also includes research components that require students to conduct research on a specific topic. Research deliverables include a term paper and presentation.  

IT 7360  Intgrt Tech School Learn Envir  
3 Credit Hours.  3 Lecture Hours.  0 Lab Hours.  

IT 7891  Independent Study  
1-3 Credit Hours.  0 Lecture Hours.  0 Lab Hours.  
Independent study is available for students to undertake individualized experimentation, research, study related to the discipline, or a capstone project. The specific topic will be approved by a faculty member in the program, and credit will be assigned commensurate with the magnitude of the study.  

IT 7895  Special Problems in IT  
1-3 Credit Hours.  0 Lecture Hours.  0 Lab Hours.  
Individual and specialized study in the one of the areas of information technology not otherwise covered in the program. Students must submit a proposal of the special problem for approval by the faculty member of record. Credit will be assigned commensurate with the magnitude of the study.  

IT 7999  Thesis  
1-6 Credit Hours.  0 Lecture Hours.  0 Lab Hours.  
This course focuses on the preparation and completion of the thesis.