OMS Cybersecurity
Course Descriptions

Please see the attached course plan to help plan out your registration. You may also consult your Georgia Tech [degree audit](#) to view your degree plan. Please let us know if you may have any questions!

**CS 6035 - Introduction to Information Security (core course) ([Course Preview](#))**
This course teaches the basic concepts and principles of information security, and the fundamental approaches to secure computers and networks. Its main topics include: security basics, security management and risk assessment, software security, operating systems security, database security, cryptography algorithms and protocols, network authentication and secure network applications, malicious malware, network threats and defenses, web security, mobile security, legal and ethical issues, and privacy.

**CS 6210 – Advanced Operating Systems ([Course Preview](#))**
Introduction to graduate-level topics in operating systems using research papers, textbook excerpts, and projects. Provides students thorough comprehension of distributed and parallel computer systems. Advanced Operating Systems is a graduate-level course that addresses a broad range of topics in operating system design and implementation, including; operating system structuring; synchronization, communication and scheduling in parallel systems; distributed systems, their communication mechanisms, distributed objects and middleware; failures and recovery management; system support for Internet-scale computing. By tracing the key ideas of today's most popular systems to their origins in research, the class highlights key developments in operating system design over the last two decades and illustrates how insight has evolved to implementation.

**CS 6238 – Secure Computer Systems ([Course Preview](#))**
Design principles of secure systems, authentication, access control and authorization, discretionary and mandatory security policies, secure kernel design, and secure databases.

**CS 6262 - Network Security ([Course Preview](#))**
This course provides an introduction to computer and network security. Students successfully completing this class will be able to evaluate works in academic and commercial security, and will have rudimentary skills in security research. The course begins with a tutorial of the basic elements of cryptography, cryptanalysis, and systems security, and continues by covering a number of seminal papers and monographs in a wide range of security areas. [Prerequisite – CS 6035]

**CS 6265 – Information Security Lab ([Course Preview](#))**
Computer systems and network vulnerabilities, information warfare, network and operating system security techniques, security analysis tools.

**CS 6300 - Software Development Process ([Course Preview](#))**
This course provides an in-depth study of the process of developing software systems, including the use of software processes in actual product development, techniques used to ensure quality of the software products and maintenance tasks performed as software evolves. By the end of the course, students will understand the role of software processes in the development of software and will have experienced several types of processes, from rigid to agile. Students will also become familiar with a variety of modern technologies and development techniques and understand their connection to software processes.

**CS 6400 – Database Systems Concepts and Design ([Course Preview](#))**
This course presents an example of applying a database application development methodology to a major real-world project. All the database concepts, techniques, and tools that are needed to develop a database application from scratch are introduced. In parallel, learners in the course will apply the database application development methodology, techniques, and tools to their own major class team project. In addition, this course will include instruction in the Extended Entity Relationship Model, the
Relational Model, Relational algebra, calculus and SQL, database normalization, efficiency and indexing. Finally, techniques and tools for metadata management and archival will be presented.

**ECE 8813 - Introduction to Cyber-Physical Systems Security** *(Course Preview)*
The course covers introductory topics in cyber-physical systems security. The goal is to expose students to fundamental security primitives specific to cyber-physical systems and to apply them to a broad range of current and future security challenges. Much of the course is taught with the focus on one instance of cyber-physical systems - Industrial Control Systems (CPSs). However, students will be expected to generalize the concepts for other cyber-physical systems.

**PUBP 6725 - Information Security Policies (core course)** *(Course Preview)*
This course introduces students to the policy and management aspects of cybersecurity. It is divided into four modules. The first involves basic concepts and definitions regarding policy, governance, and threats; the second deals with cybersecurity management and policy at the organizational level; the third deals with cybersecurity public policy at the national level; the fourth deals with cyber conflict, policy and diplomacy at the transnational level. This course situates cybersecurity in the overall Internet ecosystem.

**PUBP 6501 – Information Policy & Management** *(Course Preview)*
The course is an introduction to the role of information and knowledge in modern private and public organizations. It covers theoretical aspects of information seeking, gathering and use in organizations as well as knowledge creation and its role in management. The course also addresses the practical implementation of organization information strategies using information technology. Information security and cybersecurity are integrated into the framework of a learning and knowledge-oriented organization and general information policy rather than considered a separate concern. The first part of the course introduces the issues of organization strategy and its relation to information. The second part focuses on the notion of organizational learning. The third part focuses on the applications of information technology in government, especially related to various aspects of e-government. The final section focuses on new approaches to knowledge management in the public sector.

**Policy Track Students "ONLY" – Flexible Core options**

**CS 6400 – Database Systems Concepts and Design** *(Course Preview)*
This course presents an example of applying a database application development methodology to a major real-world project. All the database concepts, techniques, and tools that are needed to develop a database application from scratch are introduced. In parallel, learners in the course will apply the database application development methodology, techniques, and tools to their own major class team project. In addition, this course will include instruction in the Extended Entity Relationship Model, the Relational Model, Relational algebra, calculus and SQL, database normalization, efficiency and indexing. Finally, techniques and tools for metadata management and archival will be presented.

**CS 6750 – Human-Computer Interaction** *(Course Preview)* *(only for students in the Policy specialization. Information Security and ECE students cannot enroll in this course. This course is an elective that is not listed in the degree plan but will be applied to your program of study if completed.)*
This course is an introductory course on human-computer interaction. It does not presuppose any earlier knowledge of human-computer interaction, computer science, or psychology. The class covers three broad categories of topics within human-computer interaction: (a) the principles and characteristics of the interaction between humans and computers; (b) the techniques for designing and evaluating user-centered systems; and (c) current areas of cutting-edge research and development in human-computer interaction.
Please note that **CS 6750 – Human-Computer Interaction** is not included in the plan above but is an elective offered exclusively for Public Policy students ONLY for a Flexible elective option.