COMP 805 - Full Stack Development  
Credits: 3  
Students work in teams and implement, test, document, demonstrate, and deploy web systems that solve organizational needs expressed by real clients. Emphasis is on advanced server-side and client-side programming and integration of web applications with database and web server applications. Free and open source development and communication tools are used to carry out the course project.  
Grade Mode: Letter Grade

COMP 815 - Information Security  
Credits: 3  
Topics include general security principles and practices, network and system security, access control methodology, and cryptography. Students develop a basic cryptographic system based on sound mathematical principles, elaborate on its features and refine it, and experiment with various ways to attack it. Some programming required.  
Grade Mode: Letter Grade

COMP 820 - Database Systems and Technologies  
Credits: 3  
This is a project course that provides practical experience with database systems and technologies. Topics include data modeling, database design, system development and integration, database administration, and configuration and project management. The course emphasizes communication and collaboration with online tools. Project artifacts and activities are supported by current version control and database development and administration tools.  
Grade Mode: Letter Grade

COMP 821 - Big Data for Data Engineers  
Credits: 3  
In this course students gain practical experience developing data-oriented applications in modern infrastructure frameworks, also known as cloud data solutions. Guided by what a data scientist profile is, students become familiar with the use cases of data oriented applications. They will apply key data modeling and data design concepts to meet business requirements. Students will also apply modern software development to iteratively construct solutions using established reference architectures. Project work will be based in Google Cloud Platform and Amazon Web Services. Special fee.  
Grade Mode: Letter Grade

COMP 825 - Programming Languages  
Credits: 3  
Explores the main features of modern, high-level, general purpose programming languages from the user point of view. Provides students with an opportunity to use non-imperative programming paradigms, such as object-oriented, functional, and visual, and to learn how specific features of such languages can be used efficiently in solving problems. The purpose is to gain knowledge regarding the languages studied as well as providing the basis to conduct analysis related to comparisons and divergence in capabilities.  
Grade Mode: Letter Grade
COMP 851 - System Integration and Architecture  
**Credits:** 3  
Students work in teams to explore and practice various system integration techniques to address requirements, software and hardware acquisitions, integration issues, and acceptance testing. Specific focus is given to diagnosing and troubleshooting systems interoperability and interface integration issues. Students develop project plans and study the influence of business processes and culture on system architecture decisions. Studied techniques are compared and contrasted to derive lessons learned, best practices, and critical success factors.  
**Grade Mode:** Letter Grade  

COMP 855 - Digital Forensics  
**Credits:** 3  
This course studies cyber-attack prevention, planning, detection, response, and investigation with the goals of countering cybercrimes. The topics covered in this course include fundamentals of digital forensics, forensic duplication and analysis, network surveillance, intrusion detection and response, incident response, anti-forensics techniques, anonymity and pseudonymity, computer security policies and guidelines, and methods and standards for extraction and preservation of digital evidence.  
**Grade Mode:** Letter Grade  

COMP 860 - Data Visualization & Communication  
**Credits:** 3  
Through hand-on experience with a leading data-visualization tool, the course introduces the concepts of data visualization to allow students to communicate and analyze data effectively using visual techniques.  
**Grade Mode:** Letter Grade  

COMP 880 - Topics  
**Credits:** 1-3  
This course includes topics and emerging areas in computing. Barring duplication of subject the course may be repeated for credit.  
**Repeat Rule:** May be repeated up to unlimited times.  
**Grade Mode:** Letter Grade  

COMP 885 - Applied Cryptography  
**Credits:** 3  
This course aims to give students an overview of cryptographic concepts and methods, a good knowledge of some commonly used cryptographic primitives and protocols, a sound understanding of theory and implementation, as well as limitations and vulnerabilities, and an appreciation of the engineering difficulties involved in employing cryptographic tools to build secure systems. Some programming required.  
**Grade Mode:** Letter Grade  

COMP 890 - Internship and Career Planning  
**Credits:** 1  
This course is recommended for any student seeking internship and/or employment opportunities. Participants research and evaluate computing-related career opportunities related to their interests, create application portfolio, conduct informational interviews, use networking and job search resources, and participate in employer-based resume reviews and mock interviews. This course cannot be repeated for credit.  
**Grade Mode:** Letter Grade  

COMP 891 - Internship Practice  
**Credits:** 1-3  
The Internship Practice provides field-based learning experience through placement in a computing field. Students gain practical computing experience in a business, non-profit, or government organization. Under the direction of a workplace supervisor and a faculty advisor, the student is expected to contribute to the computing products, processes, or services of the organization.  
**Repeat Rule:** May be repeated for a maximum of 6 credits.  
**Grade Mode:** Letter Grade  

COMP 892 - Applied Research Internship  
**Credits:** 1-3  
This Applied Research Internship enhances the student’s academic achievements with real-world, professional computing applied research projects at a sponsoring organization. The student is expected to apply knowledge and skills acquired through other coursework in the major to address a research question in information technology related fields under the direction of a faculty advisor and a site supervisor at the organization.  
**Repeat Rule:** May be repeated for a maximum of 6 credits.  
**Grade Mode:** Letter Grade  

COMP 895 - Independent Study  
**Credits:** 1-3  
Advanced individual study under the direction of a faculty mentor. Content area to be determined in consultation with faculty mentor.  
**Prereq:** permission. May be repeated.  
**Grade Mode:** Letter Grade  

COMP 898 - Master's Project  
**Credits:** 3  
Guided project on a topic which has been approved as a suitable subject for a master's project. Supervision and advising by faculty in the Computing Technology program. Completion of 24 credits in the major.  
**Grade Mode:** Letter Grade  

COMP 899 - Master's Thesis  
**Credits:** 1-6  
Guided research on a topic which has been approved as a suitable subject for a master's thesis. Supervision and advising by faculty of the Computing Technology program. **Cr/F.**  
**Repeat Rule:** May be repeated for a maximum of 6 credits.  
**Grade Mode:**