

COMPUTING TECHNOLOGY (COMP)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

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.

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.

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.

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.

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.

COMP 830 - Object-Oriented Software Development

Credits: 3

Presents an iterative methodology for developing software systems. Development activities include requirements elicitation and analysis, system and object design, implementation and testing, project and configuration management, infrastructure maintenance, and system deployment to the end user. Students work in teams, assume developer roles, build models of a real-world system, and produce proof-of-concepts, prototypes, or system upgrades.

COMP 835 - Secure Networking Technologies

Credits: 3

In this course students study modern computer networking and focus on principles, architectures, protocols, security, and cloud. Modern IT and cloud computing call for expertise in security, which is a theme across all computing subjects, as well as a core area of study. Course requirements include both programming and administrative exercises to explore and gain practice with networking topics.

COMP 840 - Machine Learning Applications and Tools

Credits: 3

Introduces students to practical approaches of machine learning. The course is an exploration of creative applications of artificial intelligence using modern machine learning components and tools, including deep learning techniques. Different application domains are considered, such as computer vision, natural language processing, and cyber security. Students learn to evaluate the effectiveness of machine learning systems as well as their potential prediction problems.

COMP 850 - Neural Networks

Credits: 3

Artificial neural networks power the recent advances in computer vision, speech recognition, and machine translation. This is a first course on neural networks with a focus on applications in computer vision and natural language processing. Topics will include generic feedforward neural networks, convolutional neural networks for computer vision tasks, and recurrent neural networks with application to natural language processing, with other topics to be selected based on the interests of the instructor and the class.

Equivalent(s): DATA 850

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.

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.

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.

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.

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.

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.

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.

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.

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.