

COMPUTING TECHNOLOGIES (CTS)

CTS 101. Introduction to Digital Technologies. 3 Credit Hours.

The goal of this course is to help students gain a deeper appreciation of the capabilities and limitations of computing. Students will learn core computer science concepts and apply those using tools that they will use as future scientists, data analysts, and decision makers. By understanding software as more than a black box, students are better positioned to understand its value and its results, and make more intelligent decisions about when and how much to rely on software results. The course will use tools as Excel, Access, SQL, XML, and NetLogo to demonstrate principles.

Cross-listed Courses: CSC 101

CTS 120. Introduction to Visual Design. 3 Credit Hours.

This course introduces the elements of art and principles of design that create the language of visual communication. Through a variety of projects, in-class exercises, and homework assignments, students will engage in a rigorous creative process: brainstorming, conceptualizing, sketching, refinish, and producing. Students will be introduced to a variety of media and techniques and will become more conscious of the conceptual, expressive, and perceptual qualities of their aesthetic decisions, so they can effectively communicate visually. Through exposure to everything from Grand Masters to Madison Avenue ads, students will learn from examples of artists and designers from the past and present who have contributed to the visual landscape, to foster an awareness of visual systems of different cultures, time periods, and contemporary artists and to develop the ability to ask critical questions. Slide presentations and sketchbook assignments will introduce a variety of interpretations on how visual thinkers have perceived and used visual concepts and elements in their own artwork.

Cross-listed Courses: ART 120, CMM 120

CTS 123. Web Design & Development. 3 Credit Hours.

This course focuses on the design and development of web pages, including client-side web-based applications. Topics covered include Web concepts, interaction and user experience design, process used to develop web pages, usability and accessibility practices, techniques for testing and evaluating a web design, simple analytics of user behaviors, and an introduction to client-side scripting. Tools used include HTML, CSS, Web editors, imaging software, and JavaScript.

Cross-listed Courses: CMM 123

CTS 223. Web Scripting & Services. 3 Credit Hours.

This course further explores JavaScript, with an emphasis on the Document Object Model (DOM), managing events and objects, and obtaining data from databases or web-based information services. Students will be introduced to server-side scripting, content management systems, and other methods and tools used to create dynamic web page content. This course continues to discuss interaction and user experience design, process used to develop web pages, usability and accessibility practices, techniques for testing and evaluating a web design, and simple analytics of user behaviors.

Prerequisites: CTS 123.

CTS 229. Visual Design Capstone Project. 3 Credit Hours.

A culminating experience for students to use design and development tools to solve problems or generate insights in the domain of their choice.

Prerequisite: Any three Visual Design courses.

CTS 233. Data Technologies. 3 Credit Hours.

Students use technology tools to understand the different ways in which digital data may be stored, the impact this has on how this data can be retrieved, and the different ways data may be analyzed and visualized. Structured data is emphasized throughout this course, while unstructured data will be introduced and discussed. An introduction to a programming language (e.g., Python, R) is included in this course.

Prerequisites: MTH 110, or MTH 145 and BIO 265, BIO 427, CSC 101, CTS 101, MIS 201, MTH 421, or PHY 333.

CTS 340. Data Science. 3 Credit Hours.

This course will provide you the knowledge and techniques to approach phenomena analytically. Specially, you will learn the role and process of the data science lifecycle in understanding and gaining insight about phenomena, including how to ask the appropriate questions, identify the appropriate data and information needed, use the appropriate tools to analyze a large volume of data, evaluate the findings effectively with parameters, find the appropriate answers, and present the answers and compellingly. In the business context such knowledge can enable organizations to make quality decisions and develop important business strategies that can enhance organizational performance and that can contribute to significant financial gains. You will proficiently acquire such knowledge and techniques through class discussion, lectures, readings, as well as hand-on exercises. Prerequisite(s): STA 202 or MTH 112.

Cross-listed Courses: MIS 340, ANL 435

CTS 352. Digital Technology & Ways of Knowing. 3 Credit Hours.

Since the mid-20th Century, digital technology has repeatedly and thoroughly revolutionized human life. Indeed, it may be more accurate to see the digital as the ground for an overall change in the way that we know and experience reality. Topics covered in this course will include the origins of the digital revolution, media and information, artificial intelligence and its challenges, the simulation hypothesis, the digital and human values, and digital technology and the future of the planet.

Prerequisite: PHL 110, HON 110, PHL 210, or HON 215.

Fulfills: Ways of Knowing/Metaphysics.

Cross-listed Courses: PHL 352, CSC 252

CTS 409. Capstone Project in Biology and Computer Science. 1 Credit Hour.

This course represents the capstone course for the interdisciplinary minor in Biology and Computer Science. Students will combine their computational and biological skills on a project they identify while faculty will provide mentoring support to project teams.

Prerequisites: BIO 192 and CSC 185.

CTS 411. Crowds, Social Media & Digital Collaboration. 3 Credit Hours.

Over the past years, crowds, social media, and digital collaborations have emerged as important topics in the IS field. Social media and other social information systems not only support communications and collaborations among the general crowd but also harness collective intelligence for innovation. This course covers the basic concepts and theories of social media, crowdsourcing, remixing, and sharing economy. Students will also learn analytics and applications around these trending topics.

Prerequisite: MIS 201.

Cross-listed Courses: MIS 411

CTS 415. Business Intelligence. 3 Credit Hours.

This course provides an introduction to Business Intelligence, including the processes, methodologies, infrastructure, and current practices used to transform business data into useful information and support business decision-making. Business Intelligence requires foundation knowledge in data storage and retrieval, thus this course will review logical data models for both database management systems and data warehouses. Students will learn to extract and manipulate data from these systems and assess security-related issues. Data mining, visualization, and statistical analysis along with reporting options such as management dashboards and balanced scorecards will be covered. Technologies utilized in the course included SAP Business Warehouse, SAP Business Objects, Crystal Reports, and RapidMiner.

Prerequisite: MIS 201 or permission of the instructor.

Cross-listed Courses: MIS 415, MKT 415, ANL 415

CTS 499. Honors Project in Software Development. 3 Credit Hours.

This course must be completed by those software application & systems development (SASD) majors seeking to qualify for a Departmental Honors degree in SASD. The student conducts an independent study honors project under the guidance of at least one faculty member in the program. Prior to registration for this course, a student must submit a proposal and have it approved by the department chair. A student may propose a research project culminating in a research paper or a software development project culminating in software engineering artifacts including a prototype implementation.

Prerequisite: Senior Standing.