

INFORMATION TECHNOLOGY (IT)

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

IT 403 - Introduction to Internet Technologies

Credits: 4

Introductory course exploring the fundamentals of Internet communications with an emphasis on the World Wide Web. Students develop an understanding of the Internet's underlying technologies and learn how to utilize them as contributing members of the Web community. Students become proficient with creating and publishing Web pages using HTML and CSS. No prior knowledge or experience is assumed. No credit if credit earned for CIS 405. (Note CIS 405 is offered at UNH Manchester, and is not related to CS 405 at UNH Durham.)

Grade Mode: Letter Grading

IT 502 - Intermediate Web Design

Credits: 4

An intermediate level exploration of the theory and practice of Web design. Students learn the fundamentals of design theory applicable to the World Wide Web and examine tools and techniques for applying that knowledge to their projects. Additional topics include information architecture, usability, accessibility, optimization, typography, and market visibility. Working knowledge of XHTML and CSS required.

Prerequisite(s): IT 403 with a minimum grade of D-.

Grade Mode: Letter Grading

IT 505 - Integrative Programming

Credits: 4

Expands prior programming knowledge through the introduction of another programming language, with a particular emphasis on integrative programming techniques common within IT. Topics include data access and exchange; database concepts; effective interfaces; and leveraging third-party APIs, libraries, and frameworks. Computer Science majors not allowed.

Prerequisite(s): CS 416 with a minimum grade of D- or CS 417 with a minimum grade of D-.

Grade Mode: Letter Grading

IT 520 - Computer Architecture

Credits: 4

Fundamentals of computer organization, including binary systems, data representation (and compression), machine language, program execution, memory and process issues. Operating systems and networking basics. Not open to CS majors.

Prerequisite(s): CS 410 with a minimum grade of D- or CS 414 with a minimum grade of D- or CS 415 with a minimum grade of D-.

Grade Mode: Letter Grading

IT 604 - Server-side Web Development

Credits: 4

An intermediate-level examination of the theory and practice of developing server-side applications for the World Wide Web. Students will learn practical techniques for designing and implementing data-driven Web sites through the use of server-side processing. Working knowledge of HTML, CSS, and some programming language is required.

Prerequisite(s): IT 403 with a minimum grade of D- and (CS 410 with a minimum grade of D- or CS 414 with a minimum grade of D- or CS 415 with a minimum grade of D-).

Grade Mode: Letter Grading

IT 605 - Client-side Web Development

Credits: 4

An intermediate-level examination of the theory and practice of developing client-side applications for the World Wide Web. Students will learn practical techniques for designing and implementing dynamic Web sites through the use of client-side processing. Working knowledge of HTML, CSS, and some programming language is required.

Prerequisite(s): IT 403 with a minimum grade of D- and (CS 410 with a minimum grade of D- or CS 414 with a minimum grade of D- or CS 415 with a minimum grade of D-).

Grade Mode: Letter Grading

IT 609 - Network/Systems Administration

Credits: 4

Introduces the central issues in administration of a networked computer system. Topics include the client-server model (including support of mail, FTP, Telnet, the Web), disk and file systems, backup and recovery, and security. Privacy and other legal/social issues will be discussed.

Prerequisite(s): IT 520 with a minimum grade of D- and (CS 410 with a minimum grade of D- or CS 414 with a minimum grade of D- or CS 415 with a minimum grade of D-).

Grade Mode: Letter Grading

IT 612 - Scripting Languages

Credits: 4

This course is a study of the class of programming languages and tools known as scripting languages. Topics include: a general discussion of language design and its relationship to the intended computing environment, introduction to the command-line environment, the role of scripts in controlling and connecting other programs and components, basic functionality of at least two scripting languages, and the syntax use of regular expressions. Programming projects in multiple languages will be required.

Prerequisite(s): IT 505 with a minimum grade of D- or CS 515 with a minimum grade of D-.

Grade Mode: Letter Grading

IT 630 - Data Science and Big Data Analytics

Credits: 4

An introduction to various disciplines that contribute to what is commonly known as Data Science. Students will learn how to gather, analyze, classify data utilizing various techniques. Study of tools and programming techniques to analyze data. Characteristics of big data and the emerging software stack for working with massive datasets, including Hadoop and MapReduce.

Prerequisite(s): CS 416 with a minimum grade of C- or CS 417 with a minimum grade of C-.

Mutual Exclusion: No credit for students who have taken MATH 738.

Grade Mode: Letter Grading

IT 666 - Cybersecurity Practices**Credits:** 4

Through readings, exercises, research papers, and exams students will acquire the skills needed to implement solutions for security-related issues. Students will discuss security policies, legislation, system procedures, tools, and techniques. Students will analyze the patterns that attackers use to gain access to systems and understand what is required to defeat those attack patterns. At the conclusion of the course, students will have a heightened sense of security in the actions they take when using and maintaining computer systems.

Prerequisite(s): CS 527 with a minimum grade of D-.**Grade Mode:** Letter Grading**IT #696 - Independent Study****Credits:** 1-6

Individual projects developed and conducted under the supervision of a faculty member.

Repeat Rule: May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**IT 699 - Internship****Credits:** 1

Provides the opportunity to apply academic experience in settings associated with future professional employment. Proposals for the internship must be approved by the instructor prior to registration. Students may receive compensation for their internship work.

Repeat Rule: May be repeated for a maximum of 4 credits. May be repeated up to 3 times.**Grade Mode:** Credit/Fail Grading**IT #704 - Advanced Web Development****Credits:** 4

An advanced exploration of various topics in Web development. Topics covered each semester will be chosen to reflect the current state of stable and accepted Web technologies, with a decided emphasis on open-source solutions. Both client-side and server-side technologies are likely to be included, with particular attention given to concepts and techniques used to facilitate efficient Web development.

Prerequisite(s): IT 604 with a minimum grade of D-.**Grade Mode:** Letter Grading**IT 705 - Project Management for Information Technology****Credits:** 4

This course focuses on a core set of project management essentials that can affect the bottom line of project technical and business performance. These are termed "best practices," and those addressed are: formal risk management, agreement on interfaces, metrics based scheduling/tracking, frequent binary completion milestones, incremental development, people aware management style, and change management. The emphasis is on information technology projects; however, the basic principles are pertinent to a wider class of project domains.

Attributes: Writing Intensive Course**Grade Mode:** Letter Grading**IT 718 - Cloud Computing Principles****Credits:** 4

Students will learn fundamental cloud architectural principles of: operational excellence, security, reliability, performance efficiency, and cost optimization through readings, labs, and a hands-on project. Course material will cover cloud offerings from Amazon's AWS, Microsoft's Azure, and Google's Cloud Platform. Students complete a semester-long project in which they are required to implement a complete Cloud solution.

Prerequisite(s): CS 527 with a minimum grade of D-.**Grade Mode:** Letter Grading**IT 725 - Network Technology****Credits:** 4

Introduction to fundamental concepts of computer networks and exploration of widely-used networking technologies. Topics include principles of congestion and error control; network routing; local, wireless and access networks; application protocol design; and network programming. In-depth discussion of the Internet suite of protocols.

Prerequisite(s): IT 520 with a minimum grade of D-.**Equivalent(s):** CS 725**Grade Mode:** Letter Grading**IT 775 - Database Technology****Credits:** 4

Topics include database architecture, schema design and definition, entity-relationship diagrams, data retrieval and update, and indexing performance. Architectures for single-user, multi-user, client-server, and web access are introduced. The relational data model is emphasized but alternative database models, such as semi-structured and object models, are introduced. Database administration topics include examination of metadata information, data integrity, and management of users and privileges, performance tuning, transactions, isolation levels, and security. Ethics of data protection are introduced. Students develop skill in SQL. Not open to CS majors.

Prerequisite(s): IT 505 with a minimum grade of D-.**Mutual Exclusion:** No credit for students who have taken CS 775.**Grade Mode:** Letter Grading**IT 780 - Topics in Information Technology****Credits:** 4

Material not normally covered in course offerings.

Repeat Rule: May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**IT 791 - Senior Project I****Credits:** 2

First semester of the capstone design experience. Industry best practices and tools are surveyed and applied in team projects. Students begin development on software projects proposed by faculty or external sponsors, including initial stages of design, implementation, and documentation, with an interim presentation of progress expected toward the end of the semester. Principles of security, testability, and maintainability are stressed.

Prerequisite(s): IT 705 (may be taken concurrently) with a minimum grade of D-.**Grade Mode:** Letter Grading**IT 792 - Senior Project II****Credits:** 2

Continuation of IT 791: Senior Project I. Students complete the project, a final presentation of results is expected toward the end of the semester. Successful completion of this course fulfills the Capstone Experience requirement for Information Technology majors.

Attributes: Writing Intensive Course**Prerequisite(s):** IT 791 with a minimum grade of D-.**Equivalent(s):** IT 710**Grade Mode:** Letter Grading