

# ITM DEVELOPMENT (ITMD)

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## ITMD 361

### Fundamentals of Web Development

This course will cover the creation of Web pages and sites using HTML, CSS, Javascript, jQuery, and graphical applications as well as the client and server architecture of the Internet and related web technologies. The creation and deployment of modern, standards-compliant web pages are addressed. Students create and deploy a Web site with multiple pages and cross-linked structures.

**Lecture: 2 Lab: 2 Credits: 3**

## ITMD 362

### Human-Computer Interaction and Web Design

Students in this course will learn the importance of human-computer interaction design and the effectiveness of user-centered design.

The course will cover a survey of methods frequently used by the HCI profession, such as usability testing and prototyping, as well as general design principles and how to use design guidelines.

A particular emphasis will be placed on usability for Web site engineering, and students will apply knowledge from the field in the design and construction of user-centered Web sites.

**Prerequisite(s):** [(ITMD 361)]

**Lecture: 2 Lab: 2 Credits: 3**

## ITMD 411

### Intermediate Software Development

This course covers a broad spectrum of object-oriented programming concepts and application programming interfaces. The student considers the details of object-orientated development in topics of multi-threading, data structure collections, stream I/O and client interfaces. Software engineering topics of packaging and deployment are covered as well. Hands-on exercises reinforce concepts taught throughout the course.

**Prerequisite(s):** [(ITM 311 and ITM 312)]

**Lecture: 2 Lab: 2 Credits: 3**

## ITMD 412

### Advanced Structured and Systems Programming

Structured programming continues with advanced concepts including strings, arrays, pointers, data structures, file manipulation, and dynamic memory management. Students create more complex applications that work with user input, manipulate user supplied text or text obtained from a file, apply standard library routines for working with literal text, use pointers to store complex structures within arrays, and read and write data from files, the console, and the terminal. The object-oriented programming (OOP) paradigm is covered in depth including the philosophy of OOP, classes and objects, inheritance, template classes, and making use of class libraries.

**Prerequisite(s):** [(ITM 312)]

**Lecture: 2 Lab: 2 Credits: 3**

## ITMD 413

### Open Source Programming

Contemporary open-source programming languages and frameworks are presented. The student considers design and development topics in system, graphical user interface, network, and web programming. Dynamic scripting languages are covered using object-oriented, concurrent, and functional programming paradigms. Concepts gained throughout the course are reinforced with numerous exercises which will culminate in an open-source programming project.

**Prerequisite(s):** [(ITMD 411)]

**Lecture: 2 Lab: 2 Credits: 3**

## ITMD 415

### Advanced Software Development

This course considers Web container application development for enterprise systems. The primary focus is on database connectivity (JDBC) integration with Web application programming using an enterprise-level application framework. A Web application term project considers the design and implementation of a database instance that serves as the information tier in a contemporary 3-tier enterprise solution.

**Prerequisite(s):** [(ITMD 411)]

**Lecture: 2 Lab: 2 Credits: 3**

## ITMD 419

### Topics in Software Development

This course will cover a particular topic in software development, varying from semester to semester, in which there is particular student or staff interest. This course may be taken more than once but only 9 hours of ITMD 419/519 credit may be applied to a degree.

**Credit: Variable**

## ITMD 421

### Data Modeling and Applications

Basic data modeling concepts are introduced. Hands-on database design, implementation, and administration of single-user and shared multi-user database applications using a contemporary relational database management system.

**Lecture: 2 Lab: 2 Credits: 3**

## ITMD 422

### Advanced Database Management

Advanced topics in database management and programming including client server application development are introduced. Expands knowledge of data modeling concepts and introduces object-oriented data modeling techniques. Students will learn the use of Structured Query Language in a variety of application and operating system environments.

**Prerequisite(s):** [(ITMD 421)]

**Lecture: 3 Lab: 0 Credits: 3**

**Satisfies:** Communications (C)

**ITMD 453****Enterprise Intelligent Device Applications**

Intelligent device application development is covered with proprietary enterprise and open-source technologies on media device, mobile, and robotic platforms. Utilizing contemporary toolkits, the student considers design and development on simulated and real "smart" devices including smart phones, tablets, sensors, actuators, drones, and robots. Numerous exercises reinforce concepts gained throughout the course. A term project will integrate course topics into a comprehensive intelligent device application.

**Prerequisite(s):** [(ITM 311)]

**Lecture: 2 Lab: 2 Credits: 3**

**ITMD 454****Mass-Market Intelligent Device Applications**

Intelligent device application development is covered with leading mass-market and open-source technologies on media device, mobile, and robotic platforms. Utilizing contemporary toolkits, the student considers design and development on simulated and real "smart" devices including smart phones, tablets, sensors, actuators, drones, and robots. Numerous exercises reinforce concepts gained throughout the course. A term project will integrate course topics into a comprehensive intelligent device application.

**Prerequisite(s):** [(ITM 312)]

**Lecture: 2 Lab: 2 Credits: 3**

**ITMD 455****Open-Source Intelligent Device Applications**

Intelligent device application development is covered with various technologies on mobile and robotic platforms. Utilizing contemporary toolkits, the student considers design and development on emulated and real "smart" devices including smart phones, personal digital assistants, sensors, actuators, and robots. Numerous exercises reinforce concepts gained throughout the course. A term project will integrate course topics into a comprehensive intelligent device application.

**Prerequisite(s):** [(ITM 311)]

**Lecture: 2 Lab: 2 Credits: 3**

**ITMD 460****Fundamentals of Multimedia**

Students are introduced to computer-based multimedia theory, concepts, and applications. Topics include desktop publishing, hypermedia, presentation graphics, graphic images, animation, sound, video, multimedia on the World Wide Web and integrated multimedia authoring techniques.

**Lecture: 2 Lab: 2 Credits: 3**

**Satisfies:** Communications (C)

**ITMD 462****Web Site Application Development**

Programming the Common Gateway Interface (CGI) for Web pages is introduced with emphasis on creation of interfaces to handle HTML form data. CGI programming is taught in multiple languages. Security of Web sites is covered with an emphasis on controlled access sites. Setup, administration and customization of content management systems including blog and portal sites is introduced. Students design and create a Web site including basic CGI programs with Web interfaces and process data flows from online forms with basic database structures.

**Prerequisite(s):** [(ITMD 361)]

**Lecture: 2 Lab: 2 Credits: 3**

**Satisfies:** Communications (C)

**ITMD 463****Intermediate Web Application Development**

In-depth examination of the concepts involved in the development of Internet applications. Students will learn the differences and similarities between Internet applications and traditional client/server applications. A discussion of the technologies involved in creating these Internet applications is included, and students will learn to use these technologies to create robust server-side applications.

**Prerequisite(s):** [(ITMD 361)]

**Lecture: 2 Lab: 2 Credits: 3**

**ITMD 464****Advanced Web Application Development**

Strategies for management of electronic commerce allow students to learn to re-engineer established business processes to increase enterprise competitive advantage, provide better customer service, reduce operating costs, and achieve a better return on investment. Students will learn to evaluate, use, and deploy state-of-the-art tools and techniques needed to develop a reliable e-commerce offering on the Web. The course will cover state-of-the-art programming and development tools. This class will provide students with hands-on exposure needed to design and build a fully functional e-commerce Web site.

**Prerequisite(s):** [(ITMD 463)]

**Lecture: 2 Lab: 2 Credits: 3**

**ITMD 465****Rich Internet Applications**

Students learn to create interactive rich internet applications using web development frameworks, applications, and techniques that primarily operate on the client-side. These applications often exhibit the same characteristics as desktop applications and are typically delivered through a standards-based web browser via a browser plug-in or independently via sandboxes or virtual machines. Current software frameworks used to download, update, verify, and execute these applications are addressed as well as writing applications for deployment in these frameworks.

**Prerequisite(s):** [(ITMD 361)]

**Lecture: 2 Lab: 2 Credits: 3**

**ITMD 466****Service-Oriented Architecture**

This course covers IT enterprise systems employing web services technologies in SOA and ESB architectural patterns. The student considers SOA which defines and provisions IT infrastructure and allows for a loosely-coupled data exchange over disparate applications participating in business processes. The simplification of integration and flexible reuse of business components within SOA is greatly furthered by ESB. Lab exercises using contemporary tool-kits are utilized to reinforce platform-agnostic course topics.

**Prerequisite(s):** [(ITMD 361 and ITMD 411)]

**Lecture: 2 Lab: 2 Credits: 3**

**ITMD 467****Web Systems Integration**

In this project-based course, student teams will build an enterprise-grade website and web infrastructure integrating server-side applications, databases, and client-side rich internet applications as a solution to a defined business problem.

**Prerequisite(s):** [(ITMD 462 and ITMD 465)]

**Lecture: 2 Lab: 2 Credits: 3**

**ITMD 469****Topics in Application Development**

This course will cover a particular topic in application development, varying from semester to semester, in which there is particular student or staff interest. This course may be taken more than once but only 9 hours of ITMD 469/569 credit may be applied to a degree.

**Credit:** Variable