

Illinois Institute of Technology International Certificate Program Spring 2017 Course Descriptions

INTERNSHIP

Students who opt to participate in an internship must take the following course in addition to their other courses:

PD 899 - Internship Methods

Students who intend to do the 6 week internship as part of the international certificate program are required to first complete this methods course. In weekly workshops students will review the business culture in the U.S., how to research companies for appropriate placements; learn to craft a professional resume; discuss and practice interview skills; and improve business writing. Students will implement these tools to acquire a 6 week internship placement. Internships will take place at the beginning of the following semester, upon successful completion of the methods course.

INDUSTRIAL TECHNOLOGY AND MANAGEMENT

Students who major in Industrial Technology Management must take a minimum of two of the following courses:

INT 819 – Electronics in Industry

Basic overview of electrical and electronic technology in industry. Emphasis on electrical and electronic components, industrial devices, electrical theory, application and basic troubleshooting. Students select and complete an electrical or electronic class project.

INT 822 - Industrial Project Management

This course provides an introduction to the world of industrial enterprises. The world-wide evolution of business will be considered leading to today's competitive world. The range of industrial activities is reviewed, and students are introduced to the organization and purpose of various industrial sectors.

INT 804 – Sales, Marketing and Product Introduction

This course covers the full range of activities involved in the supply chain. This includes management of tools for optimizing of supply chains, relationships with other parts of the Management Systems, Advanced Planning and Scheduling Systems, as well as cost benefit analysis to determine the most appropriate approach.

BUSINESS COURSES

Students who major in Business must take a minimum of two of the following courses:

INT 801 - Communications for the Workplace

Review, analyze and practice verbal and written communication formats found in the workplace. Emphasis is on developing skills in technical writing, oral presentations, business correspondence, and interpersonal communication using electronic and traditional media.

PL 811 - Introduction to Marketing

This course provides an introduction to the activities and decisions faced by marketing managers in modern organizations. Topics include: current marketing issues, including customer relationship management (CRM), global marketing, marketing research, supply-chain management and integrated marketing communications (IMC). Special text and classroom focus is placed on Product, Price, Place and Promotion strategies, as they relate to an overall Marketing Plan.

PL 822 – Strategic Decision Making
This course teaches future managers the skills they will need to improve their judgements and decisions. By understanding and limiting biases in decision-making patterns, participants become better decision makers and protect themselves and their organizations from avoidable mistakes.
PL 819 - Essentials of Exporting and Importing
This course provides a comprehensive overview for conducting export and import business in the global arena. Content focuses on U.S. government trade policies and export-import controls, industry practices and international procedures that are essential for business or entrepreneurial success. Instruction ranges from the basics to more advanced marketing strategies for both export and import. The instructor's newly- published textbook, <i>Essentials of Exporting and Importing</i> , will be the textbook for this course.
PL 820 - Theory & Organization of Management
Theory of Organization and Management Introduction to the theory and practice of management; includes basic managerial functions: planning, organizing, leading and controlling. Communication, motivation and decision-making techniques are stressed. Also covered are organization structure and design, the dynamics of individual and group interaction, organization climate, managerial styles, the implication of increasing work force diversity, coping with conflict, and methods for achieving organizational improvement. Issues in international business are dealt with at relevant points.
PL 831 - Financial Markets
Theory and applications associated with the functioning of financial markets to include the conceptual foundations of portfolio theory, risk management, and asset valuation. The stock, money, bond, mortgage, and futures and options markets are examined.
IT-M 870 – Fundamentals of Management for Technology Professionals
This course explores fundamentals of management for professionals in high-technology fields. It addresses the challenges of the following: managing technical professionals and technology assets; human resource management; budgeting and managerial accounting; management of services, infrastructure, outsourcing, and vendor relationships; technology governance and strategy; and resource planning.
IT-M 871 – Project Management for IT Professionals
Basic principles of project management are taught with a particular focus on project planning for information technology hardware, software and networking project implementation. Management of application development and major Web development projects will also be addressed.
IT-M 881 – Entrepreneurship for IT Professionals
This course prepares students to become leaders in information technology and to build ITM companies. Students design and develop a prototype ITM product and prepare a business plan and venture proposal presentation.
IT-M 882 - Business Innovation
This course is designed to teach innovative thinking through theory, methods, and practice of innovation. The course incorporates Einstein's thinking, and Edison's method to establish the innovation process that can be applied in current business environment. Current economic conditions and global sourcing requires that innovation becomes a leading tool for developing a competitive edge. Innovation has been considered a competency of educated, design engineering, and a selected few employees that has become insufficient today. Corporations and organizations need innovation to develop customer-specific solutions in almost real time.

FOOD SCIENCE COURSES

Students who major in Food Science must take two of the following courses:

FDSC 800 - Nutrition Through the Life Cycle
Introduction to the basic principles of nutrition and the relationship of the human diet to health. Overview of the nutrition profession, the biological uses of nutrients and tools for dietary planning and assessment in various settings. Examination of specific issues such as weight management, sports nutrition, food safety, the diet-disease relationship and global nutrition. Analysis of special nutritional requirements and needs during the life cycle.
FDSC 811 - Exploring Food Science & Nutrition
In this course students will explore the wide array of disciplines in which engineering, biological, and physical sciences are used to study and produce food products. An overview of the relationship between food nutrition, chemistry, microbiology, safety, processing, engineering, sensory, and product development will be discussed. The food science and technology industry will be studied to understand food processing, food safety, quality and packaging of specific categories of foods. The course also provides a brief introduction to different career opportunities within the food and technology industry.
FDSC 821 - Nutrition, Metabolism, & Health
Study of the structures, types and metabolism of carbohydrates, lipids and proteins. Discussion of the biological roles of vitamins and minerals. Application and integration of metabolic knowledge with health promotion and chronic diseases.

ENGLISH COURSES

Students will take two English courses. Students will be given an English assessment upon arrival to determine their English level in listening, reading, speaking and writing and will register for two of the following courses:

PL 421 - Listening Enhancement Level 1
Listening Enhancement I is designed to help international students improve academic and social listening. Students will complete a variety of listening-based tasks to increase comprehension and develop strategies for effective listening and note-taking. Frequently used vocabulary terms will also be presented.
PL - 422 Listening Enhancement Level 2
Listening Enhancement II is an advanced level Listening course for international students. The course will aid students in comprehending academic lectures and strengthening social listening as well as note-taking skills. Students will complete activities using web-based videos to refine their listening skills. Each unit of study is centered on an academic lecture and the student work that is necessary before, during, and after a university course lecture.
PL 431 - Reading/Vocabulary Development Level 1
Reading and Vocabulary Development I is designed for international students to develop academic reading skills and increase overall vocabulary. Students will be exposed to a variety of readings in order to build effective strategies for analysis of and interaction with academic texts.
PL 432 - Reading/Vocabulary Development Level 2
Reading and Vocabulary Development II is designed to help international students analyze instructor-selected readings for lexical, syntactic, rhetorical, and discursive features. The course will also focus on increasing academic vocabulary and building skills and strategies to improve reading speed and overall comprehension.

PL - 440 Fundamentals of Academic Writing

Fundamentals of Academic Writing is designed to introduce international students to the conventions of academic writing and to develop a voice in writing for American audiences. By composing academic paragraphs in a variety of genres, students will gain knowledge of deductive organizational structure, academic formatting, and strategies for avoiding plagiarism.

PL 441 - Academic Writing Level 1

Academic Writing I is designed for international students to improve the fluency and accuracy of their writing. Students will reinforce their understanding of argumentation and organization for American academic audiences through the composition and revision of a variety of paragraphs and essays that demonstrate increasing complexity.

PL 442 - Academic Writing Level 2

Academic Writing II will prepare international students for research and research writing. Students will learn advanced research skills and apply them through the composition of several academic papers.

PL 461 - Effective Communication 1

Effective Communication I is designed to help international students improve speaking fluency and pronunciation. This course will focus on skills and strategies to increase confidence in spoken interactions, both in the classroom, and in daily life.

PL 462 - Effective Communication 2

Effective Communication II is an advanced course in speaking and pronunciation for international students. Topics include developing informational skills, interactional skills, and skills to manage interactions in both academic and social life. Accent reduction and the International Phonetic Alphabet (IPA) will also be addressed.

INFORMATION TECHNOLOGY & MANAGEMENT COURSES

Students who major in information Technology must take a minimum of two of the following courses:

IT 801 – A+ Certification Training

Students study the basics of computer architecture and learn to use a contemporary operating system. Hardware requirements, hardware components, software compatibility, and system installation topics are covered along with post-installation, storage, security and system diagnosis, and repair. Topics also include discussion of current and future technology industry trends.

IT 811 – Intro to Programming with Java

A broad introduction to object-oriented programming and the related knowledge necessary to program in a contemporary programming language. This would include coverage of an Application Development Kit, a standard integrated Development environment, and the use of GUI components.

IT 812 – C++ Programming

Introduces basic concepts of systems programming. Students learn to apply basic programming concepts toward solving problems, create source files and implement header files, work with and effectively use basic data types, abstract data types, control structures, code modularization and arrays. Students will be introduced to object paradigm including, classes, inheritance, and polymorphism applications.

IT-D 811 - Java Programming

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.

IT-D 815 – Intermediate Java Programming

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.

IT-D 821 - Database Concepts with Oracle

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.

IT-D 822 – SQL Databases

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.

IT-D 823 – Advanced SQL Databases

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

IT-D 827 – Data Analytics

This is a hands-on course that focuses on the creation, maintenance, and analysis of large informatics databases. Concepts such as data modeling, probability, linear regression, and statistical data analysis are covered in depth. In addition, this course will use large simulated equities, healthcare, insurance, and banking database systems. The student is expected to have a working understanding of relational database concepts as well as SQL.

IT-D 829 – Advanced Data Analytics

Informatics is the application of information technology to solve problems in other fields. Informaticists use technology and information to build intelligent systems used to bridge the gaps between information, technology, and the people who use it. The study of informatics is about blending applied mathematics with technology while understanding the broader consequences of computing on society and the problem being solved. It is important for any student to develop a broad perspective of technology and the people it serves. This course builds upon the student's knowledge of mathematical concepts of predictive modeling of samples and populations with an emphasis on applying technology to solve real world problems.

IT-D 834 – Human Computer Interaction

Introduction to human-computer interaction, a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use. Emphasis is given to the structure of communication between people and computers, capabilities of people to use computers, concerns that arise in designing and building interfaces, design trade-offs, and the process of specification, design, and implementation of user interfaces. Particular emphasis is placed on practical design and usability of computer system user interfaces.

IT-D 836 – Software Testing and Maintenance

This course covers the basic concepts of software testing and maintenance. The Testing Maturity Model provides a framework for developing a more mature test process. Testing techniques, test metrics and test plan management concepts are described within this framework

IT-D 853 – 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.

IT-D 855 – Intelligent Device Applications

Intelligent device application development is covered with mainstream 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.

IT-D 860 – 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.

IT-D 861 – 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.

IT-D 862 – Website 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 are 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.

IT-D 863 – ASP .NET with C#

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

IT-D 866 – Service Oriented Architectures

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.

IT-D 869 – Behavioral Design User Testing

This course will cover a particular topic in application development, varying from semester to semester, in which there is a particular student or staff interest.

IT-M 870 – Fundamentals of Management for Technology Professionals

This course explores fundamentals of management for professionals in high-technology fields. It addresses the challenges of the following: managing technical professionals and technology assets; human resource management; budgeting and managerial accounting; management of services, infrastructure, outsourcing, and vendor relationships; technology governance and strategy; and resource planning.

IT-M 871 – Project Management for IT Professionals

Basic principles of project management are taught with a particular focus on project planning for information technology hardware, software and networking project implementation. Management of application development and major Web development projects will also be addressed.

IT-M 874 – IT Management Frameworks

This course will examine the application of industry standard frameworks to the management of information technology infrastructure, development and operations. Frameworks including the Information Technology Infrastructure Library (ITIL), Control Objectives for Information and related Technology (COBIT), and others will be covered. Students will learn to use these frameworks to tailor a set of concepts and policies to necessary manage IT in a specific enterprise.

IT-M 881 – Entrepreneurship for IT Professionals

This course prepares students to become leaders in information technology and to build ITM companies. Students design and develop a prototype ITM product and prepare a business plan and venture proposal presentation.

IT-M 882 – Business Innovation

This course is designed to teach innovative thinking through theory, methods, and practice of innovation. The course incorporates Einstein's thinking, and Edison's method to establish the innovation process that can be applied in current business environment. Current economic conditions and global sourcing requires that innovation becomes a leading tool for developing a competitive edge. Innovation has been considered a competency of educated, design engineering, and a selected few employees that has become insufficient today. Corporations and organizations need innovation to develop customer-specific solutions in almost real time.

IT-O 840 – Network+ Certification Training

This course covers current and evolving data network technologies, protocols, network components, and the networks that use them, focusing on the Internet and related LANs. The state of worldwide networking and its evolution will be discussed. This course covers the Internet architecture, organization, and protocols including Ethernet, 802.11, routing, the TCP/UDP/IP suite, DNS, SNMP, DHCP, and more. Students will be presented with Internet-specific networking tools for searching, testing, debugging, and configuring networks and network-connected host computers. There will be opportunities for network configuration and hands-on use of tools.

IT-O 844 – Cloud Computing Technologies

Computing applications hosted on dynamically-scaled virtual resources available as services are considered. Collaborative and non-collaborative "cloud-resident" applications are analyzed with respect to cost, device/location independence, scalability, reliability, security, and sustainability. Commercial and local cloud architectures are examined. A group-based integration of course topics will result in a project employing various cloud computing technologies.

IT-O 856 – Linux+ Certification Training

Students learn to set up and configure an industry-standard, open-source operating system including system installation and basic system administration. Also addressed are applications and graphical user interfaces as well as support issues for open-source software.

IT-O 858 – Intro to Open Source Software

This course will cover the fundamental concepts and philosophy behind free and open source software (FOSS). The course will discuss open source and free software licensing; open source business strategies and impact; FOSS utilization in the enterprise; and development methodologies. Students will learn to set up and configure an industry-standard open source operating system, including system installation, and basic system administration; system architecture; package management; command line commands; devices, filesystems, and the filesystem hierarchy standard. Also addressed are applications, shells, scripting and data management; user interfaces and desktops; administrative tasks; essential system services; networking fundamentals; and security, as well as support issues for open source software. Multiple distributions are covered with emphasis on the two leading major distribution forks.

IT-S 818 – Secure Software Programming – Java

This course examines security architecture elements within modern object-oriented programming languages that create the framework for secure programming. Analysis of components and services with their inherent strength and weaknesses give rise to common coding security challenges. An exploration of identity management, encryption services and common hacking techniques will enable the student's ability to develop secure code. Homework assignments and projects will reinforce theories taught.

IT-S 848 – Cyber Security Technologies

Prepares students for a role as a network security administrator and analyst. Topics include viruses, worms, other attack mechanisms, vulnerabilities and countermeasures, network security protocols, encryption, identity and authentication, scanning, firewalls, security tools, and organizations addressing security. A component of this course is a self-contained team project that, if the student wishes, can be extended into a full operational security system in a follow-course.

IT-S 857 – Introduction to Cyber Warfare

Cyber warfare is defined as "warfare waged in cyberspace," which can include defending information and computer networks, deterring information attacks, as well as denying an adversary's ability to do the same. It can include offensive information operations mounted against an adversary, or even dominating information on the battlefield. Students participating in this discussion-based course will explore the current state of cyber security from national and international perspectives, and consider cyber-based operations through the lens of a government pursuing strategic goals. How might their actions impact industry ability to conduct business operations? What does the current threat environment look like? The course will include extensive discussions and student presentations.

IT-S 878 – Cyber Security Management

In-depth examination of topics in the management of information technology security including access control systems & methodology, business continuity & disaster recovery plans, legal issues in information system security, ethics, computer operations security, physical security and security architecture & models using current standards and models.

IT-T 831 – Object Oriented System Analysis Modeling & Design

This course will cover object oriented approaches to system analysis, data modeling and design that combine both process and data views of systems. Emphasis is given to practical problems and the techniques needed to create solutions in systems design.

IT-T 835 – Datacenter Architecture

The course deals with building integrated data center information infrastructures, including facility, hardware, software, and network components as solutions to particular enterprise information management needs and requirements. Students will learn critical elements of modern data center design including physical plant construction; network infrastructure; data storage technologies; power provisioning and conditioning; environmental controls and HVAC; system and physical security; modular component use; and planning for growth.

IT-T 892 – Embedded System Configuration & Logic Design

This course covers reconfigurable intelligent devices programmed with modern high level languages focusing on design and integration to modern environments. The course will also cover the topic and deployment of wireless sensor networks and the use of rapid prototyping for commercial application. Students will discover hardware, software and firmware design trade-offs as well as best practices in current embedded systems development. A final project will integrate course topics into a system using an embeddable single-board microcontroller.