Curriculum

Core Courses (total of 5 classes, 20 credits) Choose 4 of the following 5 classes, (16 credits)

- CT 5120 Organizational Leadership in Technology
- CT 5610 Database Design
- CT 5750 Web Applications and Web Design Development
- CT 6111 Computer Security
- CT 6670 Network Communications

and choose 1 of the following 5 classes (4 credits)

- CT 5510 Java – Introduction to Object Oriented Programming
- CT 6740 Java – Advanced Topics
- CT 6050 Mobile Web Development
- CT 6560 Web Programming with PHP/MySQL
- CT 6530 Python Programming
- CT 6220 Android Development and Programming

Optional Courses (Pick four from list, 16 credits)

- CT 5230 Cloud Computing Concepts
- CT 6110 IT Project Management
- CT 6270 Mobile App Development
- CT 6610 IT Intelligence and Business Strategy
- CT 6890 Quality Assurance and Testing
- CT 5320 Data Mining for the Intelligent Business
- CT 7610 Database Management
- CT 6440 Information Visualization
- CT 6820 Special Projects in CIS
- CT 6770 Network Programming
- CT 6870 Advanced Network Communications
- CT 5630 Pega Platform and Applications
- CT 6320 Pega System Architect Essentials
- CT 5990 Web Graphics and Animation (2 credits)

Course Descriptions

All courses are four (4) credits except CT 5990.

CT 5120 Organizational Leadership in Technology

This course combines theory and practice by encouraging students to learn traditional and contemporary leadership theories and apply them to the analysis of the behavior of leaders, colleagues, and subordinates in a technological environment. Through a variety of readings, cases, and exercises, students will examine numerous effective leadership models. Topics include the evolution of leadership; the special qualities of leadership appropriate to information

technology, the leadership roles of strategy, vision and transformational change; the development of leaders; the leadership responsibilities of creating effective teams, organizations and cultures; the exploration of different leadership styles; the application of leadership skills required for successful IT project management, and current popular approaches to leadership theory.

CT 5230 Cloud Computing Concepts

This course provides the basic skills required to analyze, design, and implement cloud-based solutions in a multitude of organizational structures. It focuses on the integration of scalable, reliable platforms, utilizing such fundamental concepts as: private vs. public clouds, migration, virtualization, debugging, development and performance metrics, and disaster recovery. Additional tools and topics, such as the use of Amazon Web Servers, are also explored.

CT 5510 Java – Introduction to Object Oriented Programming

Object Oriented programming is an essential skill for those students wishing to work with application development and maintenance. This class is an introduction to Java, among the most popular object based languages in use today. It presents the fundamental design principles of modularity and abstraction as applied to current programming practices in computer science. Students will work with object oriented components and characteristics as they write, debug, execute and test Java applets and applications. Topics to include: data types, classes, inheritance, arrays, overloading and exception processing. A variety of Java development environments will be considered.

CT 5610 Database Design

This course introduces database design and creation. Emphasis is on data dictionaries, normalization, data integrity, data modeling, and creation of simple tables, queries, reports, and forms. Students should be able to design and implement normalized database structures by creating database tables, queries, reports, and forms. Students will use MS Access and MS SQL Server and the SQL programming language. They will also work with Visio to create database diagrams.

CT 5750 Web Applications and Web Design Development

This course provides an introduction to web-based applications development. Topics include the creation of web sites using web development software and the architectural elements of programming web sites that produce dynamic content. Students will gain familiarity with a variety of programming languages and tools, and will learn methods and tools that are used in the process of developing web-based applications.

CT 5990 Web Graphics and Animation (2 credits)

A course highlighting the special requirements related to the use of graphics in a web environment. Utilizing open source tools such as Gimp and Inkscape, students learn the appropriate application of individual graphic types and the techniques required to create custom web animations. The class reviews the newest graphic types available through HTML5 and CSS3 and the methods and techniques available to manipulate those images on multiple platforms through web scripting methods.

CT 6050 Mobile Web Development

A broad introduction into the development of mobile web sites and applications. This investigation provides the basic programming skills required to design and implement quality websites on a variety of mobile platforms. Students will learn to distinguish between mobile websites and mobile web applications and to create mobile websites using tools such as HTML5 and JQuery Mobile. The class will also explore the basics of creating multi-platform web hybrid applications using Apache Cordova (PhoneGap).

CT 6110 IT Project Management

This course is designed to apply the principles and methodologies of project management to plan and manage IT projects. Throughout the course, students use technology applications and address real-world problems. Students will

learn the skills necessary to define project scope, create workable project plans, and manage projects with quality, budget, and schedule in mind.

CT 6111 Computer Security

Cybersecurity is a growing field that deals with threats to hardware and software in both public and private environments. This course is designed to prepare the software professional for a wide range of security challenges, including reviews of: cryptography, web security, network attacks, malware, operating systems, cloud processing and physical security. A wide range of security tools and procedures will be considered.

CT 6270 Mobile App Development

This is a study of Mobile app creation, specifically the creation of apps for Google's Android, the world's most popular mobile operating system. Building on a basic background in Java, students will work with Android Studio, Eclipse and with the Android Development Environment to create effective and useful Android applications. These applications will utilize various screen configurations and sizes and will incorporate techniques in classes, intents and permissions, and the design of various user interfaces.

CT 6560 Web Programming with PHP/MySQL

Server-Side Web Programming introduces the student to the core concepts of creating dynamic web pages using the PHP programming language and the MySQL database server. Students will learn to create and maintain their own databases and to execute the SQL required to access those structures using PHP. Students will acquire the skills and templates required to construct web-based, content management oriented platforms.

CT 6610 IT Intelligence and Business Strategy

This course will examine how IT can support and improve the process of strategic planning and designing business strategies. Organizations are undergoing a series of revolutionary changes, including vertical integration, horizontal consolidation, strategic alliances and joint ventures, entrepreneurial startups, and specialized niche networks. This course will critically examine changes and discuss the various strategic decisions and managerial skills needed to confront them in a variety of firms in organizations, as well as the use of technology in helping managers address these challenges. The course will also focus on using information technology to craft successful business strategies.

CT 6670 Network Communications

In this course you will study data communication networks focusing on the layered network structure and basic protocol functions. The course covers issues such as addressing, multiplexing, routing, forwarding, flow control, error control, congestion response, and reliability. It includes wired, wireless, and mobile networks. Multimedia, security, and network management topics will be introduced. Brief coverage is provided of the history of the Internet and the development of communication standards.

CT 6740 Java – Advanced Topics

A continuation of Java – An intro to Object Oriented Programming. This course builds on the beginners Java course, and goes deeper into programming topics that help the student to understand more advanced Java concepts topics. Topics covered in the class include: simple and multi-dimensional arrays, recursion, inheritance, and polymorphism.

CT 6890 Quality Assurance and Testing

Provides students with a working knowledge of the state of research and practice on software product and process evaluation and improvement. Stresses use of quantitative and experimental methods and change control as they are applied to evaluating software engineering. Pre-release software packages from commercial software vendors will be used as examples.

CT 5320 Data Mining for the Intelligent Business

Business Intelligence depends on the quality of processes and structures for data storage, retrieval, and analysis. In this course, students will study the theory of operational database design and implementation, including concepts of text analytics, big data harvesting, normalization, database queries and database application development. The course will then extend to include the concepts of data mining from the perspective of the web environment, with a particular focus on the quality of data. Students will be encouraged to find the patterns in the data and to prepare reports and presentations describing the implications of their findings.

CT 7610 Database Management

This course is a continuation of Database Design, a course that focused on the design and implementation of relational databases. In this follow-up course, students learn how to manage databases and how to use those databases to solve business problems. The course studies the concurrency issues that can arise when multiple users are attempting to update the same database structure. Advanced SQL techniques such as Triggers, Functions and Stored Procedures are reviewed. Students then use these techniques to perform database maintenance, backup and recovery. Students will learn about Big Data, Data Warehousing and options available for Cloud processing. Finally, the course will review the processes and procedures required to maintain database access in an online environment.

CT 6440 Information Visualization

In this course, students will be introduced to the field of Information Visualization. They will learn to acquire, parse, cleanse, and analyze large datasets. While learning basic visualization design and evaluation principles, students will use both Excel and the business intelligence software Tableau to create visualized interpretations of multivariate, temporal, geo-spatial business, medical, and scientific data collected from diverse sources.

CT 6530 Python Programming

This course provides an introduction to computer programming in Python, a popular, easy-to-learn, cross-platform language with extensive libraries. Programs can be written for immediate interpretation or for compilation. The language, libraries and development environments are open-source and free. Students will learn to recognize problems appropriate for computer program solutions, to determine the requirements of those solutions, and to translate those requirements into procedural programming constructs. Object-oriented programming methodology will also be covered.

CT 6820 Special Projects

Special Projects is a course that allows senior-level students to work on real-world projects associated with the college. The class utilizes all aspects of the student's academic training, including: project management, programming, system design, database integration, user training, and more. Students will operate in a team environment on real projects with established deliverables and target dates. This course is open to students who have demonstrated the skillsets required in a professional project cycle environment. It is offered by permission of the instructor only.

CT 6770 Network Programming

This course is designed to extend student's knowledge and practice in the design and analysis of computer networks by focusing on computer network programming. In addition, advanced network topics including network security, service-oriented architectures, programming interfaces such as Web services and REST using Python.

CT 6870 Advanced Network Communications

This course dives further into the routing and switching protocols that make networks work efficiently. The main focus of this course is on layer 2 and layer 3 protocols which include spanning tree, multi-area OSPF, quality of service and port security. This course introduces information assurance and security in networks in order to meet standard guidelines provided by the government.

CT 6220 Android Development and Programming

This course deals with developing and programming applications using Android, the world's most popular mobile operating system. It explores the Android SDK and various APIs used to develop applications using the Java programming language.

CT 5630 Pega Platform and Applications

An introduction to the automating of business processes using the Pega platform. Review the value of using the Pega platform and describes Pega's industry-specific applications. Defines case life cycle management application design and explains how Pega Express build functional applications.

CT 6320 Pega System Architect Essentials

This course is for System Architects who are responsible for developing business applications. It reviews the core competencies required for participating in the development of a business application built on the Pega Platform. Students learn how to use Pega's rules-based architecture to configure and test application functionality such as process flows, UI screens, automated decisions, and properties.

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