This course covers the fundamentals of database design and application development, normalization, referential integrity, security, relational database models, and database languages. Principles are applied by performing written assignments and a project using an SQL database system.

This course focuses on the design and development of object-oriented web applications. The client-server model and 3-tier architecture are discussed and analyzed. Topics covered include object-oriented methodology, enterprise software application architecture, design patterns, Enterprise JavaBeans, database connectivity, and web and application server development and technologies such as servlets, JSP, XML, HTML, security, JDBC, RMI, and multithreading. (Required: CIS 414-0 or CIS 414-DL and CIS 417-0 or CIS 417-DL.)

This course focuses on the design and development of object-oriented web applications. The client-server model and 3-tier architecture are discussed and analyzed. Topics covered include object-oriented methodology, enterprise software application architecture, design patterns, Enterprise JavaBeans, database connectivity, and web and application server development and technologies such as servlets, JSP, XML, HTML, security, JDBC, RMI, and multithreading. (Required: CIS 414-0 or CIS 414-DL and CIS 417-0 or CIS 417-DL.)

This course provides an overview of machine learning concepts, techniques, and tools with a practical emphasis on understanding large, complex datasets and building intelligent systems. Insights gleaned from data mining and machine learning can be used to optimize operational processes, identify new business opportunities, and support evidence-based decision making and digital marketing with applications in industries such as finance, retail, and healthcare. (Required: CIS 417-0 or CIS 417-DL and MSDS 430-DL.)

This course provides an overview of machine learning concepts, techniques, and tools with a practical emphasis on understanding large, complex datasets and building intelligent systems. Insights gleaned from data mining and machine learning can be used to optimize operational processes, identify new business opportunities, and support evidence-based decision making and digital marketing with applications in industries such as finance, retail, and healthcare. (Required: CIS 417-0 or CIS 417-DL and MSDS 430-DL.)

This course provides an overview of machine learning concepts, techniques, and tools with a practical emphasis on understanding large, complex datasets and building intelligent systems. Insights gleaned from data mining and machine learning can be used to optimize operational processes, identify new business opportunities, and support evidence-based decision making and digital marketing with applications in industries such as finance, retail, and healthcare. (Required: CIS 417-0 or CIS 417-DL and MSDS 430-DL.)

This course covers the fundamentals of database design and management. Topics include the principles and methodologies of database design, database application development, normalization, referential integrity, security, relational database models, and database languages. Principles are applied by performing written assignments and a project using an SQL database system.

This course focuses on developing complex programs using an object-oriented language. Students write programs that utilize functions and methods for code modularization and arrays for solving problems. Information hiding, encapsulation, inheritance, polymorphism, exception handling, and other principles of object-oriented programming will be introduced.

This course focuses on developing complex programs using an object-oriented language. Students write programs that utilize functions and methods for code modularization and arrays for solving problems. Information hiding, encapsulation, inheritance, polymorphism, exception handling, and other principles of object-oriented programming will be introduced.

This course focuses on developing complex programs using an object-oriented language. Students write programs that utilize functions and methods for code modularization and arrays for solving problems. Information hiding, encapsulation, inheritance, polymorphism, exception handling, and other principles of object-oriented programming will be introduced.

This course covers the fundamentals of database design and management. Topics include the principles and methodologies of database design, database application development, normalization, referential integrity, security, relational database models, and database languages. Principles are applied by performing written assignments and a project using an SQL database system.
This course reviews concepts behind both centralized and distributed database systems, and relational and not-only-relational database systems. Discussion of open source and commercial solutions, with special attention being paid to large distributed database systems and data warehousing. The course introduces technologies and modeling methods for large-scale, distributed analytics. (Required: CIS 417-0 or CIS 417-DL. Recommended: CIS 435-0 or CIS 435-DL.)

CIS 452-0 Fundamentals of Network Security (1 Unit)
Fundamentals of Network Security helps students develop an understanding of computer network security and survivability principles. Course work includes the study of survivability, availability, threats, risk, and policy in a multi-user network. Additionally, students study technical solutions necessary to understanding and securing network information and communications; these include cryptography, firewalls, intrusion, anti-virus, anti-spam, wireless, VPN, host systems, network services, and network infrastructure. (Required: CIS 413-0 or CIS 413-DL.)

CIS 452-DL Fundamentals of Network Security (1 Unit)
Fundamentals of Network Security helps students develop an understanding of computer network security and survivability principles. Course work includes the study of survivability, availability, threats, risk, and policy in a multi-user network. Additionally, students study technical solutions necessary to understanding and securing network information and communications; these include cryptography, firewalls, intrusion, anti-virus, anti-spam, wireless, VPN, host systems, network services, and network infrastructure. (Required: CIS 413-0 or CIS 413-DL.)

CIS 453-0 Advanced Cyber Security (1 Unit)
This course provides a hands-on overview of comprehensive security issues and techniques throughout various areas of cyberspace. Both technical and managerial topics will be explored including: security controls and technologies, cybersecurity law, auditing and cybersecurity programs, risk assessment and mitigation. (Required: CIS 413-0 or CIS 413-DL.)

CIS 453-DL Advanced Cyber Security (1 Unit)
This course provides a hands-on overview of comprehensive security issues and techniques throughout various areas of cyberspace. Both technical and managerial topics will be explored including: security controls and technologies, cybersecurity law, auditing and cybersecurity programs, risk assessment and mitigation. (Required: CIS 413-0 or CIS 413-DL.)

CIS 455-0 Business Continuity and Disaster Recovery (1 Unit)
Provides an in-depth study of the technical solutions necessary to support disaster recovery and business continuity in an enterprise networking environment. Course work includes the study of Risk and Business Impact Assessment (BIA), responding to a disaster, disaster recovery strategies, business continuity planning, and creating a recovery plan. Additional discussions will focus on designing a disaster recovery solution and surveying appropriate and current technologies and techniques, including RAID, SAN, clustering, backup solutions, LAN/WAN designs, and environmental impact. (Required: CIS 413-0 or CIS 413-DL. Recommended: CIS 452-0 or CIS 452-DL.)

CIS 455-0 Management of Information Security (1 Unit)
This course emphasizes the need for information technology security and control and provides reasonable working knowledge required to manage information technology security and risk. This is accomplished through a comprehensive survey of security threats, risk analysis, control techniques, and managerial issues associated with establishing and maintaining an information technology security plan. (Required: CIS 413-0 or CIS 413-DL. Recommended: CIS 452-0 or CIS 452-DL and CIS 455-0 or CIS 455-DL.)

CIS 457-0 Management of Information Security (1 Unit)
This course introduces students to the key challenges and responsibilities of managing information technology and an information technology organization. Students gain knowledge of the various facets of managing information technology including how to develop an IT strategy aligned with business strategy. Topics covered include the IT solution lifecycle, IT service management, IT supplier management and sourcing, ongoing IT technology operations, governance, business continuity, budgeting, benchmarking, and industry standard management frameworks such as ITIL and COBIT. (Required: CIS 413-0 or CIS 413-DL. Recommended CIS 452-0 or CIS 452-DL, 455-0 or CIS 455-DL, and CIS 457-0 or CIS 457-DL.)

CIS 460-0 Information Technology Management (1 Unit)
This course introduces students to the key challenges and responsibilities of managing information technology and an information technology organization. Students gain knowledge of the various facets of managing information technology including how to develop an IT strategy aligned with business strategy. Topics covered include the IT solution lifecycle, IT service management, IT supplier management and sourcing, ongoing IT technology operations, governance, business continuity, budgeting, benchmarking, and industry standard management frameworks such as ITIL and COBIT. (Required: CIS 413-0 or CIS 413-DL. Recommended CIS 452-0 or CIS 452-DL, 455-0 or CIS 455-DL, and CIS 457-0 or CIS 457-DL.)

CIS 465-0 Information Technology Strategy (1 Unit)
This course introduces students to the key challenges and responsibilities of managing information technology and an information technology organization. Students gain knowledge of the various facets of managing information technology including how to develop an IT strategy aligned with business strategy. Topics covered include the IT solution lifecycle, IT service management, IT supplier management and sourcing, ongoing IT technology operations, governance, business continuity, budgeting, benchmarking, and industry standard management frameworks such as ITIL and COBIT. (Required: CIS 413-0 or CIS 413-DL. Recommended CIS 452-0 or CIS 452-DL, 455-0 or CIS 455-DL, and CIS 457-0 or CIS 457-DL.)

CIS 465-DL Information Technology Strategy (1 Unit)
This course introduces effective frameworks and methods for developing information technology and systems strategies that focus on meeting enterprises business objectives and on leveraging IT to competitively extend business capabilities. Topics covered include business driver identification and business and IT alignment; key technology components of the IT strategy; including enterprise architecture, enterprise systems, SOA and other integration technologies, networks, and data management; portfolio management; sourcing and hosting alternatives; emerging technologies and entrepreneurship. (Required:
This course introduces effective frameworks and methods for developing information technology and systems strategies that focus on meeting enterprises business objectives and on leveraging IT to competitively extend business capabilities. Topics covered include business driver identification and business and IT alignment; key technology components of the IT strategy, including enterprise architecture, enterprise systems, SOA and other integration technologies, networks, and data management; portfolio management; sourcing and hosting alternatives; emerging technologies and entrepreneurship. (Required: CIS 413-0 or CIS 413-DL. Recommended CIS 452-0 or CIS 452-DL, 455-0 or CIS 455-DL, 457-0 or CIS 457-DL, and CIS 460-0 or CIS 460-DL.)

CIS 494-0 Project Management Concepts (1 Unit)
This course introduces effective frameworks and methods for developing information technology and systems strategies that focus on meeting enterprises business objectives and on leveraging IT to competitively extend business capabilities. Topics covered include business driver identification and business and IT alignment; key technology components of the IT strategy, including enterprise architecture, enterprise systems, SOA and other integration technologies, networks, and data management; portfolio management; sourcing and hosting alternatives; emerging technologies and entrepreneurship.

CIS 495-0 IT Project Management (1 Unit)
IT Project Management will teach working professionals with an IT background valuable skillsets related to real-world project management issues to help advance their career. Issues such as contemporary development methodologies, system architectures, IT team structure, and IT management functions will be discussed as well as developing personal capacities needed to lead and manage successful IT project teams. Students will also learn vital soft skills within an IT context such as team composition and leadership, conflict resolution and politics. (Required: CIS 494-0 or CIS 494-DL)

CIS 495-DL IT Project Management (1 Unit)
IT Project Management will teach working professionals with an IT background valuable skillsets related to real-world project management issues to help advance their career. Issues such as contemporary development methodologies, system architectures, IT team structure, and IT management functions will be discussed as well as developing personal capacities needed to lead and manage successful IT project teams. Students will also learn vital soft skills within an IT context such as team composition and leadership, conflict resolution and politics. (Required: CIS 494-0 or CIS 494-DL)

CIS 496-0 IT Finance & Communication (1 Unit)
This course is designed for those who want to sharpen their writing and communication skills for professional IT environments. Using a case study, students learn to apply measures of excellence in professional writing and communication in business environments, including audience analysis, persuasive writing, verbal and interpersonal communication, and document design and graphics. Writers gain experience writing individually and in collaborative environments, producing multiple drafts and receiving feedback from their peers and the instructor.

CIS 496-DL Information Technology Business Writing and Communication (1 Unit)
This online course is designed for those who want to sharpen their writing and communication skills for professional IT environments. Using a case study, students learn to apply measures of excellence in professional writing and communication in business environments, including audience analysis, persuasive writing, verbal and interpersonal communication, and document design and graphics. Writers gain experience writing individually and in collaborative environments, producing multiple drafts and receiving feedback from their peers and the instructor.

CIS 497-DL Information Technology Finance (1 Unit)
This course focuses on developing and managing an IT project budget as well as looks at the means of conveying information to ensure understanding and gain the cooperation of key partners in initiating positive IT financial initiatives.

CIS 498-DL Information Systems Project (1 Unit)
This course provides experience in the development of large multi-tier information systems. The project will cover all aspects of the software development life cycle (i.e., analysis, design, implementation, testing, deployment), as well as project management and software configuration management. Students will use Java, an object request broker, and a database management system to develop a three-tier application using a use-case-driven, iterative, and incremental methodology. (Required: CIS 413-0 or CIS 413-DL, CIS 414-0 or CIS 414-DL or MSDS 430-DL, and CIS 417-0 or CIS 417-DL. And must have completed 9 out of 11 units of credit.)

CIS 499-DL Information Systems Project (1 Unit)
This course provides experience in the development of large multi-tier information systems. The project will cover all aspects of the software development life cycle (i.e., analysis, design, implementation, testing, deployment), as well as project management and software configuration management. Students will use Java, an object request broker, and a database management system to develop a three-tier application using a use-case-driven, iterative, and incremental methodology. (Required: CIS 413-0 or CIS 413-DL, CIS 414-0 or CIS 414-DL or MSDS 430-DL, and CIS 417-0 or CIS 417-DL. And must have completed 9 out of 11 units of credit.)

CIS 499-0 Independent Study (1 Unit)
Independent Study.

CIS 590-0 Capstone Research (1 Unit)
Capstone Research.

CIS 590-DL Capstone Research (1 Unit)
Capstone Research.