COMPUTER INFORMATION TECHNLGY (CIT)

CIT 110 Introduction to Information Technology (3 credits)
This course will provide foundational knowledge for the modern knowledge worker. Innovation within a wide range of disciplines has been sparked by the diffusion of information technology into a variety of settings. Scientific, engineering, and organizational careers depend upon the heavy use of information technology. This course will provide an introduction to systems and development concepts and information technology (IT). It explains the fundamental role of information within organizations and how IT enables improvement in communication, quality, efficiency, effectiveness, and overall competitive advantage of the firm or non-profit organization. For the modern firm, information is of primary significance in stating and attaining organizational goals. Information systems will be introduced as a means to process and communicate information. The dynamic nature of organizations and the necessity for growth and re-design of the organization as well as its information systems will be presented and used as the motivator for understanding information systems development methodologies.
Course Rotation: NY and PL: Fall

CIT 196G Topic: Introduction to Mapping and Web GIS (2 credits)
Mapping and Geographic information systems have become a necessary tool in decision making, visualization, and spatial analytics across a variety of disciplines and application domains including the sciences, humanities, business, social sciences and healthcare. Going beyond Google Maps, this introductory course introduces web and mobile-based mapping solutions. Through hands on projects, students will used web-based data to build web mapping GIS applications, build mobile applications for field collection, and analyze results using the latest industry tools, such as Google Maps, Social Explorer, and the ESRI web mapping platform, ArcGIS Online.
Course Rotation: NYC & PLV: Fall, Spring, Summer 1, and Summer 2

CIT 196L Topic: Introduction to Location Intelligence and GIS (2 credits)
This course introduces Web-based tools for GIS, location intelligence, business analytics, and visualization. These tools can be leveraged in research in multiple business fields including retail, marketing, and decision support. Doing hands-on projects, students will use web-based data for mapping and analyze the data for market planning, site selection, customer segmentation, and risk assessment. Students will use the latest industry tools, such as ESRI's ArcGIS Business Analyst Online (BAO) as well as ArcGIS Online, which is a cloud mapping platform that gives users the ability to build, visualize and analyze geospatial models across multiple disciplines. ArcGIS Business Analyst Online (BAO) provides location-based intelligence to enhance prediction and decision-making with map-based analytics for accurate reports and dynamic presentations by using tools and data, such as demographic, lifestyle, spending data, health, and education data.
Course Rotation: NYC & PLV: Spring & Summer 2

CIT 201 Introduction to Programming Using Python (3 credits)
This is a beginning programming course that provides the student with complete coverage of programming topics, with emphasis on the Python programming language. Students will learn basic programming concepts such as structure, decision-making, looping, good style, and logical thinking. Objects and object-oriented programming concepts are introduced very early in the text. The second semester covers data structure topics, including stacks, queues, lists, trees, sets, and graphs.
Course Rotation: NY, PLV, Online: Fall and Spring

CIT 211 Platform Technologies and Architecture (4 credits)
This course introduces the basic components of a computer, how they are organized, and how they work together under the control of an operating system. Course activities include hands-on hardware labs, online research of hardware topics, and discussion of hardware design. This course will introduce the student to basic microcomputer hardware components and will familiarize the student with methods of troubleshooting strategies and maintaining computers. Students will examine theoretical concepts underlying hardware functions, preventative maintenance techniques, safety precautions, system procurement, and upgrades. There will also be some discussion of networking and software as it pertains to hardware functionality.
Course Rotation: NYC & PLV: Fall

CIT 221 Global Networking Technology (4 credits)
This course explores fundamentals of business telecommunications including, transmission media, synchronous and asynchronous communication, and packet transmission concepts. Data communications protocols are introduced and local area and wide area network technology is explored. The role of telecommunications in organizations and the global impact of networking are emphasized in case studies throughout the course. Hardware topics and hands-on labs will provide a foundation for network certification.
Course Rotation: NY:PLV;Fall

CIT 223 Introduction to Software Defined Networking and Virtualization (4 credits)
This course provides the student with an overview of the theory and concepts surrounding the use of Software Defined Networking (SDN) and Virtualization. SDN is the ability of software applications to program individual network devices dynamically and control the behavior of the entire network. Companies are devoting much of their development resources to having a large percentage of their networks running on virtualized platforms by moving many services from dedicated hardware from traditional vendors to software-based VNF (Virtualized Network Functions). This course will provide students with an exposure to the concepts of SDN using a variety of tools within hands-on labs.

CIT 231 Web Authoring and Digital Media (4 credits)
This course is designed to provide an introduction to the internet, Web Page design and authoring, Web site management, and multimedia for the Web. Topics include XHTML, CSS, HTML editors, Web graphics, multimedia, basic Web page design concepts, Web 2.0 design, standards-based Web design, and accessibility issues. Students will prepare Web pages incorporating text, digitized images, animations, JavaScript, and sound, using a graphics program, and HTML editor, and XHTML.
Course Rotation: NY and PL: Fall

CIT 241 Database Management (4 credits)
This course deals with the logical and physical organization of databases within and across organizations. Areas to be included are database management, Database management systems, security and integrity controls, ethics and privacy concerns, data description languages, conceptual data modeling and database implementation methods.
Course Rotation: NY, PL, and WP. Fall, Spring, and Summer.

CIT 251 Computer Security Overview (4 credits)
This course gives a broad overview of Information Assurance. The course has two parts: Lecture/discussion related to information security basics and a laboratory component in which students learn technology related security. Course materials include topics such as types of attacks, hacker techniques, legal and privacy issues, security policy, information security best practices and so on. Students also learn security technologies related to three areas: operating systems, Networks and Web, and e-commerce. The course has a strong laboratory component in which students experiment with various practical computer security tools.
Course Rotation: NY and PL: Fall, Spring, and Summer.

Prerequisites: CIS 101 or CIT 110 or permission of department Chairperson.

CIT 252 Overview of Network and Internet Security (3 credits)
This course provides a thorough introduction to perimeter defense fundamentals. Although the primary emphasis is on intrusion detection, the course covers essential practices such as developing security policies and then implementing that policy by performing network address setting up packet filtering, firewalls, and virtual private networks. This course provides the student with a solid foundation in network and web security fundamentals but assumes familiarity with TCP/IP and basic security concepts.
Course Rotation: Fall and Spring; Online

CIT 254 Overview of Computer Forensics (3 credits)
This course provides an overview of the essential skills necessary to launch and complete a successful computer investigation. It will introduce the necessary steps in conducting a high-tech investigation, from acquiring digital evidence to reporting its findings. Students will learn about how to set up a forensics lab, how to acquire the proper and necessary tools, and how to conduct the investigation and subsequent digital analysis. The required textbook features free downloads of the latest forensics software, so the students can become familiar with the tools of the trade.
Course Rotation: Fall and Spring; Online

CIT 261 Introduction to Coding Using Python (4 credits)
This course covers methods for developing solutions to programming problems using object-oriented techniques with the Python language. The course covers the fundamental elements of object-oriented programming. Students will learn how to use classes and objects, and Python libraries such as NumPy (https://numpy.org/) to develop object-oriented solutions. Students will be introduced to the use of data structures in programs and the use of UML (Unified Modeling Language). Programming problem-solving is emphasized throughout.
Course Rotation: NYC & PLV: Fall & Spring

CIT 262 Advanced Coding in Python (4 credits)
This course will focus on advanced topics in Python coding with an emphasis on data structures, algorithms, and object-oriented concepts. Data structures will include stacks, queues and linked lists. The course will also cover searching and sorting algorithms, with an introduction to Big O notation. Object-oriented concepts covered will include inheritance and polymorphism. Students will work on advanced projects in data science, cybersecurity, and Web technologies.
Course Rotation: NYC & PLV: Fall & Spring

CIT 312 Introduction to Programming I (4 credits)
Techniques for developing solutions to business and systems problems using the Java programming language. Fundamental data types; flow of control statements; functions; arrays; pointers; strings; bitwise operators; structures and unions; elementary data structures; file I/O; interfacing with the operating system.
Course Rotation: NY:PLV;Fall

CIT 314 Introduction to Programming II (4 credits)
Techniques for developing solutions to business and systems problems using object-oriented techniques and the JAVA programming language. JDK and compilers; Java applet and application basics; JAVA APIs and Java language basics (Data types/declarations, I/O streams, numbers, strings and arrays); object and class basics; class inheritance and abstract data types; constructor, and garbage collection; object overloading/overriding; polymorphism; file I/O; creating GUI using JFC/AWT Swing and event handling; exception handling and thread; Security and JAR are all areas included in this course.
Course Rotation: NY and PL: Fall, Spring, and Summer.

Prerequisites: CIT 312 or CS 121 or IS 223 or permission of department Chairperson.

CIT 316 Visual Basic Programming (4 credits)
This class provides an introduction to computer programming logic using the Visual Basic.NET language. This course will give the student a basic understanding of problem solving skills using a computer programming language. Practical experience with programming concepts will be gained through demonstration and hands-on lab exercise. There are several lessons in Game Programming. This course is designed for programmers unfamiliar with ALL of the following: (1) Visual Basic, (2) object-oriented programming, and (3) event driven Windows programming. The goal of this course is to immerse you in all three of these technologies, enabling you to build complete GUI-based object oriented Windows applications in Visual Basic.NET. You will learn application design choices, object-oriented design principles, event driven programming, UI programming using Windows Forms and user interface controls, data binding and database access using SQL and ADO.NET, exception handling, debugging and defensive programming techniques, and effective ways of working with Visual Studio .NET.
Course Rotation: NY and PL: Fall, Spring, and Summer.

Prerequisites: CIS 101 or CIT 110 or permission of department Chairperson.

CIT 322 Distributed Computing (4 credits)
This course provides students with an understanding of the alternatives and related issues regarding the distribution of Information Technology resources. Topics to be covered include centralized versus distributed systems from both a technical and organizational perspective, the role of the communications network, distributed database systems and operating systems, distributed transaction processing, two and three tier client/server systems, distributed systems management, standards and protocols, web services and the Internet as a distributed system, and systems security. Students will complete a substantial group course project.
Course Rotation: NY and PL: Fall, Spring, and Summer.

CIT 332 Multimedia and User Interface Design (4 credits)
Students will be exposed to the various elements that comprise multimedia and human computer interaction, in terms of concepts as well as design. Theoretical underpinnings of multimedia and human computer interaction will be explored and these will be directly applied to the design of web-based and stand-alone applications using various multimedia tools.
Course Rotation: NY and PL: Fall, Spring, and Summer.

CIT 334 Technical Writing (4 credits)
This course will provide students with the basic foundation on which to build and improve communication skills for the workplace. Students will create business and technical correspondence, technical reports, user manuals, and technical instructions. Emphasis will be placed on working collaboratively in an electronic environment using the Internet, email, and groupware tools.
Course Rotation: NY, PL, WP, Online: Fall, Spring, and Summer.

CIT 335 Creating with the Interactive Web (3 credits)
This course educates students in using new and emerging interactive media tools, exemplified by the interactive Web. In 1964 Marshal McLuhan introduced the concept "the medium is the message" in his book Understanding Media: The Extensions of Man. This phrase initiated an inquiry into the nature of the interactions of content and media lasting over forty year. In this course students gain experience with how the new web media interacts with content. Theoretically, the course explores human computer interaction, multimedia content management and cognition. Students use interactive technology to create content using blogs, wikis, images, photos, videos, podcasts.
Course Rotation: Spring;NY:PLV

CIT 336 Web Scripting (4 credits)
This course provides students with an introduction to scripting languages for use on the World Wide Web and includes a client-side scripting language and a server-side scripting language. Students will use JavaScript, PHP, and MySQL to develop interactive Web sites.
Course Rotation: Fall and Spring

CIT 338 Ubiquitous Computing (4 credits)
Ubiquitous and pervasive computing is a new and exciting platform and paradigm for anywhere, anyhow services and information systems. This new research area is a natural outcome of the tremendous advances in wireless networks, mobile computing, sensor networks, distributed computing, and agent technologies. This course explores issues of applications, privacy, infrastructure, mobile, wireless, and distributed computing in an Internet environment with advanced human-computer interfaces, high-definition multimedia, and powerful, efficient computing. Ubiquitous and pervasive computing is the trend towards increasingly connected computing devices in the environment, a trend being brought about by a convergence of advanced electronic-and particularly, wireless-technologies and the Internet. Pervasive computing devices are not personal computers as we tend to think of them, but very tiny-even invisible-devices, either mobile or embedded in almost any type of object imaginable, including cars, tools, appliances, clothing and various consumer goods-all communicating through increasingly interconnected networks. Among the emerging technologies expected to prevail in the pervasive computing environment of the future are wearable computers, smart homes and smart buildings. Pervasive computing researchers aim to understand how to create systems that are pervasively and unobtrusively embedded in the environment, completely connected, intuitive, effortlessly portable, and constantly available, that are of social value.
Course Rotation: NY, PL, WP, Online: Fall, Spring, and Summer.

CIT 340 Data Analysis and Visualization (4 credits)
In their work, most professionals encounter large collections of data. However, data by itself is meaningless. Therefore, professionals need to analyze data and/or interpret such analyses. This course uses advanced spreadsheet techniques and specialized data analysis packages (such as SAS or SPSS) to analyze and interpret large data sets. Data visualization techniques, which also further the analysis and understanding of data, will also be discussed.
Course Rotation: NY, PL, WP, Online: Fall, Spring, and Summer.

CIT 341 Foundation of Enterprise Information Systems (3 credits)
This course offers business students hands on instruction in the use and application of Enterprise Information Systems. Business students with direct experience using Enterprise Information Systems have more employment and career opportunities. All class sessions meet in the Accounting Department's computer lab. Hands on exercises will be used throughout to reinforce critical course concepts. These include a Web based simulation of Enterprise software designed for SAP, a leading global provider of Enterprise Information Systems.
Course Rotation: Fall;NY:PLV

CIT 342 Systems Design and User Experience (4 credits)
This course examines the fundamental concepts of Systems Analysis and Design and will concentrate on the design and technical aspects of information systems. It will provide students with the essentials of contemporary software engineering issues including object-oriented systems analysis and design, database design considerations, input and output prototyping, user interface design and usability evaluation, software development methodologies and agile methods, and current trends in systems development.
Course Rotation: NY, PL, and WP. Fall, Spring, and Summer.

CIT 344 Project Management (4 credits)
This course combines project management methods and structured systems development techniques and applies them to the complex world of information systems development. The central project management functions of planning, organizing and controlling are presented in the context of the systems development process. Topics include project planning, estimating, and testing, implementation, and documentation, management of change, and utilization of services consultants, software houses, turn-key systems and proprietary software packages.
Course Rotation: NY and PL: Fall, Spring, and Summer.

Prerequisites: Junior standing.

CIT 346 Database Programming (4 credits)
An introduction to database programming. Concepts and techniques of database queries and updates using SQL or another database language will be stressed. The concepts of triggers and stored procedures will be discussed and illustrated. Students will write application programs in a relational database environment.
Course Rotation: NY, PL, WP, Online: Fall, Spring, and Summer.

CIT 348 Data Mining (4 credits)
Advances in database technology along with the phenomenal growth of the Internet have led to unprecedented masses of data available for analysis. Data mining and knowledge discovery are methods and techniques used to analyze these data in order to determine patterns and their relationships. Because of its massive size, it is difficult for analysts to sift through the data even though it may contain useful information.
Course Rotation: NY, PL, WP. Fall, Spring, and Summer.

CIT 349 Blue CoLab I (1-3 credits)
This is a hands-on, team-based course in which students use and manage Blue CoLab's realtime water and weather sensing and related technologies, as well as real-time streaming data in projects aimed at the protection of human and environmental health. Blue CoLab allows students to advance their knowledge of a chosen specialty or a new specialty through project development and applications in areas, such as data analytics, Web presentation, data visualizations, data sonification (mapping data to music), mobile apps, application Programming Interface (API) development, etc. Lectures cover topics, such as sensor engineering, instrument deployment, user experience (UX), product development, relevant languages, and more. In addition, Blue CoLab students can utilize an on-campus data lab and a nearby offcampus tech lab. Assignments primarily include team projects culminating in team presentations. The work of each semester differs from and builds upon the work of previous semesters in the application of both CS and IT to the Blue CoLab mission; therefore, no two semesters are alike.
Course Rotation: PLV: Fall

CIT 350 Blue CoLab II (1-3 credits)
Blue CoLab is a hands-on, team-based course that focuses on training and research in the technology and data science of real-time water monitoring. Blue CoLab 2, which is offered in Spring, is a companion course to Blue CoLab 1, offered in Fall. However, the courses are not required to be taken in sequence. Blue CoLab 2 will have a strong emphasis on the use of instrumentation and hardware to create data that enhances and informs the user experience with water, particularly drinking water. In addition, because Blue CoLab is also a full-time, 365 day/year program, students work directly with faculty and staff in the operation of Blue CoLab's real-time water and weather sensors, stations, and related technologies, as well as management and translation of the real-time streaming data they generate. With operating labs in Goldstein Academic Center, Choate Pond, and off-campus, students have workspace that allows them to experience operation of the full program while creating projects, apps and presentations that advance the Pace community's understanding of its own water. The work of each semester differs from and builds upon the work of previous semesters in the application of both CS and IT to the Blue CoLab mission; therefore, no two semesters are alike.
Course Rotation: PLV: Spring

CIT 351 Introduction to Geographic Information Systems (4 credits)
This course provides an introduction to the analysis and design of geographic information systems. These are systems for which the data and solutions are location based. GIS systems are used in a variety of disciplines and applications including geosciences, environmental science, government, land management, non-profits and business. Students will learn how to create comprehensive GIS systems in a range of application areas.
Course Rotation: NY and PL: Spring

CIT 352 Network and Internet Security (4 credits)
This course provides a practical approach to network security applications and standards. The focus is to provide an in-depth understanding of the current network security principles, features, protocols, and implementations. The course includes a detailed discussion on design and maintaining a computer network from the security point of view. The emphasis is on applications that are widely used on the Internet and for corporate network, and on standards, especially Internet standards that have been widely deployed.
Course Rotation: NYC & PLV: Fall, Spring, and Summer.

CIT 353 Introduction to Mobile Computing (4 credits)
This course will introduce students to the different technologies employed to develop and manage mobile applications. Students will build a working development environment with existing tools (e.g. Eclipse, Java, XML, and the Google Android Software Development Kit). Working in teams, students will create their own applications. Students will report on the component technologies: XML, Open GL ES (@ & 3D graphics), SQLite (database), sensor support (GPS and accelerometer), Multimedia (voice, sounds, and video support). Students will explore: different commercial offerings, management issues in providing mobile services, mobile security, the uses of the Mobile Web and its global social effects (including gaming, and app entrepreneurship).
Course Rotation: Spring;NY:PLV

CIT 354 Computer Forensics (3 credits)
This course provides a thorough introduction to computer networks and data communications. Topics include major applications of networking, protocols, the OSI reference model, physical links and interfaces, modems and modem standards, interface standards, multiplexing and communication links, LANs, WANs, routers and Internetworking, application support protocols, overview of TCP/IP, Internet layer functions, address resolution, DNS, IP addressing system, subnets, IP routers, TCP and UDP and Internet services.
Course Rotation: NY, PL, WP, Online: Fall, Spring, and Summer.

CIT 356 Operating Systems Concepts (4 credits)
An operating system is responsible for the optimal allocation and utilization of the resources of a computer system. This course introduces the techniques used and problems encountered in developing operating systems for batch, on-line and multiprogramming and multiprocessing environments.
Course Rotation: NY, PL, WP, Online: Fall, Spring, and Summer.

Prerequisites: Junior standing.

CIT 361 Digital Forensics Overview (4 credits)
With much of our personal information now being recorded digitally, the field of digital forensics has grown exponentially. This course will provide students with a strong foundation in the principles of digital forensics. Students will learn how the field has evolved over time and why digital investigations have become more pervasive. A keen understanding of file systems, including operating systems and registries, is vital to understanding the evidence that a suspect leaves behind, and therefore provides the core of this course. The ultimate objective is to use digital evidence to prove control, ownership and intent to successfully prosecute a case. Students will gain practical experience with professional digital imaging tools, like Helix, X-Ways and FTK, which are used to extract, filter and analyze digital evidence. The course will include forensic imaging techniques for both Windows Personal Computers and Apple Macintosh machines.
Course Rotation: NYC & PLV: Fall, Spring

CIT 363 Computer Forensics, Cyber Law and Evidence Admissibility (4 credits)
Every computer forensics examiner must understand the interactions of people with hardware and software. Additionally, knowledge of the law is imperative to the successful conviction of a criminal. This course will detail the legal aspects of computer forensics investigations and evidence admissibility. Students will gain understanding of the legal documentation required for gaining access to a suspect's information, like letters of preservations and warrants; also included will be evidence custody and chain of custody forms. Finally, students will experience the intricacies of investigative report writing. A series of case studies will be incorporated into the course to explore reasons why some computer forensics investigations have been highly successful and in the pitfalls that caused others to fail.
Course Rotation: Fall:Spring;NY:PLV

CIT 365 Mobile Device Forensics (4 credits)
Computer forensics investigators no longer simply rely on traditional computers as sources of evidence. Incriminating evidence can be found on cell phones, smartphones, PDAs, cameras and even game systems. This course will introduce students to mobile forensic file systems. Students will learn methods of evidence extraction from the mobile devices and how these devices should be handled and analyzed. Lab sessions will allow students with hands-on analysis of phones, flash memory and SIM cards. Students will also learn about recovering deleted SMS text messages, call logs. An introduction to CDMA and GSM networks will also be provided. This practical experience will be supplemented with exposure to the use of digital images and video investigations. This course will teach students how to find photo metadata, identify whether images have been edited, reconstruct damaged image files and subsequently use these files as admissible evidence.
Course Rotation: Fall:Spring;NY:PLV

CIT 380 Applied AI with Deep Learning (4 credits)
This course provides an understanding of the capabilities and the challenges of deep learning implementations and strategies to build and train efficient neural network architectures. The course topic includes the fundamentals of neural networks (i.e., theoretical concepts and what they are suitable for), building and training neural networks using APIs (i.e., Keras and Tensorflow), and implementing relevant neural network architectures for real-world cases.
Course Rotation: NYC & PLV: Fall & Spring

CIT 396C The Hudson River Experience: Multiple Perspectives on Environmental Responsibility (3 credits)
Many environmental issues facing the nation and planet can be studies in unique fashion through focusing on the Hudson River Experiences. Through a combination of classroom, field, and experiential learning, this course will use the Hudson River Valley and region as its connecting theme and central subject. The semester will be comprised of four (4) modules taught by diverse faculty and will include business, policy, humanities, and technology. Students will gain a deep understanding of the environment in which Pace University is located and the pivotal role this region has played in local and global affairs, particularly in relation to the environment.

CIT 397B Topic: Entrepreneurial Health Informatics (4 credits)
Entrepreneurial Health Informatics is an interdisciplinary course that provides an overview of computer based clinical record systems as well as decision support systems for medical application. The course will mainly focus on experiential entrepreneurship through innovation, evolution, and imitation as well as algorithmic solutions for health decision support; data acquisition, processing, and analysis; and delivery systems and services. The main topics covered health information technology systems' standards and terminologies, risks and uncertainty, data and workflow modeling, data mining, data visualization, and medical decision making. Teamwork and entrepreneurship will be infused throughout the course in the form of creative critical thinking and problem-solving and calculated risk-taking in the design and development of the algorithms supported by a quality business plan for a health related information technology company. Entrepreneurs will be recruited for the roles of team mentors, project selection and scaling, and guest speakers. Coure Rotation: NY: Spring.
Prerequisites: Listed prerequisite or equivalents or instructor permission.

CIT 397D Topics:Introduction to Innovation Law and Policy (4 credits)
The need for innovation has never been more pronounced than in the current social, political, and economic landscape. The call is out for a new generation of scientists, technologists, and artists to become our great innovators. But the path to innovation is not without law. Legal and policy issues abound, from intellectual property law to privacy and security concerns to our constitutional guarantee of freedom of speech. Understanding the framework that governs our system of innovation is critical to ensuring that our future innovators are in the best position to create and that society is in the best position to benefit from their creations. This survey course will cover a number of topics relevant to students considering a wide variety of careers, including those in silence, engineering, and the arts. Topics include an introduction to the access to knowledge movement, the legal and policy considerations of fair use and remix culture, patents, trademarks, and open source software and licensing. The class will meet once a week for 2 hours.

CIT 397E Topic: Introduction to Geographic Information Systems (4 credits)
Geographic Information Systems are characterized by spatial objects that have locations (e.g. addresses, landmarks, geopolitical boundaries, rivers, roads, etc.) and data associated with them (e.g. quantities, statistics, etc.). Emerging applications and research involves solving problems which asks IS related questions about geospatial information and applied in many situations including customer analysis, market analysis, site selection, etc. In this class students will learn how to use ArcGIS to analyze and develop GIS solutions.
Course Rotation: TBA.

CIT 397F Topic: Financial Computing and Entrepreneurship (4 credits)
This interdisciplinary course integrates computing (computer science, information systems, and information technology), finance, and applied entrepreneurship to provide the student analytical, quantitative, application, and entrepreneurial skills needed for sound and strategic financial decision making and information technology based product creation. The course will emphasize creative problem solving of and development innovative algorithms for financial problems relating to such topics as financial analysis and time value of money, derivative products, portfolio management, hedging strategies, arbitrage, risks, Black-Scholes model, interest rate models, and fixed income analysis. Within a collaborative team environment, the student will develop innovative algorithmic solutions for financial problems as well as analyze, evaluate model financial time series with neural networks; the algorithms will be implemented in a high-level computer language (e.g. Java, C/C++, or Matlab) into prototypes for potentially marketable financial software products. An entrepreneurial perspective will permeate the course in the form of creative thinking and calculated risk-taking in the design and the development of the algorithms and prototypes, and the development of a high-quality business plan for an information technology company to market the likely software products. There will be a reliance on entrepreneurs for team mentors, project selection and scaling, and guest speakers.

CIT 397G Tpc: Modeling of Financial Processes and Systems through Service-Oriented Architecture Methodology (4 credits)
This course introduces students to models of financial processes through service-oriented architecture (SOA) methods and cloud computing. The focus of the course is on a program management methodology for projects enabling for efficiency and flexibility in process through Web services and SOA. The course concludes with students presenting models of financial processes and systems that contribute a competitive edge to financial firms through innovative technologies of leading SOA technology firms that market to Wall Street and other financial districts.

CIT 397K Topic: Technology Entrepreneurship (4 credits)
This is an interdisciplinary course designed to provide students with an entrepreneurial mindset in information and computational technologies and algorithms as well as to equip students with the tools appropriate to identifying real business opportunities worthy of pursuit. Technology industries and applications will be emphasized along with computing opportunities. The main concepts covered are creativity and innovation; market analysis; customer-driven identification and development; technology-based business creation, financing, and management; competitive business plans; and niche marketing. Two key components will be a project to develop a business plan for an information technology venture around a specific product, system, or service wherein entrepreneurs will serve as mentors to students and teams, and a business plan competition where other industry experts and entrepreneurs will serve as judges. The course will be supplemented with up to three guests lectures as well as the review and analysis of technology entrepreneur case studies.
Course Rotation: NY and PL: Fall.

CIT 397O Special Topic: International Technology Services in the Knowledge Economy (4 credits)
The course attempts to tie four important aspects together: Knowledge Economy; International Management of Services; Entrepreneurship and Innovation; and 24-Hour Knowledge Factory. The objective of the course is to look at several innovative and entrepreneurial aspects of the emerging Knowledge Economy, with special emphasis on how teams of individuals can work together in a seamless manner across national boundaries to render professional services of diverse types and varying sophistication. Graduate-level requirements include an additional 10-15 mid-term paper.
Course Rotation: TBA

CIT 397R Healthcare Innovation and Technology: Industry Trends, Challenges and Opportunities (3 credits)
This introductory course offers a multidisciplinary overview of innovation and technology in healthcare delivery and industry. Students will develop foundational knowledge of how different stakeholders and industries are operating and engaging with one another in this rapidly growing sector, as well as learning to identify and capitalize on diverse and growing business and career opportunities. This fusion of business, technology, and healthcare gives rise to new concepts, products, services and care delivery models. Students will explore these innovations, including but not limited to: telemedicine; telehealth; consumer electronics centered on self-managed care and well ness; electronic health records; and medical devices. Pioneering and key industry players will also feature in this analysis, with a focus on the telecommunications industry's expansion into health technology and care delivery sectors. In addition to examination of these business, technical and strategic developments and issues, this course will assess related legal, regulatory, and public policy concerns. In particular, students will be introduced to patient data privacy and security issues and the relevant regulatory authorities that shape these considerations. To ensure successful application and understanding of the course concepts, students will engage in hands-on group projects on innovative development and deployment of health IT and care delivery models or products. This will enable students to have a grounding of the healthcare innovation process, from end to end, and to identify and overcome the myriad of operational, technical and legal issues surrounding this process.
Course Rotation: Fall and Spring

CIT 397S Topic: Cyber Intelligence for Threat Modeling (4 credits)
Analyzing the threat landscape in cyberspace is vital to the protection of our nation's critical infrastructure. Understanding many of these cyber or physical threats can be derived from OSINT (open source intelligence) on the Web. Oren Falkowitz, former USCYBERCOM, Chief Data Scientist, stated that "In cyber security, the web balances being the platform to create attacks and being the source of information to prevent attacks." Some of the techniques will use big tools to cull through large amounts of data, from news media, propaganda, forums, and social media. A number of different groups will be profiled, including jihadists, state-sponsored attackers and hackevists. Students will learn effective ways to identify threats actors and ways to monitor their activities. In the case of the jihadists groups, students will learn how the Web is used for propaganda, recruitment and fund-raising. Additionally, the technologies used for communications, including mobile applications and encrypted messages will be discussed.
Course Rotation: Fall, NY

CIT 397T Topic: From Telemedicine to Telehealth: Opportunities for IT and Collaboration (3 credits)
As the use of telemedicine has grown, it is now time to explore broader opportunities for IT and collaboration best practices to impact the broader healthcare and life sciences ecosystem, towards a broader notion of telehealth. This seminar-style course will include lectures from industry guest speakers and cover new business opportunities, supporting technologies which are required to meet those opportunities, and the changes in organizational and regulatory frameworks which will support implementation of these technologies. Sample aspects of the life sciences ecosystem which will be covered include clinical trials of new prescription drugs, global communication of drug efficacy and quality through regulatory systems, and remote management of the medical device manufacturing process. In each of these areas, we will discuss the prospect of telehealth to include more remote participants in the process and have a better impact in patient lives. The course will also include a final project a developing a product plan for technology to address a key telehealth challenge.
Course Rotation: Spring; NY;PLV

CIT 397U Topic: Applied Cyber Defense and Operations (4 credits)
This course is designed to prepare students for skills and knowledge to monitor, analyze and respond to network security issues. Students will learn about system administration, network security, and incident response techniques. In addition, students will learn to work as a team to resolve network security incidences and to respond to organizational management requests. The course aims to train students to perform the role as a security operation center (SOC) analyst by simulating real-world scenarios in a virtualized network environment, such as the one for the Collegiate Cyber Defense Competition (CCDC). Students who took this class are expected to participate in CCDC and similar events for additional experience.
Course Rotation: NYC & PLV: Fall

CIT 471 Information Technology Internship (4 credits)
This internship is designed to provide the senior level student with a pre-professional experience in information technology at an approved worksite. Students will meet periodicity to discuss problems and issues and complete weekly assignments and projects.
Course Rotation: NY and PL: Fall, Spring, and Summer.

Prerequisites: Senior standing and permission of department chairperson required to register.

CIT 481 Capstone in Information Technology (4 credits)
This capstone course focuses on contemporary issues in information technology. The case study/project approach is used to analyze and discuss problem situations related to information technology.
Course Rotation: NY, PL, WP, Online: Fall, Spring, and Summer.

Prerequisites: Senior standing.

CIT 490 Independent Study in Information Technology (1-4 credits)
Independent study projects in special areas of information technology upon the submission of a proposal, acceptance by an instructor and permission of the department chair. This course may be taken for 1 to 4 credits. Permission from Instructor and Chairperson required.
Course Rotation: Fall:Spring;NY:PLV