Information Systems (IS) Courses

IS 1003. Unlocking Cyber. (3-0) 3 Credit Hours.
Cybersecurity is a relevant topic for everyone today, personally and professionally. This three-hour course covers core security terminology and concepts and discusses current challenges and threats faced by individuals, organizations, and nations through current topics, case studies, and hands-on labs, and career profiles. We introduce a few tools of the trade to familiarize students with the problem-solving techniques and analytical skills needed for cybersecurity and related degree programs, and with the aim of increasing awareness of the field and its critical importance to our world. Course Fees: BISP $10; BTSI $15.41; LRB1 $15.41; DL01 $75.

IS 1403. Business Information Systems Fluency. (3-0) 3 Credit Hours.
(TCCN = BCIS 1305)
This course concentrates on a set of core computing skills that are essential to student success, such as using e-mail, word processing, spreadsheets, basic data management, presentation software and on-and off-campus internet resources. Microsoft Office is required to complete the projects assigned in the course. This is an online course. All coursework (lessons, exams, and projects) is completed online. Course Fees: BISP $10; BTSI $15.41; DL01 $75; LRB1 $15.41.

IS 1413. Excel for Business Information Systems. (3-0) 3 Credit Hours.
This course concentrates on the use of Microsoft Office Excel as a tool for organizing, presenting, and analyzing data. This is an online course. All coursework (lessons, exams, and projects) is completed online. Microsoft Excel is required to complete the projects assigned in the course. Successful completion of this course will help prepare the student for taking the Microsoft Office Specialist (MOS): Microsoft Office Excel Core exam. Students who are MOS certified or have taken an equivalent course that specifically prepares students for the MOS Excel exam can petition for exemption for the course. Students in quantitative majors (such as Accounting, Actuarial Science, Economics, Finance, Management Science, and Statistics and Data Science) are encouraged to take this course in lieu of IS 1403. Course Fees: BISP $10; BTSI $15.41; DL01 $75; LRB1 $15.41.

IS 2053. Programming Languages I with Scripting. (3-0) 3 Credit Hours.
Prerequisites: IS 1003 with a grade of "C" or better. This course introduces programming logic and constructs in Python and basic command line scripting in Linux and Windows environments. Control structures, arithmetic and logical operators, functions, arrays, regular expressions, classes/objects, and exception handling are covered in Python. Students will also write Bash and PowerShell scripts to execute basic processes and tasks. The emphasis will be on building problem solving and coding skills that apply to any language. Course Fees: BISP $10; BTSI $15.41; LRB1 $15.41; DL01 $75.

IS 2063. Programming Languages II with Java. (3-0) 3 Credit Hours.
Prerequisites: IS 2053 with a grade of "C" or better. The course focuses on high-level programming constructs through the Java programming language. Students will apply an object-oriented framework to business and security problems using data structures, built-in libraries, file processing, and exception handling, and become familiar with concepts such as inheritance, polymorphism, and generics. Course Fees: BISP $10; BTSI $15.41; LRB1 $15.41; DL01 $75.

IS 3003. Principles of Information Systems for Management. (3-0) 3 Credit Hours.
An overview of fundamental MIS concepts within a framework for describing and analyzing managerial/organizational information needs. Includes coverage of hardware and software tools, information structures, various types of information systems, and formal problem-solving techniques. Issues related to organizational controls, security, globalzation, collaboration, and ethics as a result of changing technologies are discussed. A variety of assessment methods will be assigned to illustrate the use of specific tools and techniques for problem-solving. Differential Tuition: $126. Course Fee: DL01 $75.

IS 3033. Operating Systems Security. (3-0) 3 Credit Hours.
Prerequisites: IS 2053 (IS 2031 and IS 2033 in previous catalogs). IS 3033 is a hands-on course with an emphasis on studying real-world cyber security challenges of Operating System (OS). Throughout the course, students will be introduced to the fundamental knowledge of OS such as process scheduling, memory management, I/O device and file systems etc. as well as hands-on approaches to securing and hardening the essential components of a specified OS (Unix-like or Windows). The lab exercises of this course provide students with comprehensive practices on secure operation and maintenance, secure server configuration, system-level firewalls, kernel security module, logging, and anti-malware measures, etc. Differential Tuition: $126. Course Fees: DL01 $75, ISCS $75.

IS 3043. Secure Mobile App Development. (3-0) 3 Credit Hours.
Prerequisites: IS 2063 (IS 2041 and IS 2043 in previous catalogs), or the instructor’s consent. As mobile devices such as smartphones and tablets become ubiquitous, the demand for mobile apps and developers who specialize in mobile technology also surges. This course teaches students how to develop a mobile app in an advanced development environment (e.g., Android Studio) and principles of secure software engineering. The course will cover requirements analysis, interface design, functionality development, testing vulnerabilities, data security and other secure software design strategies with a focus on the usability of mobile apps in the real world. This course can be an elective for the information systems major and cyber security major and minor. Differential Tuition: $126.

IS 3053. Fundamentals of Cyber Security. (3-0) 3 Credit Hours.
This course covers core cyber security terminology, concepts, and challenges faced by individuals, organizations, and nations through case studies and discussions. Application to business environments will be emphasized with hands-on exercises in areas such as network/device security hygiene, search techniques, incident response, and risk assessment. The overall aim of the course is to familiarize students with security techniques and strategies needed across a broad range of industry sectors. Credit for this course cannot be counted toward the B.B.A. in Information Systems or the B.B.A. in Cyber Security. Differential Tuition: $126.

IS 3063. Database Management for Information Systems. (3-0) 3 Credit Hours.
Prerequisite: IS 2053 (IS 2031 and IS 2033 in previous catalogs). A study of database management systems (DBMS) features, functions, and architecture, including database conceptual design, data models, entity relationship diagrams, database query design, and database administration. A contemporary DBMS product such as MS SQL Server will be used to illustrate principles in a relational database. Differential Tuition: $126. Course Fees: ISCS $75; DL01 $75.
IS 3073. Application Development. (3-0) 3 Credit Hours.  
Prerequisite: IS 2063 (IS 2041 and IS 2043 in previous catalogs). This course examines the challenges, techniques, and methodologies involved with updating, maintaining, and testing software applications and packages. Students will analyze cases that address implementation and deployment issues; analysis and testing of code will be included. Differential Tuition: $126.

IS 3413. Telecommunications and Networking. (3-0) 3 Credit Hours.  
Includes an in-depth look at basic telecommunications terminology and concepts. Introduction to voice and data networks, signaling and multiplexing. Includes comparisons of network topologies, protocol fundamentals, and architectures. Ethernet, IEEE 802.11x, TCP/IP, dedicated circuit, and VPN technologies are introduced. Network security fundamentals are explored. (Formerly titled "Introduction to Telecommunications for Business." Same as IS 6113. Credit cannot be earned for both IS 3413 and IS 6113.) Differential Tuition: $126. Course Fees: DL01 $75, ISCS $75.

IS 3423. Network Security. (3-0) 3 Credit Hours.  
Prerequisite: IS 3413 with a grade of "C-" or better or consent of instructor and Department Chair. The course provides a foundation in networking technologies that are core to creating secure networks. Topics included in this course are basic cryptography, secure networking protocols, logical and physical security management and security devices. Relation between these technologies and operational and implementation issues for these technologies will also be discussed. (Formerly titled "Secure Network Design.") Differential Tuition: $126. Course Fees: DL01 $75, ISCS $75.

IS 3433. Cyber Crime Investigation Principles. (3-0) 3 Credit Hours.  
The digital forensic investigation process involves organizational preparation, incident response, data collection, data analysis, and communication of findings. This course will teach students how to prepare for incidents, how to respond to incidents, and how to reliably collect digital data. Students will be introduced to various types of storage media and sources of volatile data. Students will also be introduced to forensic accounting principles and practices as well as fundamental legal issues related to digital forensics. (Formerly titled "Introduction to Digital Forensics.") Differential Tuition: $126. Course Fees: DL01 $75, ISCS $75.

IS 3453. Networking Fundamentals. (3-0) 3 Credit Hours.  
This course will focus on the principles of telecommunication with particular emphasis on networking. Networking and transmission protocols will be emphasized. Both IPv4 and IPv6 will be included. This class will also include the hardware side of the network. The role of servers, switches, and routers will be included. Security will be introduced. Differential Tuition: $126. Course fee: DL01 $75.

IS 3513. Information Assurance and Security. (3-0) 3 Credit Hours.  
Prerequisite: IS 3413 or IS 3453 with a grade of "C-" or better or consent of instructor. This course will provide the student the opportunity to learn about the basic elements that comprise Information Assurance Security. An in-depth presentation of information assurance topics such as fraud, eavesdropping, traffic analysis, intrusion detection and prevention, hacking, viruses, cryptography, risk management, and secure architectures will be discussed. (Formerly IS 4453. Same as IS 6213. Credit can only be earned for one of the following: IS 6213, IS 3513, and IS 4453.) Differential Tuition: $126. Course Fees: DL01 $75, ISCS $75.

IS 3523. Intrusion Detection and Incident Response. (3-0) 3 Credit Hours.  
Prerequisite: IS 3513 with a grade of "C-" or better. This course will provide the student with the opportunity to learn about the elements that comprise intrusion detection and incident response. It provides an in-depth look at intrusion detection methodologies, tools, and approaches to handling intrusions when they occur. It examines the laws that address cyber crime and intellectual property issues, and includes a study of proper computer and network forensics procedures to aid in the identification and tracking of intruders and in the potential prosecution of criminal activity. (Same as IS 6223. Credit cannot be earned for both IS 6223 and IS 3523.) Differential Tuition: $126. Course Fees: DL01 $75, ISCS $75.

IS 3533. Cyber Law and Legal System. (3-0) 3 Credit Hours.  
An introductory course in laws and legal issues that affect law enforcement, businesses, and investigators related to the preservation, collection, and analysis of digital data. Students will examine computer crime laws, civil and criminal laws that often involve electronic evidence, search and seizure of electronic evidence, judicial issues involving the admissibility of electronic evidence and related testimony, and legal issues involved with electronic surveillance. (Same as IS 6763. Credit cannot be earned for both IS 3533 and IS 6763.) Differential Tuition: $126. Course fee: DL01 $75.

IS 3543. Cyber Analytics Policy, Law and Ethics. (3-0) 3 Credit Hours.  
There are numerous policy, legal, and ethical issues that surround the collection, warehousing, and analysis of cyber data, which includes both system and user data. Further, there are policy and legal issues that impact whether data even exists to be collected and analyzed. Students will be given the opportunity to learn how to write, implement, and apply cyber analytics policy. Legal permissions and constraints involving electronic data collection, aggregation, and analysis will be discussed. Critical analysis exercises will be provided involving privacy concerns and ethical issues that arise with cyber. Differential Tuition: $126.

IS 3833. Cyber Operations. (3-0) 3 Credit Hours.  
Prerequisite: IS 3523 with a grade of "C-" or better. This course investigates cyber operations, defining terms and discussing modern defensive and offensive cyber security strategies. Enterprise-level network protection will be addressed in the context of the cyber security operations center (CSOC), to include capabilities and technologies as well as organization and policies. Offensive cyber operations will be discussed in the context of red teaming and aggressor operations. Recent/current events will be examined as case studies. Differential Tuition: $126. Course Fee: ISCS $75.

IS 4023. Applied Big Data with Machine Learning. (3-0) 3 Credit Hours.  
Prerequisite: IS 2053. This course provides an overview of machine learning techniques to explore, analyze, and leverage data. Students will be introduced to tools and algorithms they can use to create machine learning (ML) models that learn from data, and to scale those models up to big data problems. ML concepts covered include neural networks, support vector machines, and random forests. This course emphasizes a focus on the three major steps in the data analysis pipeline: 1) Data collection and analysis methods and techniques, 2) Data storing and feature engineering methods, and 3) Data modeling (supervised and unsupervised methods). The language of choice for this course is Python, along with the use of libraries such as Pandas, NumPy, Sklearn, Matplotlib, BeautifulSoup, and Selenium. RDBMS and SQL concepts are covered as aspects of data storing. Differential Tuition: $126. Course Fee: ISCS $75.
IS 4043. Natural Language Processing. (3-0) 3 Credit Hours.
Prerequisite: IS 2053. Natural Language Processing (NLP) employs computational tools to process, understand, and communicate using human (natural) language. NLP is a multi-disciplinary subject applicable to computation social science, humanities, biomedical informatics, business, cybersecurity, and a wide range of other fields. In this class, students will (1) gain hands-on experience implementing traditional NLP applications, including, but not limited to, text classification, part-of-speech tagging, parsing, coreference resolution, and machine translation, and (2) practice applying NLP techniques to real-world problems. Differential Tuition: $126.

IS 4053. Systems Analysis and Design. (3-0) 3 Credit Hours.
Prerequisite: IS 3063 with a grade of "C-" or better. An introduction to systems theory and development techniques. Topics include problem definition, system development life cycle, feasibility analyses, project management, and system models. Differential Tuition: $126. Course fee: DL01 $75.

IS 4053. Advanced Topics in Information Systems. (3-0) 3 Credit Hours.
Prerequisite: IS 3063 with a grade of "C-" or better. An introduction to systems theory and development techniques. Topics include problem definition, system development life cycle, feasibility analyses, project management, and system models. Differential Tuition: $126. Course fee: DL01 $75.

IS 4083. Agile Project Management. (3-0) 3 Credit Hours.
This introductory course presents concepts and techniques for leading agile teams in many types of projects including software development, engineering, construction, product development, as well as science and technology focused efforts. The course will give students the opportunity to develop an agile mindset and a range of adaptive skills including agile methods, practices and values that are associated with achieving higher levels of performance and customer satisfaction. This course is structured around the concepts and skills covered in the Project Management Institute’s (PMI) PMI-ACP certification exam. Differential Tuition: $126.

IS 4143. Wide Area Networks. (3-0) 3 Credit Hours.
Prerequisite: IS 3413 with a grade of "C-" or better or consent of instructor. This course explores telecommunication technologies associated with wide area networks. Technologies such as frame relay, MPLS, SD-WAN and VPN tunneling will be studied. The role of common carriers, leased lines and associated security and quality of service issues will also be discussed. Differential Tuition: $126.

IS 4183. Advanced Database Concepts and Applications. (3-0) 3 Credit Hours.
Prerequisite: IS 3063 with a grade of "C-" or better. Databases play a critical role in the business operations of most organizations. This course provides an in-depth coverage on concepts governing the design and management of database systems. Topics include data modeling, database design, administration, optimization and performance evaluation, SQL language, procedures, functions and triggers. Students will have the opportunity to learn how to design and build modern database systems through a set of hands-on exercises and projects using MS SQL Server, Oracle and other contemporary database software. The course also covers some advanced topics such as database security, database connectivity and Web applications. Differential Tuition: $126. Course Fee: ISCS $75.

IS 4213. Data Center Infrastructure Planning. (3-0) 3 Credit Hours.
Prerequisite: IS 3413 with a grade of "C-" or better or consent of instructor. The purpose of this class will be to explore the electrical power, air conditioning, and fire suppressant requirements of a data center. Electrical grids, standby generators, and uninterruptible power supplies will be discussed. The course explores the various aspects of power quality, interruption of service, voltage flicker and control, voltage swells and sags and power surges. Air conditioning requirements and methods will also be included. Fire suppressant techniques will also be part of the class. A comprehensive project involving the design of the data center to include these three major issues will be part of the class. Differential Tuition: $126.

IS 4223. Emerging Network Technologies. (3-0) 3 Credit Hours.
Cloud computing has become popular in industry. This class will look at what it is and how it works. Security issues will be an important part of the course. Other topics include virtual machines, storage area networks, software defined networks, and remote systems management. New wireless technologies along with new data storage and retrieval techniques will be included. New hardware will also be included. Differential Tuition: $126. Course fees: DL01 $75; ISCS $75.

IS 4233. Cloud Computing. (3-0) 3 Credit Hours.
The course provides an introduction to cloud computing and cloud security. Architectural principles, methodologies, and best practices are discussed. The course covers the foundational principles required to securely operate in the cloud, including cloud security architecture, guiding security design principles, design patterns and workflows, industry standards, and applied technologies. Real-world case studies and exercises are included to emphasize the topics covered. Differential Tuition: $126. Course fees: BISP $20; BTSI $15; LRB1 $21; DL01 $75.

IS 4443. Cyber Analytics I. (3-0) 3 Credit Hours.
Prerequisites: IS 4023 or equivalent, and IS 3523. This integrative course will build upon students’ cybersecurity and data analytics knowledge. Students will be given an opportunity to gain valuable experience with industry standard tools, platforms, and business processes for collecting, curating, sharing, and analyzing cyber data to proactively hunt for, reactively respond to, and investigate cyber threats. Analysis of low-level data from a wide variety of devices and sensors onto cyber threat frameworks for sense making in triaging and event reconstruction will be presented. Students will have an opportunity to gain extensive hands-on experience with proprietary and open-source cyber analytics tools. Differential Tuition: $126.

IS 4463. Web Application Security. (3-0) 3 Credit Hours.
Prerequisite: IS 3513 with a grade of "C-" or better or consent of instructor. The security issues related to web applications will be discussed in this course. Topics include web application authentication, authorization, as well as browser and web database security principles. Various web application security attack types such as code injection, cross-site scripting, and cross-site request forgery will be studied. The course will also include discussions about business aspects that contribute to a secure web-based transaction environment. (Formerly titled "Secure Electronic Commerce." Same as IS 6463. Credit cannot be earned for both IS 6463 and IS 4463.) Differential Tuition: $126. Course Fees: DL01 $75; ISCS $75.
IS 4473. Cyber Security Policy, Compliance, and Risk Assessment. (3-0) 3 Credit Hours.
This course will examine how policies, compliance, and risk assessments affect information assurance and cyber security practices. This course will align security with business strategy through the identification and development of administrative, physical, and technical policies to mitigate risk exposure, minimize liability, and maintain regulatory compliance for global organizations, government entities, and key industry sectors such as healthcare and finance. Cyber security frameworks, implementation issues, and current case studies will be included along with hands-on policy writing. (Same as IS 6473. Credit cannot be earned for both IS 6473 and IS 4473.) Differential Tuition: $126. Course Fee: DL01 $75.

IS 4483. Digital Forensic Analysis I. (3-0) 3 Credit Hours.
Prerequisites: Students may not enroll without 60 credit hours completed and without nine (9) hours of upper-division IS and/or CS coursework.
An introductory course in digital forensic analysis. This course examines the fundamental data structures, software tools, and forensic analysis techniques commonly used to locate and recover trace evidence of crimes involving computers. This course focuses on file system forensic analysis of computer hosts and associated media. The tools of collecting, examining, and evaluating data in an effort to establish intent, culpability, motive, means, methods, and loss resulting from such crimes will be examined. (Same as IS 6483. Credit cannot be earned for both IS 4483 and IS 6483.) Generally offered: Fall. Course Fees: BISP $20; BTSI $15.41; LRB1 $15.41; DL01 $75. Differential Tuition: $126.

IS 4503. Cyber Analytics II. (3-0) 3 Credit Hours.
Prerequisite: IS 4443. This capstone course integrates cybersecurity and data analytics knowledge. Students focus on the human aspect of cyber analytics, both behavioral analytics involving users and threat actors, as well as the humans to which findings need to be presented and communicated from a risk, intelligence, and business perspectives. Students will be given an opportunity to learn how to apply cyber analytics concepts holistically across multiple contexts. Additionally, students will explore advanced topics, such as the role of artificial intelligence in increasingly autonomous cyber systems for intrusion detection, prevention, investigation, attribution, and other current and potential uses. Differential Tuition: $126.

IS 4513. Industrial Control Systems. (3-0) 3 Credit Hours.
Prerequisite: IS 3513 with a grade of “C-” or better, or consent of instructor and Department Chair. Many of the critical infrastructure systems contain a system control and data acquisition (SCADA) component. Frequently, the control systems are remotely accessed and therefore become the focal point for attack. This course examines the control system components from the standpoint of vulnerability and protection. System architectures will be discussed. Current events will also be part of the class. (Formerly titled “Cyber and Physical Systems.” Same as IS 6513. Credit cannot be earned for both IS 6513 and IS 4513.) Differential Tuition: $126. Course Fee: ISCS $75.

IS 4523. Digital Forensic Analysis II. (3-0) 3 Credit Hours.
Prerequisite: IS 4483. This course examines advanced digital forensic analysis topics, tools, techniques, and control mechanisms. Advanced topics include operating system artifacts, non-standard file systems, mobile devices, malware, and volatile memory. Students will gain experience with state-of-the-art forensics tools and techniques needed to successfully investigate illegal activities perpetrated through the use of information technology. Differential Tuition: $126. Course Fees: DL01 $75, ISCS $75.

IS 4533. Malware Analysis. (3-0) 3 Credit Hours.
Prerequisite: IS 3033 with a grade of “C-” or better, or instructor’s consent. This class is designed to introduce students to concepts, tools, and techniques associated with modern malicious code analysis. The course will examine the methods employed by malicious actors to prevent analysis and neutralization of their exploits and discuss ways of leveraging resources and tools to effectively examine malicious code. Safe handling practices for malware analysis such as sandboxing, virtualization, and system isolation will be taught/practiced throughout the course. Differential Tuition: $126. Course Fee: ISCS $75.

IS 4543. Cyber Attack and Defend I. (3-0) 3 Credit Hours.
Prerequisites: IS 3413 or the instructor’s consent; students may not enroll without 60 credit hours completed and without nine (9) hours of upper-division IS and/or CS coursework. This course will bridge the concepts of implementing a secure network with actual cyber threats. Students will learn the necessary skills to implement key IT system components, create security policies, and understand the background of what hackers do to mandate such security measures. Students will conduct red team assessments against common infrastructure components, and monitor residual effects of attacks. Differential Tuition: $126. Course Fees: ISCS $75, DL01 $75.

IS 4553. Cyber Attack and Defend II. (3-0) 3 Credit Hours.
Prerequisite: IS 4543. This course will build on the cyber themes and skillsets learned in prior classes to conduct threat hunts to detect advanced persistent threats. Students will learn the necessary skills to detect networking, operating system, and application-level exploitation. Students will utilize advanced community penetration testing tools to emulate advanced persistent threats. Students will leverage community security monitoring and log management tools to conduct threat hunting. Differential Tuition: $126.

IS 4563. Mobile Forensics. (3-0) 3 Credit Hours.
Prerequisite: IS 4483. This course is a project-driven, hands-on study of mobile devices from a forensics perspective. Students will implement various techniques to collect and analyze information from mobile devices used in forensic investigations. Students will learn fundamental mobile device concepts, techniques, and tools needed to acquire and analyze common mobile devices in a forensically sound manner. Differential Tuition: $126.

IS 4573. Cyber Security Policy, Compliance, and Risk Assessment. (3-0) 3 Credit Hours.
Prerequisites: IS 3413 or the instructor’s consent; students may not enroll without 60 credit hours completed and without nine (9) hours of upper-division IS and/or CS coursework. This course will bridge the concepts of implementing a secure network with actual cyber threats. Students will learn the necessary skills to detect networking, operating system, and application-level exploitation. Students will utilize advanced community penetration testing tools to emulate advanced persistent threats. Students will leverage community security monitoring and log management tools to conduct threat hunting. Differential Tuition: $126.

IS 4593. Cyber Security Capstone. (3-0) 3 Credit Hours.
Prerequisites: IS 3513 with a grade of “C-” or better and 18 hours of upper level IS courses, excluding IS 3003. This course should be taken during the final semester. This course builds upon the material in prior cyber security classes with an examination of the cybersecurity tactics, techniques, and procedures involved in executing cyber security in various business settings. Students are required to integrate their functional knowledge and understanding of the global cyber threat environment with advanced cybersecurity techniques, and determine effective ways to reduce risk, detect intrusions, and resolve complex breaches so that organizations can operate in high threat environments. Strong problem solving skills, creative analytical procedures, and effective communication in current cybersecurity scenarios are emphasized. Differential Tuition: $126.

IS 4911. Independent Study. (0-0) 1 Credit Hour.
Prerequisites: Approval in writing from the instructor, the Department Chair, and the Dean of the Carlos Alvarez College of Business. Independent research in a management of technology topic under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree. Differential Tuition: $42.
IS 4913. Independent Study. (0-0) 3 Credit Hours.
Prerequisites: A 3.0 Carlos Alvarez College of Business grade point average, and approval in writing from the instructor, the Department Chair, and the Dean of the College. Independent research in an information systems topic under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree. Differential Tuition: $126.

IS 4933. Internship in Information Systems. (0-0) 3 Credit Hours.
Prerequisites: 6 semester credit hours of information systems courses (excluding IS 1403 and IS 3003), a 2.5 UTSA grade point average, and approval in writing from the instructor, the Department Chair, and the Associate/Assistant Dean of Undergraduate Studies in the Carlos Alvarez College of Business. Directed internship of at least 200 hours of work under the supervision of a professional providing students with opportunities to apply concepts, principles, and techniques learned in the classroom. Written report required. A proposal form must be completed and approved prior to registration. Internship may not be repeated for credit. Differential Tuition: $126.

IS 4943. Internship in Cyber Security. (0-0) 3 Credit Hours.
Prerequisites: 6 semester credit hours of information systems courses (excluding IS 1403 and IS 3003), a 2.5 UTSA grade point average, and approval in writing from the instructor, the Department Chair, and the Associate/Assistant Dean of Undergraduate Studies in the Carlos Alvarez College of Business. Directed internship of at least 200 hours of work under the supervision of a professional providing students with opportunities to apply concepts, principles, and techniques learned in the classroom. Written report required. A proposal form must be completed and approved prior to registration. Internship may not be repeated for credit. Differential Tuition: $126.

IS 4953. Special Studies in Information Systems. (3-0) 3 Credit Hours.
Prerequisite: Consent of instructor. An organized course offering specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor’s degree. Differential Tuition: $126. Course Fee: DL01 $75.