Southern Illinois University
CARBONDALE

Table of Contents

Information Systems and Applied Technologies

The School of Information Systems and Applied Technologies in the College of Applied Sciences and Arts offers the following technically related courses. These courses serve as common requirements for various majors. Selected courses are available to students enrolled in other academic units.

Game Design and Development Minor

The minor in Game Design and Development (GDD) is a multi-disciplinary minor offered by the School of Information Systems and Applied Technologies (ISAT), and the College of Mass Communication and Media Arts (MCMA). The purpose of this minor is to prepare students who wish to enter the field of game design and development. The Game Design and Development minor requires 15 credits. For IST majors, the required courses are RTD 201 and IST 392; for all other majors, IST 209 and MCMA 499 are required. Only after completing 12 credit hours in GDD, students can take the capstone course of IST 392 (IST major) or MCMA 499 (RTD major). This course is co-taught by two faculty (one from IST and one from MCMA) as an independent study. The GTDD minor students are required to display their final project at each program's website and/or showcase.

The approved electives are in two areas for 9 credit hours: Game Studies and Production -- RTD 331, RTD 378, RTD 382, RTD 478, RTD 487 and Game Programming (Prerequisite) -- IST 312 (209), IST 336 (209), IST 403 (312), IST 422 (312 & 336), & IST 446 (209). All prerequisites for these courses must be fulfilled prior to enrollment in each course. All courses for this minor must be completed with a grade of C or better. All students who wish to enroll in this minor must do so through the ISAT advisors or the MCMA advisors. The required courses for each major (IST & RTD) will not be counted as the GDD minor courses.

Required (6 credit hours):

- RTD 201 - Introduction to Media Production
- IST 392 - Special Projects
- IST 209 - Introduction to Programming
- MCMA 499 - Independent Study

Elective Courses (9 credit hours):

Game Studies and Production:

- RTD 331 - Digital Graphics Foundations
- RTD 378 - Writing for Game Production
- RTD 382 - 2D Digital Character Animation I
- RTD 478 - Game Narrative
- RTD 487 - 3D Animation I: Modeling

Game Programming:

- IST 312 - Digital Graphis Foundations
- IST 336 - Web-based Applications in Information Systems

- IST 403 - Client-Side Web Development
- IST 422 - Mobile Programming
- IST 446 - Software Engineering and Management

Information Systems and Applied Technologies Courses

ISAT101 - Intro Information Processing 101-3 Introduction to Information Processing. The successful student should be able to demonstrate an understanding of basic terminology, procedures, applications and equipment used in information processing. Topics covered will range from simple computer processing techniques to advanced contemporary applications. Credit cannot be given for both 101 and Information Systems Technologies 109. Lecture three hours.

ISAT113 - Info Assurance Everyone 113-3 Information Assurance for Everyone. This course is designed to give all students, especially those without a technical or computing background, an introduction to the concerns and issues associated with computers, social networks, and the Internet. Students will learn about the motivation of cyber criminals, common tricks and tactics used by them, and methods of defending against them. At the end of the course, students will have the knowledge necessary to more safely and securely use modern communication technologies and students will learn about basic ethical and legal issues of computing, consequences of insecurity for individuals and organizations, and leave the course with a broad understanding of the basics and topics of information security and assurance. Lab and lecture. A grade of C or better is required for IST majors.

ISAT120 - Fiscal Aspects of ASA I 120-3 Fiscal Aspects of Applied Sciences and Arts I. An individualized program of instruction designed to acquaint students enrolled in the various technical programs of the College of Applied Sciences and Arts with applications and procedures common to their area of specialization. Students will be able to demonstrate a basic working knowledge of the standard documents and procedures related to their specific area through the use of business working papers and practice sets. Open to students in the College of Applied Sciences and Arts. Lecture three hours.

ISAT121 - Installing/Upgrading Computers 121-3 Installing and Upgrading Computer Systems. This course introduces students to the process of installing and upgrading personal computer systems. Topics include identification, selection, and installation of hardware, operating system, peripherals, and basic networking. Introduction to basic electrical measurements and numbering systems are also included. Lecture and Laboratory. A grade of C or better is required. Restricted to majors within ISAT.

ISAT125 - Operating Systems 125-3 Optimizing and Troubleshooting Operating Systems. This course will introduce both Linux and Windows operating systems, from a user and an administrator standpoint. Basic monitoring, optimizing, and troubleshooting tools will be utilized to understand and manipulate a PC. The student will also create a Linux server. A grade of C or better is required. Restricted to majors within ISAT.

ISAT213 - Application PGM Projects 213-3 Application Programming Projects. This course will enable the student to use advanced techniques in the design and implementation of application programs. The student draws upon knowledge gained in previous courses and develops an understanding of the interrelationship of subject matter. Topics will include structures, classes, overloading, inheritance and exception handling. Prerequisite: Information Systems Technologies 209.

ISAT216 - Info Security Fundamentals 216-3 Information Security Fundamentals. This course provides students in technical programs with an introduction to a broad range of information security concepts. Students will learn concepts required for the CompTIA Security+ certification. These include the following domains: networks security, compliance and operational security, threats and vulnerabilities, application, data and host security, assess control and identity management, and cryptography. Lecture and Lab. A grade of C or better is required. Restricted to majors within ISAT.

ISAT224 - Network Fundamentals 224-3 Network Fundamentals. This course takes a lab/lecture approach which leads the student through a series of activities involved in the installation of a local area network (LAN) capable of sharing information and a variety of electronic input/output devices. The student will be introduced to various LAN designs, communication protocols, network certification requirements,

as well as procedures for selecting, installing, and managing a LAN. Lecture and Laboratory. A grade of C or better is required. Restricted to majors within ISAT.

ISAT229 - Computing:Business Admin 229-3 Computing for Business Administration. [IAI Course: BUS 902] The successful student will acquire an understanding of information systems concepts and of the use of computers to process business data through solving a variety of business related problems. Emphasis on the computer as a management tool. Lecture one hour, lab two hours.

ISAT259 - Occupational Education Credit 259-1 to 60 Occupational Education Credit. A designation for credit granted for past occupational educational experiences related to the student's educational objectives. Credit will be established by departmental evaluation. This credit may be applied only at the 100 and 200 level unless otherwise determined by the school's director. Restricted to majors in the Information Systems and Applied Technologies.

ISAT292 - Intro to Microcomputers 292-1 Introduction to Microcomputers. A short course introduction to concepts and procedures related to using microcomputer hardware and software. Lecture one hour. Mandatory Pass/Fail.

ISAT299 - Individual Study 299-1 to 16 Individual Study. Provides students with the opportunity to develop a special program of studies to fit a particular need not met by other offerings. Enrollment provides access to the resources of facilities of the entire institution. Each student will work under the supervision of a sponsoring staff member. Special approval needed from the instructor.

ISAT308 - Device Interfacing & Control 308-3 Device Interfacing and Control. (Same as EST 308) This course provides a basis for electronic device interfacing for systems control. The principles of voltage, current, power, diodes, transistors, and other essential electronic devices will be covered as well as digital system principles. A major focus of the course will be interfacing to a micro-controller a variety of sensors and control devices necessary for system monitor and control. A grade of C or better required. Lecture and Lab. Prerequisite: IST 209 with a grade of C or better.

ISAT316 - Information Assurance I 316-3 Information Assurance I. The purpose of this course is to provide the student with an overview of the field of Information Security and Assurance. Students will be exposed to the spectrum of security activities, methods, methodologies, and procedures. Coverage will include inspection and protection of information assets, detection of and reaction to threats to information assets, and an overview of the Information Security Planning and Staffing functions. A grade of C or better is required. Prerequisite: ISAT 216, 224, and each with a grade of C or better.

ISAT325 - Small Office Networking 325-3 Small Office Networking. This lecture/lab course provides an introduction to the planning installation, and administration of a small office network. Topics covered: an overview of current networking technologies, small to moderate scale network planning and design, an introduction to peer-to-peer and client-server topologies, file storage and back-up, and other topics specific to the small business environment. Restricted to major within ISAT.

ISAT327 - Linux Essentials 327-3 Linux Essentials. Students will learn to use Linux operating systems in this course. Intermediate computing skills are required, but previous experiences to Linux is not necessary. From the foundations of the open source philosophy to advanced command line activities, this course teaches the skills and knowledge needed for the Linux Essentials certification exam. Topics include selecting a Linux distribution, installing applications, operating system security, and basic shell scripting to automate tasks. Lecture and lab. A grade of C or better is required.

ISAT335 - Network Protocols and Apps 335-3 Network Protocols and Applications. Students will build upon their fundamental knowledge of networking by examining, in depth, the operation of TCP/IP and a limited set of application layer protocols. The operation and implementation of DHCP, DNS, and HTTP will be discussed with hands-on lab and implementation exercises. Analysis of the most common data link layer protocols will be performed and installation of physical layer components will be performed. Lecture and Laboratory. A grade of C or better is required. Prerequisite: ISAT 216 and ISAT 224, each with a grade of C or better.

ISAT340 - Intro Video Game Design 340-3 Introduction to Video Game Design and Industry. Introduction to electronic video game development, processes, and game development careers. This course includes an examination of the history of video games, genres and platforms, the game

development process with an emphasis on design elements, audio for games, game industry teams and careers, and managerial roles in the game development and publishing industry. A grade of C or better is required for IST major or GDD minor.

ISAT342 - Device Programming for IoT 342-3 Device Programming for IoT. (Same as EST 342) This course provides a hands-on introduction to programmable devices that may be used with the Internet of Things (IoT). The course covers essential electronics, device interfacing and programming for local monitoring and control. The use of Wi-Fi or Ethernet for monitoring and control via the Internet will be explored as well as security methods for IoT devices. Students will be required to purchase a microcontroller system ranging in cost between $80-100.Lecture and Laboratory. A grade of C or better is required. Prerequisite: IST 209 with a grade of C or better.

ISAT343 - IoT OS Platforms 343-3 Internet of Things (IoT) Operating System Platforms. (Same as EST 343) The selection, configuration, installation, maintenance, and troubleshooting of industrial peer-to-peer and device level networks will be examined with the purpose of forming a complete industrial control network structure. The integration of various industrial control devices, components, and automation cells to form a complete automated control system will be examined. Safety and standard practices will be emphasized throughout the course. Students will be required to purchase a microcontroller system ranging in cost between $100-130. Lecture and Laboratory. A grade of C or better is required. Prerequisite: ISAT 327 with a grade of C or better.

ISAT350 - Technical Career Subjects 350-1 to 32 Technical Career Subjects. In-depth competency and skill development and exploration of innovative techniques and procedures used in business, industry, professions, and health service occupations offered through various workshops, special short courses, and seminars. Hours and credits to be individually arranged. This course may be classified as independent study. Special approval needed from the advisor.

ISAT358 - Work Experience Credit 358-1 to 30 Work Experience Credit. Credit will be granted via departmental evaluation of prior job skills, management-worker relations, and supervisory experience while employed in industry, business, the professions or service occupations. Credit will be established by school director evaluation. This credit may be applied only to the Major Requirements for degrees in the School of Information Systems and Applied Technologies. Restriction: Majors in the School of Information Systems and Applied Technologies.

ISAT360 - Information Assurance II 360-3 Information Assurance II. Students in this course will approach the topics of information assurance and security from the perspective of a large enterprise. Technologies and procedures used to improve an organization's security posture will be discussed and tested in hands-on lab exercises. An examination of modern security products and standard security protocols will accompany lab exercises. Lecture and laboratory. A grade of C or better is required. Prerequisite: ISAT 316 (with a grade of C or better) or consent of instructor.

ISAT365 - Data Apps & Interpretation 365-3 Data Applications and Interpretation. (Same as EST 365) This course will give students an understanding of the basic principles and techniques involved in the statistical treatment of data, including the selection of data sources, the design of statistical studies, and the analysis, synthesis, and utilization of data. Students will gain experience in using data for decision-making in their respective professions. Information Systems Technologies majors must earn a grade of C or better. Prerequisite: University Core Curriculum Mathematics with a grade of C or better.

ISAT366 - Apps of Technical Writing 366-3 Applications of Technical Writing. (Same as TRM 316 and PSM 316) This course will increase students' abilities in communicating various workplace documents common to technical disciplines. The course is designed to meet the writing portion of the College's Communication-Across-the-Curriculum initiative. A grade of C or better is required. Prerequisite: ENGL 101 with a grade of C or better. Restriction: College of Applied Sciences and Arts.

ISAT381 - Special Topics 381-1 to 9 Special Topics. Intensive study of selected topics relevant to the contemporary information management systems environment. Offered as need exists and as time and interests permit. May be repeated for up to nine hours total. Special approval needed from the advisor.

ISAT392 - Special Projects 392-1 to 6 Special Projects. Advanced undergraduate information management systems technologies students will work with current technology to solve problems and

develop projects in a team environment. A grade of C or better is required. Special approval needed from the instructor. Restricted to IST major.

ISAT407 - Industrial Control & Security 407-3 Industrial Control and Security. (Same as EST 407) This course provides an in-depth look at control systems and networks particular to industrial processes. Security vulnerabilities and security measures to protect critical system will be explored. Upon completion of this course students will be able to perform risk assessment and make recommendations for threat detection monitoring of industrial control systems. Not for graduate credit. Grade of C or better required. Prerequisite: ISAT 417 with a grade of C or better.

ISAT411 - Info Storage and Mgmt 411-3 Information Storage and Management: Data, Drives, and Disaster Recovery. This course will provide students with fundamental understanding of a wide range of data storage devices, techniques, and systems ranging from individual standalone drives to large storage system clusters. Focus will be placed on enterprise storage systems in conjunction with lab exercises. Methods to create secure and recoverable storage systems and forensic discovery. A grade of C or better is required. Prerequisite: ISAT 224 (with a grade of C or better) or consent of instructor. Restricted to majors within ISAT.

ISAT415 - Enterprise Network Mgmt 415-3 Enterprise Network Management. This course teaches students about advanced services and application layer protocols used to support business communications in a complex enterprise network. Students will analyze technical business requirements in order to design and propose technology to meet those requirements. Implementation of the design using common technologies, software, and hardware will be performed as part of student lead lab exercises. Students will focus their network designs by implementing solutions relying on Microsoft Windows technologies. The integration of security principles within network designs is required. Lecture and laboratory. A grade of C or better is required. Prerequisite: ISAT 335 (with a grade of C or better) or consent of instructor.

ISAT416 - Adv Enterprise Network Mgmt 416-3 Advanced Enterprise Network Management. This course immerses students in additional advanced network services and application layer protocols used to support business communications in a complex and distributed enterprise network. Students will analyze technical business requirements in order to design and propose technology to meet those requirements. Implementation of the design using common technologies, software, and hardware will be performed as part of student lead lab exercises. Students will focus their network designs by implementing solutions relying on Linux and open source software and technologies. Demonstration of successful integration of security technologies and techniques is required. Lecture and laboratory. A grade of C or better is required. Prerequisite: ISAT 415 (with a grade of C or better) or consent of instructor.

ISAT417 - Wireless Comms & Security 417-3 Wireless Communications and Security. (Same as EST 404) This course provides a comprehensive overview of wireless communications through an examination of the wireless channel, signal modulation, encoding and transmission techniques, antennae theory and error control. Uses of wireless technologies in local, personal and mobile networks will be examined. An emphasis will be placed on security measures and techniques in wireless communications. A grade of C or better is required. Prerequisite: ISAT 216 and ISAT 224, each with a grade of C or better. Restricted to IST major.

ISAT418 - Cloud & Data Center Tech 418-3 Cloud Infrastructure and Data Center Technologies. During this course, students will sample the certification curriculum and materials from a variety of industry leading virtualization and data center products, technologies, and services. Students will learn about storage, computing, and network equipment required for cloud deployments. The class will use lab exercises to learn cloud and data center concepts using products and resources from many industry leaders using virtualization platforms. A grade of C or better is required. Prerequisite: ISAT 224 with a grade of C or better. Restricted to IST major.

ISAT419 - Occupational Internship 419-1 to 3 Occupational Internship. Each student is required to secure an internship at a business/industry work site which relates to the student's academic program and career objectives. The student will perform duties and services assigned by the work supervisor and internship coordinator, and will also complete reports and assignments. Minimum of 3 credit hours

required for Information Systems Technologies majors. Not for graduate credit. A grade of C or better is required. Prerequisites: ISAT 365 and 366 (each with a grade of C or better) or consent of instructor.

ISAT460 - Information Assurance II 460-3 Information Assurance II. This lecture/lab course focuses on design documentation and implementation of network security solutions that will reduce the risk of revenue loss and vulnerability. It is designed to enhance the student's skills and knowledge in three key areas of network security; firewalls, intrusion detection systems, and virtual private networks. The course combines instructor led, group-paced, classroom delivery, and learning models with structured hands-on activities. Lecture and laboratory. A grade of C or better is required. Prerequisite: ISAT 316 with a grade of C or better. Restricted to IST and EST majors.

ISAT491 - Seminar 491-3 Seminar. Students will examine a variety of information systems and technologies topics and/or problems. A grade of C or better is required. Special approval needed from the instructor. Restricted to IST major.

Information Systems and Applied Technologies Faculty

Caldwell, Paul N., Associate Professor, Emeritus, M.S. ED., Southern Illinois University, 1965.
Chung, Sam, Professor and Director of ISAT, Ph.D., University of South Florida, 1996.
Cook, F. Roger, Assistant Professor, Emeritus, M.S., Southern Illinois University, 1987.
Davis, Diane, Professor, Emerita, Ph.D., Southern Illinois University Carbondale, 1990.
Devenport, William R., Associate Professor, Emeritus, M.S., Southern Illinois University, 1985.
Dotson, Michael, Assistant Professor, Emeritus, M.S., Southern Illinois University Carbondale, 1986.
Einig, Raymond G., Jr., Assistant Professor, Emeritus, M.S., St. Louis University, 1962.
Evans, Candy Duncan, Associate Professor, Emerita, Ph.D., Southern Illinois University Carbondale, 1992.
Fisher, Valerie, Assistant Professor, Emerita, M.S., Southern Illinois University Carbondale, 1975.
Gonzenbach, Nancy, Professor, Emerita, Ph.D., Southern Illinois University Carbondale, 1990.
Harre, Paul A., Associate Professor, Emeritus, Ph.D., Southern Illinois University Carbondale, 1995.
Henry, Janice Schoen, Professor, Emerita, Ph.D., Southern Illinois University Carbondale, 1987.
Hertz, Vivienne, Associate Professor, Emerita, Ph.D., Southern Illinois University Carbondale, 1980.
Imboden, Thomas, Associate Professor, M.S., DePaul University, 2007.
Kearney, Brian, Assistant Professor, Emeritus, M.S., Southern Illinois University Carbondale, 1990.
Legier, John, Associate Professor, Ph.D., Southern Illinois University Carbondale, 2007.
Magney, John, Assistant Professor, Emeritus, Ph.D., University of Michigan at Ann Arbor, 1977.
Martin, Nancy, Associate Professor, Ph.D., Southern Illinois University Carbondale, 2006.
Morgan, Barbara, Assistant Professor, Emerita, Ph.D., Southern Illinois University Carbondale, 1992.
Novak, Mary Ann, Associate Professor, Emerita, Ph.D., Southern Illinois University Carbondale, 1987.
Preece, Linda, Assistant Professor, Emerita, M.S., Southern Illinois University Carbondale, 1984.
Rehwaldt, Susan S., Assistant Professor, Emerita, Ph.D., Southern Illinois University, 1982.
Richard, Harold, Associate Professor, Emeritus, Ed.D., Pennsylvania State University, 1976.
Sheets, Leslie P., Associate Professor, Emeritus, M.S., Southern Illinois University Carbondale, 1976.
Shih, Stephen C., Professor, Ph.D., Pennsylvania State University, 1992.
Shin, Wangshik, Associate Professor, Emeritus, M.A., Southern Illinois University, 1963.
Sissom, James D., Associate Professor, M.P. Ad., Southern Illinois University Carbondale, 1996.
Stitt, Beverly A., Associate Professor, Emerita, Ph.D., Southern Illinois University Carbondale, 1980.
Wang, Andy Ju An, Professor and Dean, Ph.D., Beijing University of Aeronautics and Astronautics, 1992.
Woodward, Belle S., Associate Professor, M.A., Webster University, 1997.

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Catalog Year Statement:
Students starting their collegiate training during the period of time covered by this catalog (see bottom of this page) are subject to the curricular requirements as specified herein. The requirements herein will

extend for a seven calendar-year period from the date of entry for baccalaureate programs and three years for associate programs. Should the University change the course requirements contained herein subsequently, students are assured that necessary adjustments will be made so that no additional time is required of them.