Information Systems (ISYS)

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Susan E. Bristow, Clinical Assistant Professor
David E. Bruce, Lecturer
Timothy P. Cronan, Professor, M.D. Matthews Endowed Chair in Information Systems
David Douglas, University Professor, Walton College Professorship in Information Systems
Joseph Ehrhardt, Instructor
Ron Freeze, Clinical Associate Professor
Hartmut Hoehle, Associate Professor
Elizabeth Kifker, Instructor
Phillip D. Kindy, Instructor
Xiao Ma, Assistant Professor
Andrew Mackey, Instructor
Suresh Malladi, Assistant Professor
Beverly McDaniel, Instructor
Jeff Mullins, Executive in Residence
Rajiv Sabherwal, Professor, Edwin and Karlee Bradberry Chair
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Pankaj Setia, Associate Professor
Tracy Ann Sykes, Associate Professor
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Degrees Conferred:
Ph.D. in Business Administration (BADM)
M.I.S. in Information Systems (INSY)
Graduate Certificate in Enterprise Systems (ISESGC)

Master of Information Systems

Master of Information Systems Program Website (https://gsb.uark.edu/master-of-information-systems)

The Master of Information Systems is designed to provide professional preparation for positions in business and government. It provides sufficient flexibility to meet the needs of students with various backgrounds and foster lifelong learning and innovation. Students may concentrate in one of four areas: Information Technology Management, Enterprise Resource Planning (ERP) Management, Enterprise Systems (ES) Management, or Software Engineering.

Admission Requirements: The Master of Information Systems program is open to students who have earned a bachelor’s degree from an accredited institution and who can present evidence of their ability to do graduate work. “Evidence of ability” means superior grade-point average, an acceptable test score on the Graduate Management Admission Test (GMAT) or Graduate Record Exam (GRE), and recommendations with respect to ability for successful pursuit of graduate-level work. International applicants and resident aliens must submit an acceptable TOEFL or IELTS score, or complete the Intensive English Language Program (Spring International Language Center) and receive an English proficiency recommendation for admission. Other admissions criteria can be considered on a case by case basis.

Requirements for the Master of Information Systems Degree:

Students whose previous studies have fulfilled requirements of the common body of knowledge in business and information systems will be required to complete a minimum of 30 hours of graduate work. The required common body of knowledge in Information Systems includes management information systems, systems analysis, database, and programming languages (such as Visual Basic, Java, or other).

To ensure that students acquire the skills necessary for career success, the M.I.S. program strongly encourages all students to obtain additional training directly related to the M.I.S. program prior to graduation. The M.I.S. program considers this training an integral part of the curriculum and recommends that students work for up to one year in a position (or positions) which allow for the practical application of the theoretical principles taught in M.I.S. courses.

Students who hold non-immigrant status in the United States in the F-1 or J-1 categories are responsible for coordinating any necessary authorization for employment with the Office of International Students and Scholars (ISS). F-1 and J-1 students are strongly advised to discuss training options with the M.I.S. Program Director and the ISS office early in their program, and to make themselves aware of limitations and restrictions related to F-1 or J-1 employment authorization benefits.

Pre-M.I.S.

<table>
<thead>
<tr>
<th>ISYS 511V</th>
<th>IT Toolkit &amp; Skills Seminar (Irregular) (This course may not be used for the Master of Information Systems degree.)</th>
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Core Courses

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<tr>
<th>ISYS 5423</th>
<th>Seminar in Systems Development (Fa)</th>
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</tr>
<tr>
<td>ISYS 5943</td>
<td>Management of Information Technology Seminar (Sp)</td>
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</table>

Areas of Concentration 15

Select one of the following concentrations:

Information Technology Management

<table>
<thead>
<tr>
<th>ISYS 5213</th>
<th>ERP Fundamentals (Su, Fa)</th>
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<tbody>
<tr>
<td>ISYS 5503</td>
<td>Decision Support and Analytics (Fa)</td>
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Enterprise Resource Planning (ERP) Management

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Overview

Program Requirements

Research Tools

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<thead>
<tr>
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</tr>
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</tr>
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<td>IS Research Projects (Irregular)</td>
<td>2</td>
</tr>
<tr>
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</tr>
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Supporting Fields

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<tr>
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<tbody>
<tr>
<td>WCOB 6111</td>
<td>Seminar in Business Administration Training I (Fa)</td>
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</tr>
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<td>Seminar in Research Methods (Irregular)</td>
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</table>

Comprehensive Examination

Written exam, research tools and IS (at the end of all coursework)

The objective of the Ph.D. in business administration with a concentration in information systems is to prepare students to conduct quality research in information systems as a faculty member at a research-oriented university school of business. The program is designed to produce a graduate with an understanding of the necessary subject matter required to contribute educational and research expertise to the field of information systems. In addition to preparing students to be world-class researchers, the program seeks to prepare students to teach effectively in an information systems curriculum.

Requirements

Requirements for the Ph.D. in business administration with concentration in information systems include core courses and elective courses in information systems, research tools, and supporting fields. These 43 credit hours of courses are taken prior to advancing to candidacy and are broken down as follows: research tools (9 hours); ISYS core courses (21 hours); and supporting field courses (13 hours). Also, there is a requirement that students satisfactorily complete a one-hour Graduate Colloquium during the fall and spring semesters of each year when students are in residence on campus in pursuit of the degree. Following completion of the coursework, students must pass a comprehensive examination. The program also requires completion of 1st and 2nd year summer research projects, defense of a dissertation proposal, and successful defense of the dissertation (18 credit hours). Students are also prepared for a career in research through research assistantships, collaborative research projects with faculty members, colloquia, and classroom teaching and support.

Program Requirements

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Comprehensive Examination

Written exam, research tools and IS (at the end of all coursework)
Residence Requirement

There is a strong preference for students to be in residence — i.e., be full-time students with assistantship duties — during the entire program. Residence requirements are intended to ensure that every student has ample opportunity for the intellectual development that can result from a sustained period of intensive study and close association with scholars in the intellectual environment of the University. The requirement recognizes that growth as an independent scholar is not merely a matter of class attendance, but rather involves a broader development of the intellect that comes through intensive study, independent research, sustained association with faculty members and other colleagues who share common scholarly and professional interests, attendance at seminars and colloquia, intensive reading and familiarization with library resources, consultation with specialists in other disciplines and resource centers, and the opportunity for broadened exposure to current intellectual issues as they are revealed in various campus offerings.

After filing a Declaration of Intent to pursue the doctoral degree, a student must fulfill a residence requirement as outlined in the Graduate Catalog (http://catalog.uark.edu/graduatecatalog/objectivesandregulations/#degreeextend) section on doctors of philosophy and education degrees.

**Graduate Certificate in Enterprise Systems**

Timothy Paul Cronan
ISYS 511V | IT Toolkit & Skills Seminar (Irregular) (this course may not be used for the Master of Information Systems Degree) | 3
---|---|---
ISYS 5423 | Seminar in Systems Development (Fa) | 3
ISYS 5833 | Data Management Systems (Sp) | 3

**Elective Course**

Students should choose 3 hours of coursework from among the following:

- ISYS 5213 | ERP Fundamentals (Su, Fa) (recommended)
- ISYS 5133 | E Business Development and Analytics (Fa)
- ISYS 5453 | Enterprise Data (Sp)
- ISYS 5933 | Global Technology and Analytics Seminar (Su)

**Total Hours**: 12

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**Business Analytics Concentration**

This concentration is open to individuals with backgrounds in any discipline and is designed to give business and non-business graduate students knowledge and experience in the management and use of enterprise data for operations and decision-making. The ability to effectively manage and analyze increasingly large and complex sets of data is highly valued among employers in all disciplines, as “business intelligence” becomes a primary source of competitive advantage in many organizations. Students who complete this concentration will have a foundation in the effective management and use of relational and dimensional data, the application of statistical decision-making theory, and the exploration and exploitation of data using advanced data mining tools and techniques. Students completing this concentration may be eligible to receive a certificate endorsed by the SAS Institute.

**Required Courses (9 hours)**

- ISYS 5833 | Data Management Systems (Sp) | 3
- ISYS 5503 | Decision Support and Analytics (Fa) | 3
- ISYS 5843 | Seminar in Business Intelligence and Knowledge Management (Sp) | 3

**Elective Course**

Students should choose 3 hours of coursework from among the following:

- ISYS 511V | IT Toolkit & Skills Seminar (Irregular) (recommended) | 3
- ISYS 5453 | Enterprise Data (Sp) | 3
- ISYS 5833 | Data Management Systems (Sp) | 3
- ISYS 5933 | Global Technology and Analytics Seminar (Su) | 3
- ISYS 5943 | Management of Information Technology Seminar (Sp) | 3

**Total Hours**: 12

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**Enterprise Resource Planning Concentration**

This concentration is open to individuals with backgrounds in any discipline and is designed to provide business and non-business graduate students with a foundation in the effective use, implementation, and customization of Enterprise Resource Planning (ERP) systems. ERP systems support integrated core business processes in nearly every large organization, and knowledge of and experience with these systems are highly valued among employers in all business disciplines. Students who complete this concentration will have exposure to fundamental principles of ERP and techniques for configuration, implementation, and development of ERP systems. Students completing this concentration may be eligible to receive a certificate endorsed by SAP America and the SAP University Alliances Program.

**Required Courses (9 hours)**

- ISYS 5213 | ERP Fundamentals (Su, Fa) | 3
- ISYS 5223 | ERP Configuration and Implementation (Sp, Fa) | 3
- ISYS 5233 | Seminar in ERP Development (Sp) | 3

**Elective Course (3 hours)**

Students should choose 3 hours of coursework from among the following:

- ISYS 511V | IT Toolkit & Skills Seminar (Irregular) (recommended) | 3
- ISYS 5453 | Enterprise Data (Sp) | 3
- ISYS 5833 | Data Management Systems (Sp) | 3
- ISYS 5933 | Global Technology and Analytics Seminar (Su) | 3
- ISYS 5943 | Management of Information Technology Seminar (Sp) | 3

**Total Hours**: 12

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**Courses**

**ISYS 4243. Current Topics in Computer Information (Irregular), 3 Hours.**

Intensive investigation of selected developments in computer information systems, software, hardware, and organization having current impact on computer information systems design and application. Offering an extension of lower-level CIS courses through individual student research and faculty team-teaching of advanced topics. Topical selection made with each course offering. Prerequisite: Junior standing. May be repeated for up to 6 hours of degree credit.

**ISYS 4373. Application Development with Java (Fa), 3 Hours.**

This course covers object-oriented programming concepts and illustrates them via an appropriate object-oriented programming language. Students will be exposed to the design of software objects, creation of software objects, and the use of objects in constructing an information system. Prerequisite: ISYS 3293 with a grade of C or better.

**ISYS 450V. Independent Study (Sp, Fa). 1-3 Hour.**

Permits students on individual basis to explore selected topics in data processing and/or Quantitative Analysis.

**ISYS 5103. Data Analytics Fundamentals (Fa), 3 Hours.**

Fundamental knowledge and skills in several major areas of business data analytics. Emphasis on the management and use of data in modern organizations, intermediate & advanced spreadsheet topics; relational databases & SQL; and programming (such as Python). Prerequisite: MIS Director approval.

**ISYS 511V. IT Toolkit & Skills Seminar (Irregular), 1-3 Hour.**

Seminar in Information Systems solutions and concepts (such as applications development, VB.NET, analysis of problems and design of solutions via application systems, etc.) designed for students entering the MIS program--may not be used for MIS degree credit. Prerequisite: MIS Director approval. May be repeated for up to 3 hours of degree credit.

**ISYS 5133. E Business Development and Analytics (Fa), 3 Hours.**

This course explores various e-business development technologies and then utilizes the technologies for developing a relatively realistic business-to-consumer (B2C) e-business site. Students will also learn about Business to Business (B2B) strategies, market exchanges, XML and XML Web services applications. Simple XML Web services will also be created. Prerequisite: MIS 511V.

**ISYS 5203. Experimental Design (Fa), 3 Hours.**

ANOVA, experimental design, introduction to basis of statistics. Prerequisite: Graduate standing and WCOB 1033 or equivalent.
ISYS 5213. ERP Fundamentals (Su, Fa). 3 Hours.
An introduction to enterprise resource planning systems. Students should gain an understanding of the scope of these integrated systems that reach across organizational boundaries and can change how a company does business. Implementation issues are covered, including the importance of change management. Prerequisite: Graduate standing.

ISYS 5223. ERP Configuration and Implementation (Sp, Fa). 3 Hours.
The process of configuring and implementing an enterprise resource planning system. Business process analysis and integration. Students will develop a company and set up several modules in SAP for use. Develop understanding of how the business processes work and integrate. Prerequisite: ISYS 5213 or equivalent.

ISYS 5233. Seminar in ERP Development (Sp). 3 Hours.
ERP administration and system development practices. Advanced system support issues related to Enterprise Resource Planning systems that are used in global organizations. Basic ABAP programming. In addition, students will learn how to provide basic systems administration support of the operating system, database, and application systems software levels of ERP systems. Pre- or Corequisite: ISYS 5223. Prerequisite: ISYS 5213. May be repeated for up to 6 hours of degree credit.

ISYS 535V. Internship Experience (Sp, Su, Fa). 1-6 Hour.
This course allows a student to experience an internship within a business and benefit from the work experience. The internship focuses on applications and business problems and is supervised by a faculty member as well as a member of the company/firm. Prerequisite: MIS Director approval is required. May be repeated for up to 6 hours of degree credit.

ISYS 5363. Business Analytics (Sp). 3 Hours.
This course in managerial business analytics provides future managers with the key concepts of decision modeling and information technology management concepts. Students will learn to utilize real time operational business data, as well as quickly process and effectively leverage information. In addition, students will exercise strategic IT deployment skills for supply chain and marketing processes as well as develop strong decision modeling abilities.

ISYS 5403. Quantitative Methods and Decision Making (Irregular). 3 Hours.
Utilization of information, quantitative techniques, and computer application in decision making and problem solving for managers. This course is cross-listed with SCMT 5133.

ISYS 5423. Seminar in Systems Development (Fa). 3 Hours.
Advanced study of structured systems development. Emphasis on strategies and techniques of structured analysis and structured design for producing logical systems specifications and for deriving physical systems designs. Coverage of methodologies for dealing with complexity in the development of information systems. Prerequisite: ISYS 511V.

ISYS 5433. Enterprise Systems (Sp). 3 Hours.
Enterprise Systems comprises the entire class of information technology and systems that support the mission of the company including decision support and business processes. This managerial enterprise systems course focuses on strategic issues of information technology. Students study the various elements and integration of an organization's business processes; as a result, students gain an understanding and working knowledge of systems used to support these business processes and their use in decision making. In addition, students will study concepts and develop skills needed to utilize decision-centric business intelligence and knowledge management applications.

ISYS 5453. Enterprise Data (Sp). 3 Hours.
The focus of this course is to expose students to working with large scale mainframe computer systems. Mainframe computers are the heart of large company's transaction processing systems. This course provides the opportunity for students to gain valuable insight into computing in a mainframe operating environment. Pre- or Corequisite: ISYS 5833.

Being able to accurately capture and store business transactions is an important processing function in many businesses. For many large companies with high volume processing, the tools of choice for transaction processing are CICS/Cobol/DB2. This course provides students with the necessary understanding and skills to work in this type environment. Pre- or Corequisite: ISYS 5453 or equivalent or MIS Director approval.

ISYS 5503. Decision Support and Analytics (Fa). 3 Hours.
Analysis of the highest level of information support for the manager-user. A study of systems providing analytics-based information derived from databases within and/or external to the organization and used to support management in the decision making. Application of tools in business analytics, problem solving, and decision making. Prerequisite: MIS Director approval.

ISYS 5603. Analytics and Visualization (Fa). 3 Hours.
This course focuses on how to discern and tell your story visually using data based on traditional graphical data representation as well as the latest data and information technologies. Coverage includes both visualization theory and hands-on exercises using appropriate computing tools. The course will also include visualization of predictive, clustering, and association models. The opportunities and challenges of Big Data visualization will be explored. Prerequisite: (ISYS 5503) or (ISYS 5133 and departmental consent).

ISYS 5613. Business Applications of Nonparametric Techniques (Sp). 3 Hours.
Consideration of business and economic research related to sampling and experimental design, testing of hypothesis, and using nonparametric tests. Prerequisite: ISYS 5203 or equivalent.

ISYS 5623. Multivariate Analysis (Sp). 3 Hours.
Principal component analysis, regression analyses. Prerequisite: ISYS 5203.

ISYS 5713. Seminar in IS Topics (Irregular). 3 Hours.
Intensive seminar in selected information systems topics. Topical selection made with each course offering. Prerequisite: ISYS 511V or MIS Director approval. May be repeated for up to 9 hours of degree credit.

ISYS 5723. Advanced Multivariate Analysis (Irregular). 3 Hours.
Factor analysis and other advanced techniques. Prerequisite: ISYS 5623.

ISYS 5833. Data Management Systems (Sp). 3 Hours.
Investigation and application of advanced database concepts include database administration, database technology, and selection and acquisition of database management systems. Data modeling and system development in a database environment. Prerequisite: ISYS 5103.

ISYS 5843. Seminar in Business Intelligence and Knowledge Management (Sp). 3 Hours.
Business intelligence focuses on assessing and creating information and knowledge from internal and external sources to support business decision making process. In this seminar, data mining and information retrieval techniques will be used to extract useful knowledge from data, which could be used for business intelligence, and knowledge management. Pre- or Corequisite: ISYS 5833 or equivalent. Prerequisite: ISYS 5503 or equivalent.

ISYS 5933. Global Technology and Analytics Seminar (Su). 3 Hours.
This course is designed to provide an updated, comprehensive, and rigorous treatment of emerging global topics. Includes, but is not limited to, global study experiences, business insights, and foundational perspectives; examines significant issues from global perspectives. Prerequisite: Graduate standing and MIS Director approval.

ISYS 5943. Management of Information Technology Seminar (Sp). 3 Hours.
Presented in a way that allows you to play an active role in the design, use, and management of information technology. Using IT to transform the organization, as competitive strategy, and creating new relationship with other firms is included. Pre- or Corequisite: ISYS 5833. Prerequisite: ISYS 5423.
ISYS 599V. Practicum Seminar (Sp, Su, Fa). 3-6 Hour.
This course is designed to introduce and engage the student in the practice, application, and problem solving in the business environment. Hands-on application of a business problem. Students will gain experience working on, making decisions about, and developing solutions for business applications. Topics include but not limited to analytics, data, and information technology. Prerequisite: Graduate standing and MIS Director approval. May be repeated for up to 6 hours of degree credit.

ISYS 601V. Graduate Colloquium (Sp, Fa). 1-6 Hour.
Presentation and critique of research papers and proposals.

ISYS 6133. Survey of IS Research (Fa). 3 Hours.
This is an introductory seminar in information systems research for doctoral students. Its objective is to introduce participants to major streams of IS research and discuss many of the important roles and responsibilities of an IS researcher. Also, this course will play the important role of introducing participants to the research of the current IS faculty.

ISYS 6233. IS Research Projects (Irregular). 3 Hours.
The students will understand the ideas underlying a scientific contribution; understand the practical challenges in designing and executing a study; Design and execute a study; Write an empirical journal article.

ISYS 6333. Individual-level Research in IS (Irregular). 3 Hours.
This course aims to expose students to individual-level research in IS. It provides a window into major streams of individual-level research in IS and reference disciplines. May be repeated for up to 18 hours of degree credit.

ISYS 636V. Special Problems (Irregular). 1-6 Hour.
Independent reading and research under supervision of senior staff member. May be repeated for up to 6 hours of degree credit.

ISYS 6423. Structural Equation Modeling (Irregular). 3 Hours.
Structural equation modeling using current tools, such as AMOS. This course is cross-listed with MKTG 6423, SCMT 6423.

ISYS 6433. Team-level Research in IS (Irregular). 3 Hours.
This course aims to expose students to team-level research in IS. It provides a window into major streams of team-level research in IS and reference disciplines.

ISYS 6533. Macro- and Meso-level IS Research (Irregular). 3 Hours.
This course aims to expose students to research at the macro- and meso-levels. For example, it could provide a window into major streams of organizational-level research in IS and reference disciplines. Topics could also include: change management, ERP research models, implementation, applications, and successes/failures, and ERP simulation models. Other topics that fall within the purview of the course are: large-scale technology and process innovations in organizations--e.g., software development process innovations and RFID will be examined at various levels (e.g., organizational).

ISYS 6633. Systems Development (Irregular). 3 Hours.
The course provides an in-depth study of systems development as an area of research, understanding of the theoretical and conceptual foundations, insight into the current state of the research area, utilizes both IS and reference discipline literature as appropriate, guidance for conducting research projects and producing publishable research, an opportunity to work on cutting-edge research.

ISYS 6733. Emerging Topics (Irregular). 3 Hours.
Various emerging topics, such as RFID applications and RFID supply chain, ethical decision models, behavioral modeling, piracy and privacy issues, and virtual worlds.

ISYS 6833. Theory Development (Irregular). 3 Hours.
To acquire theory development and writing skills, to understand challenges in developing and writing theory sections of papers, and to discuss approaches to writing good empirical journal articles. This course is suited for all social sciences students and is particularly appropriate for students conducting behavioral research in the business disciplines.