C. T. Bauer College of Business
UNIVERSITY OF HOUSTON

MIS MAJOR REQUIREMENTS

8 Courses (24 Credit Hours) Total Required

Revised March 28, 2025

This document is a tool to assist with general information. Please consult with the UH Catalog and Course Schedule for the most up-to-date information. Consult with your academic advisor to track degree progress.

3000 Level-Required Courses

Note: *You must be a declared business major or a pre-business student in the Mixed Program to take 3000-4000 level MIS courses*

MIS 3360 Systems Analysis and Design

Introduction to the systems analysis and design process. Focus is on gathering systems requirements from the business unit and modeling business needs and creating plans for how the system should be implemented.

MIS 3370 Information Systems Development Tools

Pre or Corequisite: MIS 3360. Introduction to object-oriented programming. The current programming language used in JAVA.

MIS 3371 Transaction Processing I

Pre or Corequisite: MIS 3360. Introduction to web applications. The focus is on clientside: scripting languages, HTML, AJAX, CSS and XML.

MIS 3376 Database Management I

Pre or Corequisite: MIS 3360. This course focuses on data modeling and database design. Topics covered focus on conceptual data modeling using the entity-relationship modeling grammar, logical data modeling using the relational data modeling grammar and physical database implementation using Oracle's SQL to (a) define the structure and create a database, (b) implement relational algebra operations, and (c) query multiple tables.

4000 Level-Required Courses

Note: *Prioritize completion of your 3000-level MIS courses. Many 4000-level MIS courses require pre-requisites, and/or may be scheduled at popular times that will conflict with 3000-level course offerings. You must be a declared business major to take 4000-level MIS courses.*

MIS 4374 IT Project Management

Prerequisites: MIS 3360, MIS 3370, MIS 3371, and MIS 3376. Focuses on the management of information technology projects. The class includes a real-world project where student teams design and implement a MIS system for an organization.

MIS 4378 Admin of Computer-Based MIS

Prerequisites: MIS 3360. Developing and managing computer-based management information systems. MIS departmental organizational structures, information systems planning, and managing system development projects including laboratory experience.

4000 Level-Required Advanced MIS Electives (Choose 6 Hours)

MIS 4372 Transaction Processing II

Prerequisite: MIS 3371. Follow-up to MIS 3371 focuses on serverside web applications: MS active server pages; MS SQL Server; MS VB.Net; MS C#; PHP; and AJAX.

MIS 4373 Transaction Processing III

Prerequisite: MIS 3371. Follow-up to MIS 4372. Covers IT Audit, IT controls and various Sarbanes-Oxley compliance frameworks such as: COBIT, COSO and ITIL.

MIS 4477 Network & Security Infrastructure (4 Cr.)

Prerequisite: MIS 3360. Coordination of the hardware and software components of data communications systems, networks and security. Includes laboratory experience.

MIS 4379 MIS Consulting

Prerequisite: Senior Standing. Practical aspects of evaluation, implementation, and design of complex information systems in the consulting environment. Teams perform a consulting project for a real organization.

MIS 4381 Management of IT Security (Typically Spring Only)

Prerequisite: MIS 3360. The management of information security, considering profit, legal, and ethical perspectives, and covering topics such as threat identification and security incident response.

MIS 4386 Database Management II

Prerequisite: MIS 3376. This course uses Oracle to study a variety of database implementation topics. Among the topics covered are Oracle utilities concurrency control using resource locking, the basics of Oracle's architecture, database recovery, PL/SQL, the creation of procedures, functions, and packages, database security, the enforcement of constraints using database triggers, advanced SQL queries, and using object types to define object tables.

MIS 4390 Energy Trading Systems

Prerequisite: Senior Standing. This course covers the prevalent computer technologies, processes and practices in support of energy commodity trading with emphasis on the U.S. domestic market. Topics covered include a history of deregulation of energy commodities in the U.S., the U.S. interstate pipeline system, basic energy deal types, financial trading and hedging, commodity risk management and the business systems and practices necessary to succeed in the modern energy trading environment.

MIS 4397 Open Systems

Prerequisites: MIS 3360, MIS 3370, MIS 3371, MIS 3376. This course is designed to expose the student to the variety of serverside system development tools and technologies. The topics covered are: advanced object-oriented concepts, virtualization, back-end database options, and middleware software. The course focuses on the LAMP stack (Linux, Apache, MySQL and PHP).

MIS 4397 Advanced Web Application Development

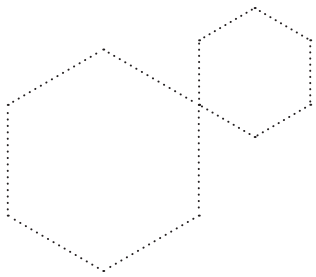
Prerequisite: MIS 3371 (B or better). Formerly "Mobile Application Development", this course focuses on Web application development techniques using Javascript and Ruby on Rails, a web application framework. Emphasis on responsive design techniques that will allow users to access the web application on multiple screen sizes, including mobile.

MIS 4397 Cloud and Generative AI Solutions (formerly Cloud and Collaboration Solutions)

Prerequisites: MIS 3360, MIS 3370, MIS 3371, MIS 3376. The course will cover: (a) Cloud Computing - offerings; usage scenarios; benefits; economics; and storage and compute alternatives. The primary technology focus will be on the Microsoft Azure Platform and Microsoft Cloud Services; (b) Collaboration - document collaboration; portals; administration; customization; and business process automation. The primary technology focus will be on the Microsoft SharePoint 2010. ***Note: Students cannot get credit for both MIS 4397 Cloud and Generative AI Solutions AND MIS 4397 Cloud and Collaboration Solutions.*

MIS 4397 Energy Geographic Information Systems (GIS)

Prerequisite: MIS 3360. Introduction to GIS concepts, map design, geo-databases, geo-processing and spatial analysis. Industry leading GIS software (ESRI's ArcGIS) will be the major tool utilized. Once concepts are understood focus will be toward understanding specific application to uses by energy companies and the understanding of pipeline measurements, routing, linear referencing and dynamic segmentation.



4000 Level-Required Advanced MIS Electives (Choose 6 Hours) [Continued]

MIS 4397 Advanced Data Modeling

Prerequisite: MIS 3376. An indepth treatment of conceptual and logical data modeling. Topics covered include information-preserving mapping technique, functional dependencies, normalization of data up through fifth normal form, reverse engineering, and data modeling semantic traps. Students will have an opportunity to work together on in-class workshops allowing them to apply concepts discussed during class in the context of practical application scenarios.

MIS 4397 Business Intelligence

Prerequisites: BUSI 2305 OR STAT 3331 (B+ or better). Organizations either build or assess their strategies based on data. Data Mining is the process by which they extract useful information from their data. This involves exploring and analyzing these data with a goal to discover meaningful patterns and rules. Computer-based techniques that are used in conjunction with Data Mining define what a given company's Business Intelligence is. This course covers a variety of these techniques, from simple to complex ones. These techniques are taught by an example-based approach. In this regard, emphasis is placed on realistic problems drawn from all areas of business. The primary software tools used is SAS.

MIS 4397: Programming for Big Data Analytics

Prerequisites: BUSI 2305 OR STAT 3331. This course is designed to introduce the fundamental of programming for business analytics using R. R is a powerful language for data management, visualization, and predictive modeling; it is now one of the most popular languages in business analytics. In this course, you'll be learning about the basics of R, and you'll end with the confidence to write your own R scripts.

MIS 4397 Business Technology Consulting (Spring Only)

Prerequisites: Declared Business Major. In this course, students take part in the HPE's Technology Transformation Initiative and learn fundamental consulting concepts to help teach Small and Medium-Sized Businesses (SMB) how to utilize technology to improve operations.

MIS 4397 Cloud Data Visualization

Prerequisites: MIS 3376. This course will cover how to use Microsoft Power BI Desktop and the Microsoft Power BI Service to create, view, and share data insights.

MIS 4397 Cloud-Powered Mobile App Development

Prerequisites: MIS 3360 AND Senior Standing. The course will cover: (a) Cloud Services - The primary technology focus will be on the Microsoft Azure Platform and cover scalable services including: (b) Data Analytics (c) Data Warehousing (d) Data Science and Machine Learning (e) Real-Time Event Processing.

MIS 4397 Introduction to Artificial Intelligence

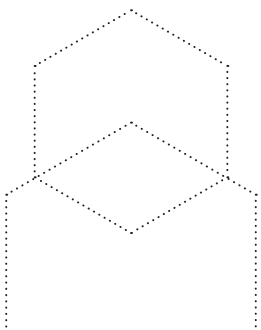
Prerequisites: BUSI 2305 (B or better) AND 3.0 UH Cumulative GPA. This course aims to equip students to understand the application of AI and build effective AI plans.

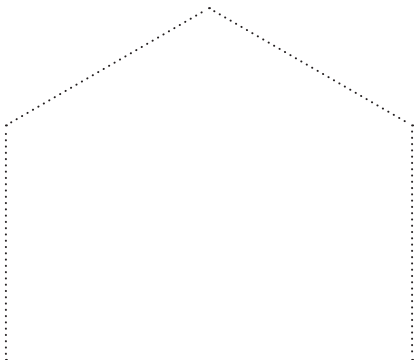
MIS 4397 Digital Transformation

Prerequisite: Completion of Concurrent Enrollment in MIS 4374. (1) Decoding Digital Transformation: Uncover the secrets of digital transformation – why it's shaking up industries, and how to spot the winners and losers. (2) Tech Superhero Skills: Become a master of cutting-edge tech like AI, Cloud, Big Data, and the Internet of Things. Learn how to harness them for business success with the power of advanced project management. (3) Digital Leadership Unleashed: Discover how to lead teams through change, build an unstoppable digital culture, and thrive in a competitive marketplace where agility is everything.

MIS 4397 Agile IT Project Management

Prerequisite: Completion of Concurrent Enrollment in MIS 4374. This course presents the area of Agile IT Project Management. Agile has significantly expanded from its beginnings in software development to encompass enterprise-wide approaches and methodologies for developing products across a portfolio. The focus of the course is to introduce various Agile methodologies at both the Team and Scaled levels, discuss differences between them, and determine which to choose depending on the situation.





UH MIS Technology Stack

Application Development

Technology	Courses
JAVA	MIS 3370 Information Systems Development Tools
Javascript HTML 5 CSS 3 XML	MIS 3371 Transaction Processing I
C# VB.NET AJAX JSON	MIS 3372 Transaction Processing II
Ruby on Rails	MIS 4397 Advanced Web Application Development
LAMP Stack: *Linux* *Apache (Web Server)* *MySQL* *php*	MIS 4397 Open Systems
CITRIX	MIS 4477 Network & Security Infrastructure
Mobile	MIS 4397 Advanced Web Application Development MIS 4397 Cloud-Powered Mobile App Development
User Experience	MIS 4397 User Experience: Introduction To Design Thinking

Data (SQL - For All Engines Below)

Technology	Courses
ORACLE	MIS 3376 Database Management I (DB I) MIS 4386 Database Management II (DB II) MIS 4397 Advanced Data Modeling (DB III)
MS SQL Server	MIS 4372 Transaction Processing II
MySQL	MIS 4397 Open Systems
Data Analysis Tools: *SAS Enterprise Miner* *SAS JMP* *R*	 MIS 4397 Business Intelligence MIS 4397 Business Intelligence MIS 4397 Programming for Business Analytics

Infrastructure/Security

Technology	Courses
Network	MIS 4477 Network & Security Infrastructure
Security	MIS 4381 Management of IT Security

Other Tools

Technology	Courses
AZURE (MS Cloud)	MIS 4397 Cloud-Powered Mobile App Development
AWS (Amazon Cloud)	MIS 4397 Cloud and Generative AI Solutions MIS 4397 Advanced Web Application Development
SHAREPOINT	MIS 4397 Cloud and Generative AI Solutions
GIS (ESRI's ArcGIS)	MIS 4397 Energy Geographic Information Systems (GIS)
UML	MIS 3360 Systems Analysis and Design
Microsoft Project	MIS 4374 IT Project Management

Contact Information

If you have any questions or would like to learn more about the MIS degree program at Bauer College, please contact the following advisors:

Undergraduate MIS Advising

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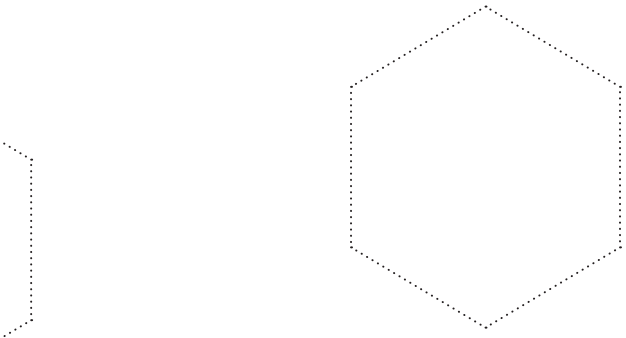
MIS Student Organization (MISSO)

www.misso.org



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