

# APPLIED INFORMATION MGMT SYS (AIMS)

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## **AIMS 3710 Database Management Systems (4 semester hours)**

This course is intended for the student who wishes to become more proficient at developing and managing database applications. It is designed to provide an introduction to the conceptual foundations underlying database management systems, with an emphasis on its applications in business and organizations. The course begins with an introduction to the fundamental principles of database design - from data modeling to the actual implementation of a business application. This part of the course will employ lectures describing database theory, as well as hands-on tutorials demonstrating database concepts using a DBMS package. Particular emphasis will be placed on the careful planning and analysis of business needs, which will lead to the appropriate development of an Entity-Relationship Model. Using these principles, each student will design and implement a database application using a DBMS product. The second part of the course will further investigate the principles of relational model, which is the basis for the most popular DBMS products on the marketplace today (i.e., Oracle, SQL Server, MS Access, MySQL). Topics to be studied include relational algebra, Structured Query Language (SQL), and maintaining data integrity in a relational design. In addition, important managerial concerns will be covered including database administration and the management of multi-user databases. Prerequisite: ACCT 3140 or AIMS 2710, or BCOR 2710 with a grade of C- (1.7) or higher.

## **AIMS 3720 Systems Analysis and Design (4 semester hours)**

This course introduces established and evolving methodologies for the analysis, design, and development of a business information system. Concepts taught include systems modeling of business processes, requirement analysis, logical and conceptual design, prototype development, testing, and implementation strategies. Upon completion, students should be able to analyze a business problem and design an appropriate solution using a combination of tools and techniques. Prerequisite: AIMS 2710 or BCOR 2710 with a minimum grade of C, or consent of instructor and approval of Associate Dean.

## **AIMS 3730 Programming for Business Applications (4 semester hours)**

This course is an introduction to programming with an emphasis on its business application capability. Students will learn the basic techniques of programming from concepts to code, including problem analysis, program design, documentation, testing and debugging. The objectives of this course are: making students comfortable with fundamental programming terminology and concepts, including data type, input/output, control statements methods, arrays, strings, and files, along with web, data, and analytics applications; giving students hands-on practical experience with defining and solving problems; and illustrating to students how their programming skills can be translated into working business applications. Prerequisite: AIMS 2710 or BCOR 2710 with a grade of C (2.0) or higher.

## **AIMS 3797 Internship (1 semester hour)**

The objective of this one-semester-hour course is to help students achieve a worthwhile learning experience relevant to their major program of study. The internship, conducted with an off-campus organization, will help the student gain insights relative to his/her strengths and weaknesses in the job environment.

## **AIMS 4715 Developing Business Applications Using SQL (4 semester hours)**

Students looking to work with data must know how to extract data from databases using SQL (Structures Query Language). Students will gain hand-on SQL experience to create databases, construct complex relational queries, develop database programs (views, transactions, triggers, functions, and stored procedures), and write Python code to issue SQL queries for analytics and application development purposes. The SQL syntax covered is supported by many popular databases, such as Oracle, MySQL, Microsoft SQL Server, and PostgreSQL. The course will cover SQL usage for common roles such as a software developer, data scientist, and a business analytics manager. Prerequisites: ACCT 3140 or AIMS 2710 or BCOR 2710; and AIMS 3710, all with a grade of C- (1.7) or higher.

## **AIMS 4740 Financial Modeling and Analytics (4 semester hours)**

This course develops spreadsheet modeling skills and quantitative analysis tools including VBA and Python to support financial decision-making. Hands-on experience in the development of spreadsheet forecasting, simulation, and optimization models for applications in valuation, cash budgeting, and financial planning and portfolio management will be provided as well as techniques for collecting, processing, visualizing, and exploring semi-structured financial data for analysis. Prerequisites: BCOR 3750; and BCOR 3410 or FNCE 3400, all with a grade of C (2.0) or higher.

## **AIMS 4755 Introduction to Big Data (4 semester hours)**

Ability to process and draw valuable business insights from big data has become central to competitiveness and survival for many industries. However, older and current technologies are not effective in handling big data, and the challenges have pushed the industry to invent fundamentally new ways of capturing, storing, retrieving, processing, and analyzing data. This course introduces students to the fundamental concepts of big data, their sources, and how analytics on big data are designed and implemented. With that foundation, this course will expose students to big data and related new generation platforms and technologies. Students will gain insights into the challenges and techniques of analyzing unstructured data that are generated through various social media and other interactive platforms. Students will also learn the fundamentals of non-relational NoSQL databases, distributed file system, and massively parallel processing used extensively in big data processing. The course will also students to acquire introductory-level proficiencies in hands-on skills involving some big data platforms and tools such as Hadoop, Spark, HBase, etc., or other similar platforms. After completing this course, students will be able to analyze the big data needs and challenges of an organization and recommend choice of tools, technologies, architecture, and implementation strategies needed to capture, process, and turn "Big Data" into actionable business insight. Prerequisites: ACCT 3140 or AIMS 2710 or BCOR 2710; and AIMS 3730 or CMSI 185, all with a grade of C (2.0) or higher; or consent of instructor and approval of Associate Dean.

## **AIMS 4796 Capstone Proposal Development (1 semester hour)**

Successful delivery of the Capstone project requires students to have a thorough knowledge about the techniques and methodologies of user requirements gathering, systems analysis, design, test planning, and project management. This course will help students prepare for the Capstone course by introducing processes and tools to manage a complex IT project and deliverables. At the end of the course, students will have a completed and well-vetted Capstone Project proposal. By the time students begin the Capstone course, they will be well underway through the design and planning phase, allowing more time for implementation and execution. Prerequisite: AIMS 2710.

**AIMS 4797 Capstone Project (4 semester hours)**

This course presents a student with a challenge and an opportunity to build a portfolio-worthy project to solve a real business problem by integrating business and technical knowledge and skills. For employers, it represents a clear snapshot of a student's understanding of the subject matter and their ability to identify a meaningful project and exercise initiative. It also presents students with first-hand experience to develop project management, teamwork, and communication skills critical for an IT career. A project proposal and instructor consent are required. Prerequisites: AIMS 3710; AIMS 3730 or CMSI 185; BCOR 3750, all with a grade of C- (1.7) or higher. University Core fulfilled: Flags: Oral Skills, Writing.

**AIMS 4798 Special Studies (1-4 semester hours)**

**AIMS 4799 Independent Studies (1-3 semester hours)**

Permission of Associate Dean required.