COURSE DESCRIPTIONS

INFORMATION TECHNOLOGY

INFT 5053: Information Systems Resource Management

A study of the principles and concepts involved in the management of information resources including hardware, software and personnel. Includes coverage of departmental functions within computer/ information services as well as legal, ethical, and professional issues, quality management, and strategic impact of information system.

INFT 5103: Software Development

An introduction to programming using a high-level language, such as C#, Java, or Python, with topics ranging from coding basics through advanced concepts. Students will experience designing, implementing, testing, and debugging large programs/medium-scale software.

INFT 5203: Database Systems

Prerequisite: INFT 5103 Software Development, or two semesters of undergraduate programming

An introduction to database systems where students will gain a thorough understanding of database software package development for microcomputer applications. Topics include how to design, implement, and access a personal database. Entity relationship diagrams are emphasized in design. The use of macros, data conversion operations, linking, and complex selection operations are used in implementation.

INFT 5303: Developing and Administering Web Sites

An introduction to developing and administering websites. Topics include the world wide web, web browsers, and web servers. Students will develop web pages using HTML/CSS while also addressing security, screening, and privacy issues.

INFT 5403: Introduction to Information Technology and Systems

Introduction to the infrastructure of information technology and systems. Topics include computer hardware and software, communication and networks, databases, e-commerce technology, design and development of information systems, information security, privacy, ethics, and social impact.

INFT 5413: Computer Systems and Architecture

A study of the fundamentals of system software and computer architecture. The course includes an introduction to the basic foundation of processor operation, memory hierarchy, bus and I/O systems along with their interactions. RISC and CISC instructions sets, fundamental networking terminology and implementation strategies, and an introduction to basic digital logic design.

INFT 5503: The UNIX Operating System

An introduction to the UNIX operating system. Topics to be covered will include the history and philosophy of UNIX systems, an introduction to basic elements of UNIX, the "shell" command interface, utilities for managing files, and an introduction to the functions that administrators perform to maintain or re-establish the reliability of UNIX systems and the tools that UNIX provides to support that activity.

INFT 5603: Principles of Data Science

Introduction to data science, data preprocessing and exploratory analysis, data visualization, mathematical foundations for data science (mathematics/ calculus, linear algebra, probability, and statistics), Python programming language, data science frameworks and ecosystems, linear and nonlinear regression, unsupervised learning, clustering methods, dimensionality reduction, supervised learning, classification methods, ensemble methods and association analysis, neural networks, introduction to deep learning, big data and Hadoop ecosystem, anomaly/outlier detection, ethics in data science.

INFT 5700: Principles of Networking Lab

Co-requisite: INFT 5703 Principles of Networking.

Students will complete network lab exercises in support of INFT 5703 Principles of Networking.

INFT 5703: Principles of Networking

An introduction to the concepts of computer data communication networks. Topics include an introduction to network topologies, routing, protocols, infrastructure, security, and troubleshooting tools.

INFT 5803: Principles of Cybersecurity

An introduction to the principles of cybersecurity where students will help learn how to protect networks, devices, and data from unauthorized access and ensure confidentiality, integrity, availability, and authentication of information. This course introduces the fundamental principles of cybersecurity. Those topics include risk management, network security, end users training and awareness, incident management, data privacy and security, and malware prevention. A balance between theory and current practices will be discussed.

INFT 5981: Special Topics

A treatment of subjects not routinely covered in other courses. Subjects will vary.

Note: May be repeated for a maximum of nine (9) hours.

INFT 5982: Special Topics
A treatment of subjects not routinely covered in other courses. Subjects will vary.
Note: May be repeated for a maximum of nine (9) hours.

INFT 5983: Special Topics
A treatment of subjects not routinely covered in other courses. Subjects will vary.
Note: May be repeated for a maximum of nine (9) hours.

INFT 6013: Decision Support Systems
This course enables students to acquire a broad understanding of management information systems and their components and the use of data and analysis models to aid the process of making decisions.

INFT 6103: Visual Programming
Prerequisite: INFT 5103 Software Development
An advanced programming course where students will learn event-driven programming concepts using high-level programming languages such as Python, C# or Java. Emphasis is placed upon creating structured programs implementing object-orientated concepts to solve problems. Topics include problem-solving, algorithm design, control structures, input/output, and data manipulation from multiple sources.

INFT 6203: Database Development and Administration
Prerequisites: INFT 5203 Database Systems.
Advanced training in database development and administration where students will receive a thorough introduction to accessing and maintaining a database via programming interface. Topics include database administration features of SQL and the installation and tuning of a database.

INFT 6303: Design of Web-Based Information Systems
Prerequisites: INFT 5303 Developing and Administering Web Sites.
An advanced course in web development using modern scripting languages such as JavaScript.

INFT 6403: Information Systems Analysis and Design
An advanced course exploring topics within information systems and design. Topics include the various concepts, tools, principles, procedures, techniques, and stages of information systems development. Emphasis is placed on the systems approach to problem-solving, user involvement, the management of quality, project control, and teamwork. Other subjects will include feasibility study, requirements definition, documentation, system development life cycle, prototyping, and data modeling.

INFT 6603: Advanced Data Science and Machine Learning
Prerequisite: INFT 5603 Principles of Data Science
This course is a continuation of the INFT 5603 Principles of Data Science Principles of Data Science course where students will be introduced to advanced topics in this important area of IT. Topics covered in this course will vary due to the ever-changing nature of technology. In general, students will be exposed to information theoretic learning, review of numerical analysis/computation and optimization theory for data science, reinforcement learning, classification methods, recurrent neural networks, clustering methods, feature selection, computer vision for machine learning, deep learning, recommender systems, convergence analysis of dynamical neural networks, explainable artificial intelligence (XAI), quantum machine learning, neuromorphic computing and spiking neural networks, nature inspired algorithms, graph neural networks, developing advanced applications for data science (in computer vision, text mining, natural language processing (NLP), cybersecurity, healthcare/medical, bioinformatics, finance, social media, sentiment analysis, etc.)

INFT 6700: Advanced Networks Lab
Co-requisite: INFT 6703 Advanced Networks.
Students will complete network lab exercises in support of INFT 6703 Advanced Networks.

INFT 6703: Advanced Networks
Prerequisites: INFT 5703 Principles of Networking.
An advanced course in implementing and managing numerous heterogeneous networking operating system environments. Networking tools necessary for developing a seamless heterogeneous networking environment are discussed and applied.

INFT 6803: Advanced Cybersecurity
Prerequisite: INFT 5803 Principles of Cybersecurity
An advanced course in cybersecurity covering a wide range of concepts. Topics include web and network basics, cryptography, hacking, packet analysis, and pen testing. Additional topics include social engineering, cyber countermeasures, incident response and mitigation, digital forensics, counter surveillance, security the loT, and AI in cybersecurity are also discussed.

INFT 6903: Emerging Trends
Prerequisite: Permission of the coordinator.
Study of emerging trends in information technology. Analyzing and reporting on these trends.

Note: May be repeated for a maximum of twelve (12) hours if topic varies.

INFT 6973: Thesis Research in Information Technology I

Prerequisite: Approval of a thesis plan by the thesis committee or the head of the department.

Formal presentation of directed research on a thesis topic selected by the student in consultation with a supervising professor. Prior to the final defense of a written thesis, students will be required to present their research study in a seminar to faculty, staff, and other students.

Note: This course must be continued by taking INFT 6983 Thesis Research in Information Technology II in a later semester to complete the entire six (6) hour thesis research.

INFT 6983: Thesis Research in Information Technology II

Prerequisite: INFT 6973 Thesis Research in Information Technology I.

A continuation of the six-hour thesis research. Students may not enroll in this course with INFT 6991 Internship-3 in the same semester. In this course the degree candidate must submit his/her thesis to the thesis committee by the date established by the thesis committee. A final oral defense conducted by the thesis committee must be passed at least three weeks before the degree is conferred.

INFT 6991: Internship

Prerequisite: Approval of a project proposal by the MSIT Graduate Committee or the Instructor.

A supervised, practical experience providing graduate information technology majors with hands-on professional experience in a position relating to an area of career interests. The student will work with an advisor to have a site approved by the graduate program director prior to course enrollment. During the internship, the student will submit regular reports regarding their internship experience, as well as an internship summary report at the end of the term.

Note: This course can be repeated up to six (6) total credit hours in different semesters.

INFT 6992: Internship

Prerequisite: Approval of a project proposal by the MSIT Graduate Committee or the Instructor.

A supervised, practical experience providing graduate information technology majors with hands-on professional experience in a position relating to an area of career interests. The student will work with an advisor to have a site approved by the graduate program director prior to course enrollment. During the internship, the student will submit regular reports regarding their internship experience, as well as an internship summary report at the end of the term.

Note: This course can be repeated up to six (6) total credit hours in different semesters.

INFT 6993: Internship

Prerequisite: Approval of a project proposal by the MSIT Graduate Committee or the Instructor.

A supervised, practical experience providing graduate information technology majors with hands-on professional experience in a position relating to an area of career interests. The student will work with an advisor to have a site approved by the graduate program director prior to course enrollment. During the internship, the student will submit regular reports regarding their internship experience, as well as an internship summary report at the end of the term.

Note: This course can be repeated up to six (6) total credit hours in different semesters.