DEPARTMENT OF
MATHEMATICAL, COMPUTING,
AND INFORMATION SCIENCES

Department Head: Dr. Vijaya Gompa
119 Ayers Hall

Computer Science and Computer Information Systems Programs
Accredited by the Computing Accreditation Commission of ABET, Inc.

Three majors are available:

1. Mathematics with one of two concentrations—Traditional and General
2. Computer Science with one of three concentrations—Information Assurance, Game Development, and General
3. Computer Information Systems with one of three concentrations—Information Assurance, Web Development, and General

To satisfy the general studies curriculum, general courses from the areas listed in the "Plan of Study" for each major and concentration must be completed. All students, especially transfer students, must note the specific courses required in their "Plan of Study." For specific requirements in each major/minor see the department head or an advisor.

- Mathematics - General (Bachelor of Science) (catalog.jsu.edu/undergraduate/science/mathematical-computing-information-sciences/mathematics-general-bs/)
- Mathematics - Traditional (Bachelor of Science) (catalog.jsu.edu/undergraduate/science/mathematical-computing-information-sciences/mathematics-traditional-bs/)
- Computer Science - Information Assurance (Bachelor of Science) (catalog.jsu.edu/undergraduate/science/mathematical-computing-information-sciences/computer-science-information-assurance-bs/)
- Computer Science - Game Development (Bachelor of Science) (catalog.jsu.edu/undergraduate/science/mathematical-computing-information-sciences/computer-science-game-development-bs/)
- Computer Science - General (Bachelor of Science) (catalog.jsu.edu/undergraduate/science/mathematical-computing-information-sciences/computer-science-general-bs/)
- Computer Information Systems - Information Assurance (Bachelor of Science) (catalog.jsu.edu/undergraduate/science/mathematical-computing-information-sciences/computer-information-systems-information-assurance-bs/)
- Computer Information Systems - Web Development (Bachelor of Science) (catalog.jsu.edu/undergraduate/science/mathematical-computing-information-sciences/computer-information-systems-web-development-bs/)
- Computer Information Systems - General (Bachelor of Science) (catalog.jsu.edu/undergraduate/science/mathematical-computing-information-sciences/computer-information-systems-general-bs/)
- Applied Information Processing Minor (catalog.jsu.edu/undergraduate/science/mathematical-computing-information-sciences/applied-information-processing-minor/)
- Computer Science Minor (catalog.jsu.edu/undergraduate/science/mathematical-computing-information-sciences/computer-science-minor/)
- Computer Information Systems Minor (catalog.jsu.edu/undergraduate/science/mathematical-computing-information-sciences/computer-information-systems-minor/)
- Mathematics Minor (catalog.jsu.edu/undergraduate/science/mathematical-computing-information-sciences/mathematics-minor/)

Mathematics

MS 100 Intermediate Algebra for Precalculus (3)
Prerequisite(s): Satisfactory score on the departmental placement test. Operations and properties of real numbers, rates and proportions, units and measurement, elementary plane geometry, linear equations and inequalities, exponents and polynomials, factoring algebraic expressions, graphing in the cartesian plane, systems of equations and inequalities, rational and radical expressions, and functions. May not be repeated. Institutional credit only. Grades: P, NC.

MS 107 Intermediate Algebra for Finite Mathematics (3)
Prerequisite(s): Satisfactory score on the departmental placement test. Operations and properties of real numbers, rates and proportions, units and measurement, elementary plane geometry, linear equations and inequalities, exponents, graphs, and radicals. (May not be repeated. Institutional credit only.) Grades: P, NC.

MS 110 Finite Mathematics (3)
Prerequisite(s): Satisfactory score on the departmental placement test, or satisfactory performance in the appropriate developmental course, or MS 112 or higher. This course gives an overview of topics in finite mathematics with applications, including set theory, logic, proportional reasoning, statistics, and finance. Credit will not be given for both MS 110 and MS 111.

MS 111 Honors Finite Mathematics (3)
Prerequisite(s): Admission to the honors program and at least one of the following:

Advanced study of topics in finite mathematics with applications, including set theory, logic, proportional reasoning, statistics, and finance with an emphasis on writing, projects, and technology. Credit will not be given for both MS 110 and MS 111.

MS 112 Precalculus Algebra (3)
Prerequisite(s): Satisfactory score on the departmental placement test, or satisfactory performance in the appropriate developmental course. First and second degree equations and inequalities; linear and quadratic functions and graphs; polynomial and rational functions; exponential and logarithmic functions; conic sections, and systems of equations.

MS 113 Precalculus Trigonometry (3)
Prerequisite(s): MS 112 with a "C" or better or satisfaction of MCIS Department placement criteria (see the MCIS Department website). Trigonometric functions and inverses, applications, graphs, identities and equations, laws of sines and cosines, vectors and complex numbers.

MS 115 Precalculus Algebra and Trigonometry (4)
Prerequisite(s): MS 112 with a "C" or better or MS 113 with a "C" or better or satisfaction of the MCIS Department placement criteria (see the MCIS Department website). The course is an algebra-trigonometry composite providing the student with a mathematical foundation required for calculus or other courses requiring a similar mathematical background.
MS 120 Calculus and Its Applications (3)
Prerequisite(s): MS 112 with a "C" or better or satisfaction of MCIS Department placement criteria (see the MCIS Department website).
An introduction to the ideas and techniques of the differential and integral calculus. Graphical, numerical, analytical, and verbal representations and analyses of selected applications of calculus relevant to business and industry. Does not count towards a mathematics major or minor.

MS 125 Calculus I (4)
Prerequisite(s): MS 113 with a "C" or better or MS 115 with a "C" or better or satisfaction of MCIS Departmental placement criteria (see MCIS Department website).
Introduction to analytic geometry, functions and limits, differentiation with applications, indeterminate forms, antiderivatives, definite integrals, numerical integration, calculus of transcendental functions.

MS 126 Calculus II (4)
Prerequisite(s): MS 125 with a "C" or better.
Applications of integration, techniques of integration, improper integrals, infinite series, vectors in the plane and in 3-space.

MS 133 Mathematical Concepts I (3)
Prerequisite: MS 112. One of three mathematics courses designed for prospective elementary teachers. Problem solving, set theory, number theory, real number operations, historical development and structure of number systems.

MS 134 Mathematical Concepts II (3)
Prerequisite(s): MS 112.
One of three mathematics courses designed for prospective elementary teachers. A thorough study of geometry, measurement, and statistics. Problem solving and application are emphasized.

MS 135 Mathematical Concepts III (3)
Prerequisite(s): MS 112.
One of three mathematics courses designed for prospective elementary teachers. Logic, probability, principles of counting, algebraic reasoning and representation.

MS 204 Basic Statistics (3)
Prerequisite(s): Satisfactory score on the departmental placement test, or satisfactory performance in the appropriate developmental course, or MS 110 or higher.
Numerical descriptive methods, axioms of probability, random variables, statistical inference, point and interval estimation of mean, and hypothesis testing.

MS 227 Calculus III (4)
Prerequisite(s): MS 126 with a "C" or better.
Polar coordinates, parametric equations, vector-valued functions, multivariate functions, multiple integrals, vector analysis.

MS 250 Introduction to Linear Algebra (3)
Prerequisite(s): MS 113 or 115.

MS 300 Introduction to Advanced Mathematics (3)
Prerequisite(s): MS 126 with a "C" or better.
Mathematical writing, including methods of proof, and fundamentals of sets and functions. May also include selected topics in algebra, analysis, number theory, or discrete mathematics. Students will be required to demonstrate mastery of selected precalculus material by independently completing a mastery-based tutorial and testing program with a satisfactory score.

MS 302 Applied Probability and Statistics (3)
Prerequisite(s): MS 120 with a "C" or better or MS 125 with a "C" or better.
Provides a summary of introductory probability and statistics centered around data analysis examples and computer simulations. Includes discrete and continuous probability distributions, estimation, and hypothesis testing.

MS 304 Mathematical Statistics I (3)
Prerequisite(s): MS 126 with a "C" or better.
Probability rules, discrete and continuous random variables and their probability distributions, expected value, variance, moment generating functions, multivariate probability distributions, and covariance.

MS 305 Number Theory (3)
Prerequisite(s): MS 125 with a "C" or better.
An introduction to the principal topics of elementary number theory, including divisibility, linear Diophantine equations, distribution of primes, congruences, Fermat's Theorem, and number theoretic functions.

MS 309 Combinatorics (3)
Prerequisite(s): MS 125 with a "C" or better.
An introduction to counting techniques such as permutations and combinations, the inclusion-exclusion principle, recurrence relations, and generating functions. May also include topics from graph theory, combinatorial design, and discrete probability.

MS 322 Selected Survey of Secondary School Mathematics (3)
Prerequisite(s): MS 112 and 113 or equivalents.
For students pursuing certification in mathematics. Overview of secondary school mathematics for prospective and inservice teachers of mathematics. Department credit not given for mathematics majors or minors.

MS 323 College Geometry (3)
Prerequisite(s): MS 125.
Euclidean geometry including synthetic and analytic proofs, geometric constructions, properties of the triangle and circle; an introduction to non-Euclidean geometry.

MS 331 Peer Educator (1)
Academic credit given to advanced undergraduate students who provide tutorial assistance in the mathematics department. Students will work under the guidance of an experienced mathematics instructor. Permission of department head required. Department credit not given for mathematics majors or minors. MS 331 and MS 332 may be repeated up to a maximum combined total of six semesters. GRADE: Pass/Fail.

MS 332 Peer Educator (2)
Academic credit given to advanced undergraduate students provide tutorial assistance in the mathematics department. Students will work under the guidance of an experienced mathematics instructor. Permission of department head required. Department credit not given for mathematics majors or minors. MS 331 and MS 332 may be repeated for credit up to a maximum combined total of six semester hours. GRADE: Pass/Fail.
MS 344 Differential Equations (3)
Prerequisite(s): MS 126 with a "C" or better.
The methods of solving differential equations of first or second order
and higher order linear equations, including series solutions and selected
applications.

MS 352 Linear Algebra (3)
Prerequisite(s): MS 126 with a "C" or better.
Matrices, linear systems, vector spaces with emphasis on algebraic
structures.

MS 390 Numerical Analysis (3)
Prerequisite(s): MS 352 and CS 230 (or a higher numbered computer
science programming course) with a "C" or better in both.
Numerical analysis and computing with emphasis on methods adaptable
to electronic computing machinery.

MS 397 Directed Readings in Undergraduate Mathematics (1)
Prerequisite(s): Advanced standing and approval of instructor.
This course may be repeated for credit up to a maximum of three hours.

MS 399 Study Tour (3)
Topics, excursions, and requirements determined by department. May
be duplicated for credit; however, only three (3) credits may be applied
toward any major or minor. Infrequently scheduled and subject to
minimum and maximum numbers. Advanced deposit required.

MS 403 Vector Analysis (3)
Prerequisite(s): MS 227.
Algebra and calculus of vectors, Stokes theorem, and divergence
theorem; applications to geometry, mass potential functions, electricity,
and fluid flow.

MS 404 Mathematical Statistics II (3)
Prerequisite(s): MS 227 and 304.
Continuation of MS 304. The Central Limit Theorem, order statistics,
functions of random variables, properties of estimators, confidence
intervals, hypothesis testing, and least squares regression models.

MS 415 Advanced Calculus I (3)
Prerequisite(s): MS 227 and 300.
Real number system, elementary point set theory, limits, theory of
continuous functions, differentiable functions.

MS 416 Advanced Calculus II (3)
Prerequisite(s): MS 415.
Selected topics from advanced calculus, including differentiable
functions, the Riemann integral, and sequences and series of functions.

MS 423 A Survey of Geometries (3)
Prerequisite(s): MS 323.
Selected topics from advanced Euclidean geometry, finite geometries,
non-Euclidean geometry, and other geometries.

MS 441 Abstract Algebra I (3)
Prerequisite(s): MS 300 and 352.
Introduction to ring theory and related topics: elementary number theory
(integer divisibility, congruence, and modular arithmetic), rings, integral
domains, fields, ring homomorphisms and isomorphisms, polynomial
rings, and if time permits, ideals and factor rings.

MS 442 Abstract Algebra II (3)
Prerequisite(s): MS 300 and 352.
Introduction to group theory and related topics: groups, cyclic groups,
subgroups, cosets and Lagrange’s theorem, group homomorphisms and
isomorphisms.

MS 451 Functions of a Complex Variable (3)
Prerequisite(s): MS 227.
Undergraduate Prerequisite: MS 227 and 300 and 415. Graduate
Fundamental operations with complex numbers, differentiation and
integration theorems, mapping, series, and residues.

MS 475 Seminar in Mathematics (3)
Prerequisites or corequisites for undergraduate: MS 415 or MS 441 or
MS 451. Prerequisites or corequisites for graduate: MS 415 or MS 441.
Goals include examining deeply the fundamental ideas of mathematics
and connections among various branches of mathematics, exploring the
historical development of major concepts, and further developing the
habits of mind that define mathematical approaches to problems.

MS 480 Introductory Topology (3)
Prerequisite(s): MS 415.
Basic topological concepts to include topological spaces, mapping,
compactness, connectedness, and separation axioms.

MS 484 Partial Differential Equations (3)
Prerequisite(s): MS 227 and 344.
Standard methods of solution; separation of variables, Fourier Series,
Laplace Transforms; selected applications.

MS 499 Undergraduate Research in Mathematics (3)
Prerequisite(s): MS 302 or 304 or 415 or 441, senior standing, and
approval of instructor.
A guided independent investigation of a topic outside the department’s
normal course offerings, to culminate in a written paper and oral
presentation to the faculty.

Computer Science

CS 201 Introduction to Information Technology (3)
A brief exposure to theory and operations of information technology.
Concepts presented include computer systems, hardware and software.
Hands-on experience with selected productivity software packages.
(Department credit not given for CS/CIS majors and/or minors.)

CS 202 Honors Introduction to Information Technology (3)
Prerequisite(s): ACT score of 24 or above or SAT of 520 or above and
basic computer proficiency.
Advanced coverage of the theory and operations of information
technology. Hands-on experience with selected popular software
packages for Web and program design. (Department credit not given for
CS/CIS majors or minors.)

CS 230 Fundamentals of Computing (3)
Lecture 1 hour, Lab 2 hours. Sets, functions, propositional logic, number
systems, data representation, binary arithmetic. Problem solving tools
and techniques. Control structures. Data structures. Implementation
using a high-level language. (Open to any major, but required for CS/CIS
majors.)

CS 231 Computer Programming I (3)
Prerequisite(s): CS 230 and overall GPA of 2.0 or higher and MS 112 or
higher level mathematics or a satisfactory score on the departmental
placement test.
Algorithmic problem solving. Modular programming. Strings, multi-
dimensional arrays, records, dynamic linked lists. Documentation. Testing
and debugging. Developing robust, user-friendly programs. Integral,
scheduled laboratory. Lecture 2 hours, Lab 1 hours.
CS 232 Computer Programming II (3)
Prerequisite(s): CS 231.

CS 234 Discrete Computational Structures (3)
Prerequisite(s): CS 230 and MS 112 or higher.
Introduction to concepts, terminology and manipulative skills associated with combinatorial structures and logic. Sets and functions, partially ordered sets, trees and graphs, algorithms and induction. Boolean algebra and introduction to symbolic logic.

CS 300 Microcomputing (3)
Prerequisite(s): CS 232.
Examination of micro-computers and their role in small to medium firms. Emphasis on applications, I/O operations and file handling in a laboratory environment.

CS 302 Database Applications (3)
Prerequisite(s): CS 231 with a C or better.
Introduction to database management systems using a current DBMS package; development of menu-driven database applications.

CS 304 Technical Writing for Computer Science (3)
Prerequisite(s): EH 102 and CS 230.
Introduction to the writing tasks necessary of computer technology professionals. Covers skills necessary to prepare the technical reports, presentations, and documentation specific to the information technology environment.

CS 305 Spreadsheet Modeling (3)
Prerequisite(s): MS 112 or higher and CS 201.
The use of spreadsheet software in modeling business problems. Extensive hands-on use of spreadsheets is required. (Department credit not given for CS/CIS majors or minors.)

CS 307 Management of Information Security and Forensics (3)
Prerequisite(s): CS 201.
Study of information security and digital forensics using practical case studies. Emphasis is on developing security policies, security management and practices, utilization of digital forensic tools and techniques, risk management, security project management, and protection mechanisms. Major components of the course are hands-on projects on digital forensic investigation and security management case studies. (CS 307 is cross-listed with EM 325, but only one course can be counted for credit.)

CS 308 Embedded and Control Systems Security (3)
Prerequisite(s): CS 231.
A study of embedded system architectures, security, and digital forensics, the role of hardware abstraction layers and middleware, real-time OS issues such as concurrency, synchronization, and resource management, and the components and applications of industrial control systems. Laboratory activities include: ladder logic programming, embedded systems programming, and digital forensics for microcontrollers, mobile computing platforms, and industrial control systems.

CS 309 Introduction to E-Commerce (3)
Prerequisite(s): CS 201.
This course focuses on a rich variety of models and strategies for connecting individuals, businesses, governments, and other organizations to each other. The topics covered in the course will span value and supply chain concepts, varying business relationship types, as well as obligations for protection of individual privacy and organizational security.

CS 310 Software Engineering I (3)
Prerequisite(s): CS 232.
Introduction to the systems development life cycle, software development models, analysis and design techniques and tools, and validation and verification testing. Emphasis and experience will be on software engineering within a team environment.

CS 311 Management Information Systems (3)
Prerequisite(s): CS 309.
Study of the systems concept and its relationship to information requirements for decision making and management in traditional and e-commerce environments.

CS 312 Software User Documentation (3)
Prerequisite(s): CS 310 and EH 102.
Introduction to writing, analyzing, and evaluating effective software documentation. Exposure to proposal writing. Emphasis on writing software user manuals.

CS 315 Intro to Web Design (3)
Prerequisite(s): CS 201.
Step-by-step process of creating a well-designed website. Emphasizes web design techniques resulting in fast-loading and well-placed graphics, cohesive color and typography across platforms and browsers, clear navigational interface, and appropriate use of sound and video. Includes studio component where students analyze, design, and implement websites.

CS 322 Document Management (3)
Prerequisite(s): CS 304.
Trains students to manage dynamic documents as well as apply document imaging technologies to achieve a paperless office environment. Students will learn about the technology of scanning, importing, transmitting, organizing, indexing, storing, protecting, locating, controlling, authenticating, retrieving, viewing, printing, and preserving documents for document imaging systems and digital libraries. This course has direct implications for project management and information assurance, among other topics that will be addressed.

CS 325 Web Scripting (3)
Prerequisite(s): CS 315 or CS 231.
A practical hands-on introduction to web scripting for writing client-side scripts. Topics include fundamentals of scripting as a web programming language, scripting techniques and programming concepts such as control structures, data structure, objects, event handling, and functions. Multiple scripting languages will be used for the hands-on projects.

CS 331 Data Structures and Algorithms (3)
Prerequisite(s): CS 232.
Design, analysis, and implementation of fundamental data structures: trees, heaps, and graphs. Basic algorithmic analysis and strategies. Basic computability and introduction to distributed algorithms.
CS 333 Computer Organization and Architecture (3)
Prerequisite(s): CS 232.
Digital logic; instruction set architecture and computer organization; memory systems; functional organization; interfacing and communication; multiprocessing and alternative architectures.

CS 339 Game Design I (3)
Prerequisite(s): EH 102 and either CS 201 or CS 230.
Principles of game design. Covers analysis of genres; gameplay; conceptual design; story and character development, effects of art, lighting, and sound; interface design; level design; and the business of game development.

CS 340 Discovering Genomics and Bioinformatics (3)
Prerequisite(s): CS 230.
The course provides a fundamental background in bioinformatics, both theoretical (bioinformatics algorithms) and practical (databases and web-based tools used to study problems in biology), to students in computer science or in biological sciences. Introduction to the biological problems addressed in this course will be provided, as well as a formal definition of the computational problems and a deep exploration of the algorithms for solving these problems. Practical use of topics introduced in class is demonstrated by laboratory exercises and homework problems. Students are grouped for class projects such that each group contains at least one life scientist and one computer scientist. (CS 340 is cross listed with BY 340, but only one course may be taken for credit.)

CS 350 Fundamentals of Computer Operating Systems (3)
Prerequisite(s): CS 232.
Overview of operating system concepts and structures. Study of process management including synchronization techniques for cooperating processes, main memory management including virtual memory systems, system resource allocation and deadlocks, file system implementation, secondary storage management and input/output subsystems.

CS 370 COBOL for Information Systems (3)
Prerequisite(s): CS 232.
An introduction to solving business problems using structured programming techniques and methodology for both interactive and batch processing. Integral, scheduled lab. Lecture/2 hours, lab/1 hour.

CS 399 Study Tour (3)
Topics, excursions and requirements determined by department. May be duplicated for credit; however, only three (3) credits may be applied toward any major or minor. Infrequently scheduled and subject to minimum and maximum numbers. Advanced deposit required.

CS 400 Business Information Management (3)
Prerequisite(s): CS 201 or equivalent.
Study of terminology and concepts of computer-based management information systems. Emphasis on applications for developing and managing World-Wide Web page information. (Department credit not given for CS/CIS majors and/or minors.)

CS 412 Disaster Response & Recovery (3)
Prerequisite(s): CS 201.
How people, groups, organizations, communities and governments manage disasters in the immediate aftermath and recover from their effects, including social, physical, business, and infrastructure problems as well as intra and inter-organizational issues. (CS 412 is cross-listed with EM 411, but only one course can be counted for credit.)

CS 415 Dynamic Web Application (3)
Prerequisite(s): CS 488.
The course will present dynamic web based application architecture, web scripting languages syntax, principles and techniques for developing database driven web applications using multiple web scripting languages. Students will gain the experience in web scripting programming via the completion of a series of practical dynamic website projects.

CS 420 Algorithms Design/Analysis (3)
Prerequisite(s): CS 331.
Survey of design and analysis of efficient algorithms. Introduces methods of describing algorithm time and space complexity and various problem-solving techniques.

CS 425 Web Application Development Using Web Services (3)
Prerequisite(s): CS 310 or equivalent.
Undergraduate Prerequisite: CS 310. Graduate Introduction to technologies and tools for developing Web applications using Web Services, emphasizing organizational issues, challenges, and security concerns related to the effective deployment of those applications.

CS 430 Human-Computer Interaction (3)
Prerequisite(s): CS 232.
Human-computer interface, human performance, diversity, and mental models, interaction devices, dialog styles, interface styles, error handling, documentation, and evaluation of software interface designs.

CS 432 Computer Graphics (3)
Prerequisite(s): CS 232 and MS 113 or equivalent.
Hardware and software components of computer graphic systems, input representation, and transformation of graphic information. Two-dimensional and three-dimensional transformations; perspective, hidden-line algorithms, shading. Interactive graphics. Survey of applications.

CS 438 Introduction to Business Intelligence and Data Mining (3)
Prerequisite(s): CS 488.
Introduction to business intelligence and data mining methodologies and tools that enable users to analyze big data and develop insight for decision making. This course provides students thorough conceptual framework and practical experience in business intelligence, data mining methods, predictive analysis, information quality and data warehousing management. Hands-on assignments will apply the skills learned.

CS 439 Game Design II (3)
Prerequisite(s): CS 232 and CS 339.
Principles of game development. Covers relevant game mathematics and data structures; selected AI topics common to game development; programming techniques and optimization techniques; game engines; and software engineering and project management for game development.

CS 444 Artificial Intelligence (3)
Prerequisite(s): CS 331 or permission of instructor.
Introduction to the principles and methods used in artificial intelligence programs with a focus on autonomous agents.

CS 450 Computer Networking (3)
Prerequisite(s): CS 350. Graduate Prerequisite Study of the computer interconnection and protocols with emphasis on network layers, error detection/correction, and topologies; project approach utilized. Graduate Prerequisite: Undergraduate operating systems course or equivalent.
CS 453 Theory of Languages and Automata (3)  
Prerequisite(s): CS 232.  

CS 461 Critical Infrastructure (3)  
Prerequisite(s): CS 201.  
Identifies what constitutes critical infrastructure including cyber as well as physical infrastructure. Evaluation of strategies for promoting vulnerability assessments and risk reduction, and protection of critical infrastructures are examined. (CS 461 is cross-listed with EM 461, but only one course can be counted for credit.)

CS 462 Ethics and Legal Issues (3)  
Prerequisite(s): CS 310 or approval of instructor.  
An overview of legal, ethical, global and professional issues in computing.

CS 464 Honors Ethics and Legal Issues (3)  
Prerequisite(s): Completion of CS 310 (B or above) or permission of the instructor.  
This course is an advanced (honors) course that provides an overview of the legal, ethical, global and professional issues in computing. This course will enable students to identify ethical issues in technology, perform ethical analyses using a variety of ethical theories, and to critically read professional literature in the field. Students will develop an awareness of ethical issues in technology, including, but not limited to, the Internet (e.g. freedom of expression on the Internet), Intellectual Property rights, Privacy, Security, Reliability, Professional ethics, Employment issues and technology, and Plagiarism, and apply ethical theories to issues in those domains.

CS 470 Computer Security (3)  
Prerequisite(s): Undergraduate operating systems course or equivalent.  
Undergraduate Prerequisite: CS 350. Graduate Study of network security architectures and models, cryptography, authentication and authorization protocols, secure application and systems development, federal regulations and compliance. Emphasis is on security professional certification.

CS 488 Database Systems (3)  
Prerequisite(s): CS 232.  
Concepts and terminology associated with data structure, file organization, access methods, packaged systems, database design and database systems.

CS 491 Software Engineering II (3)  
Prerequisite(s): CS 310.  
This course is a continuation of software engineering that emphasizes the entire software process, developing and using process and product metrics, and managing software projects. Both individual and team projects will develop student expertise.

CS 499 Special Topics (1-6)  
Prerequisite(s): Senior status and approval of department head.  
Exposes student to current or developing topics in computer science or computer information systems. Projects/topics are jointly selected by student and computer science instructor. This course can be taken multiple times of variable credit hours up to a total maximum of six credit hours.

Distinguished Professor  
Case, Janice (catalog.jsu.edu/undergraduate/faculty-admin/faculty/#case44)
Snellen III, Jay (catalog.jsu.edu/undergraduate/faculty-admin/faculty/
  #snellen_iii264)

Stanley, Clint (catalog.jsu.edu/undergraduate/faculty-admin/faculty/
  #stanley267)