COMPUTER INFO TECH (CITA)

CITA 101. Principles Computer Apps. (3 Credits)
Empowers students with a comprehensive understanding of responsible usage of SUNY Morrisville's computing resources. By addressing common issues encountered by students and highlighting potential pitfalls, the course equips them with the knowledge and tools necessary to excel in a digital learning environment. Develop adeptness in utilizing frequently employed technologies, tools, and resources, including word processing, spreadsheets, and presentation software. Emphasizing effective operation of these applications and the importance of seeking assistance, the course instills a sense of responsibility for safeguarding information and computing resources. Avoid behaviors jeopardizing security, gain insights into diverse online threats and risks, and explore strategies to protect yourself and digital assets. Prepare for the demands of the modern digital landscape. 3 credits (3 lecture hours), fall and spring semesters.

CITA 110. Intro Information Technology. (3 Credits)
A survey of equipment and programs used in common computer systems. Topics include internal storage, in-put/output devices, operating systems, popular applications packages. Current and future trends will be discussed in reference to networks, mainframe and microcomputers. (Note: This course may be challenged with a formal test out process. Contact your advisor or CIT Dept. for information) 3 credits (3 lecture hours), fall and spring semester

CITA 112. Intro to Game Development. (3 Credits)
This course involves game development, game concepts, design components and processes, game worlds, character development, storytelling and narrative, creating the user experience, core mechanics, game balancing, and leveling. The creation of 2D games is used to introduce the concepts of game design. No traditional programming languages are involved and no programming experience is required. This course has an additional lab fee. 3 credits (2 lecture hours, 2 laboratory hours), fall semester

CITA 113. Intro to Game Design & Dev. (3 Credits)
This course addresses the theories and practices of the video game design process, with an emphasis on maximizing the aesthetic qualities of student-designed video games. Topics include game design and development processes, game concepts, design components, game worlds, character development, storytelling and narrative, creating the user experience, core mechanics, balancing, and leveling. The creation of 2D games is used to introduce and practice game design. Documentation of the creative process involved in creating/modifying 2D games is required. No traditional programming languages are involved, and no programming experience is required. 3 credits (2 lecture, 2 laboratory hours), fall semester This course satisfied the Liberal Arts and Sciences requirement and the SUNY General Education requirement for The Arts.

CITA 120. Computer Concepts & Op Sys. (3 Credits)
A study of the terminology and concepts associated with computer systems hardware and software. Topics include system hardware components, memory organization and management, operating systems, and troubleshooting fundamentals. Students will install, configure, test and troubleshoot system software to apply the various concepts covered in the course. Prerequisites: CITA 110 or CITA 101, or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), spring semester

CITA 140. Introduction to Programming. (3 Credits)
Programming in a high level language emphasizing problem-solving and object- oriented programming techniques. Topics include assignment, input/output, selection, looping, scalar and array data structures, string and numeric data and modular development. 3 credits (2 lecture hours, 2 lab hours), fall and spring semester

CITA 150. Data Management Techniques. (3 Credits)
Advanced object-oriented high-level language programming focusing on internal memory management techniques, programming structures, and programming style. Topics include character string processing, sorting, searching and lists. Prerequisite: CITA 140 or equivalent, or permission of the instructor 3 credits (2 lecture hours, 2 lab hours), spring semester

CITA 155. Intro to Mobile Web Design. (3 Credits)
This course is an in-depth examination of web design concepts, usability, and development practices. Students will apply practical approaches to web development, site implementation, and problem solving. Students will learn to apply design, usability, and technology skills and will develop a professional portfolio site demonstrating responsive web design. Prerequisite: CITA 140 (passing grade) or permission of the instructor. 3 credits (2 lecture hours, 2 lab hours)

CITA 190. Intro to LINUX/UNIX Systems. (3 Credits)
Lecture and hands-on instruction in the installation, configuration, and use of the Linux and UNIX operating systems. Hands-on laboratory exercises are used to help students gain experience with practical application of concepts discussed in lecture. Upon successful completion of the course, students will understand basic Linux/UNIX terms and history, installation procedures, Linux/UNIX file systems, the command interface, X Windows, managing processes, common administrative tasks, and Linux/UNIX network services and security. Prerequisite: CITA 110 or CITA 101 or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), spring semester

CITA 200. Data Communications Networking. (3 Credits)
A study of the terminology, hardware, and software associated with data communications and networking systems. Topics include design principles for human-computer dialogues, selection criteria for communications devices, the technology behind data transmission, techniques and message protocols for line control and error processing, networking components, and network topologies, routing and protocols. Prerequisite: CITA 120, or permission of the instructor 3 credits (2 lecture, 2 laboratory hours), fall and spring semester

CITA 210. Visual Languages & Devel Tools. (3 Credits)
Lecture and hands-on instruction in visual programming which is commonly defined as the visual expressions including drawings, animation, or icons that are directly manipulated by the user in an interactive way. Object oriented and event driven programming that include forms, controls, properties, and solutions. Solutions to application problems encountered in the typical business organization. Prerequisite: CITA 140 or equivalent, or permission of the instructor. 3 credits (2 lecture hours, 2 laboratory hours), fall semester

CITA 211. Game Level Design. (3 Credits)
A study of the design and implementation of game levels. Topics include the development of strategies to approach the design of game levels and the processes and best practices for prototyping, testing and balancing game levels. Understanding and practice developing game level design will result in higher quality games being produced by students. Learning the theory and methods to effectively design and program game levels introduces and reinforces a number of different skills: following processes, creative and critical thinking, utilizing functional and aesthetic criteria to create test plans, effectively using feedback to modify designs, and writing code to implement level design. 3 credits (2 lecture hours, 2 lab hours) Prerequisite: CITA 112

CITA 212. Fundamentals of Game Design. (3 Credits)
The design of games, both for education as well as entertainment, is explored in detail. The course involves programming in a high-level scripting language. Topics include game concepts, design components and processes, game worlds, character development, storytelling and narrative, creating the user experience, core mechanics, game balancing, and leveling. A user-centric approach to design is emphasized. Prerequisites: CITA 140 or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours) spring semester

CITA 214. Game Asset Creation. (3 Credits)
This course will cover the creative and technical processes in the development of audio and visual game elements as a form of artistic expression within a game environment. Students develop skills and awareness of game space and layout and obtain the fundamental theory and experience necessary to create efficient and compelling 2D and audio game assets. Prerequisite: CITA 113 3 credits (2 lecture hours, 2 lab hours) spring semester

CITA 216. Introduction to 3D Modeling. (3 Credits)
A study of 3D modeling for game design. Topics include 3D basics such as creating, moving, rotating, and scaling objects. Other basics such as lighting, sculpting, physics and rendering are also covered. 3D characters will be designed and modeled, rigged and animated. Prerequisites: CITA 214 3 credits (2 lecture hours, 2 lab hours), spring semester

CITA 220. Systems Analysis. (3 Credits)
This course explores the philosophy, objectives and organization of the systems analysis activity. Topics include: the justification of the need for information systems to support management decisions; the impact of information systems on individuals and organizations; life cycle and prototyping methodologies; tools and techniques of systems analysis. Emphasis is on transaction processing systems. Prerequisite: CITA 140, or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), fall semester

CITA 225. Introduction to Data Structure. (3 Credits)
A study of the fundamental data structures for representing information in computer memory. Topics include data structure concepts; abstract data types and their implementations; arrays; stacks; queues; simple linked lists; trees; recursion and backtracking; and sorting and searching algorithms. Achieving an understanding of fundamental data structures and the tradeoffs between different implementations of these abstractions will result in higher quality programs, including games, being produced by students. Prerequisite: CITA 210 and MATH 149 or permission of the instructor 3 credits (2 lecture hours, 2 lab hours)

CITA 230. Network Technology. (3 Credits)
Survey and evaluation of network media, access methods, and topologies. Design, configuration, operation and maintenance questions are explored. Topics will include end user perspective, network operating systems, cabling, hardware protocols, software, design, and administration. Prerequisite: CITA 200, or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), spring semester

CITA 245. Intro to Database Concepts. (3 Credits)
A study of the basic terminology and concepts associated with databases and database management systems. Topics include historical development of databases, data organization and structure, relational databases, and basic structured query language (SQL). Students will use a DBMS to design and create a database and write basic queries to access the data. Prerequisite: CITA 140 (passing grade) or permission of the instructor 3 credits (2 lecture hours, 2 lab hours)

CITA 255. App Development. (3 Credits)
Cross-platform mobile application (app) development focusing on User Interface (UI) design, layouts, and controls. Learning how to apply these fundamental developing concepts will result in higher quality applications being produced by students. Topics include navigation patterns, managing states, arrays, strings, and data binding. Prerequisite: CITA 140 (with a grade of C or better) or permission of the instructor. 3 credits (2 lecture hours, 2 lab hours), fall semester.

CITA 260. Photography & Digital Imaging. (3 Credits)
An introduction to the principles of photography. This course will include the use of the camera, processing and printing. Computer scanning and the manipulation of photographic images with software editing tools will be covered. Design and composition will be stressed. Students will be expected to have access to a good camera, and they must purchase additional materials. Prerequisite: CITA 110 or CITA 101 or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), fall semester

CITA 270. Fundamentals Network Security. (3 Credits)
Survey of fundamental knowledge needed to analyze security risks to systems and implement a workable security policy that protects information assets from potential intrusion, damage, or theft. Students learn to deploy effective countermeasures to thwart potential attacks in a hands-on laboratory environment. Prerequisite: CITA 200 or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), spring semester

CITA 275. Computer Crime Digital Forensi. (3 Credits)
A study of computer crime and digital forensics providing an introduction to foundational terminology and concepts. Areas of study include current trends in computer crime, methodologies for computer crime investigation, techniques for maintaining legal chain-of-custody and documentation, and application of basic digital forensics tools. Students may not receive credit for both CITA 270 and CITA 275. prerequisites: CITA 101 or CITA 110, or permission of instructor 3 credits (3 lecture hours), fall and spring semesters

CITA 280. Tools/Tech for Appl Devel.. (3 Credits)
This course includes lecture and hands-on instruction in application and database development. Topics include data modeling; database design; the use of database management software, screen and report generators; query languages; 4GLs. Current topics in application development are also discussed. Prerequisite: CITA 220, or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), spring semester

CITA 300. Computer System Support Mainte. (3 Credits)
This is a project-oriented course that focuses on the support and maintenance of PCs. Students will learn how plan, organize, implement and operate a support system and apply this knowledge and skill through actual participation in a help desk environment. Students will also learn how to upgrade, troubleshoot, and maintain PC hardware and software, and how to build and repair PCs in a hands-on environment. Prerequisite: CITA 120, or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), fall semester

CITA 305. Computer Crime Digital Forensi. (3 Credits)
A study of computer crime and digital forensics providing an introduction to foundational terminology and concepts. Areas of study include current trends in computer crime, methodologies for computer crime investigation, and techniques for maintaining legal chain-of-custody and documentation, and application of basic digital forensics tools. Prerequisites: CITA 101 or CITA 110, or permission of instructor 3 credits (3 lecture hours), fall and spring semesters

CITA 312. Intermediate Game Design. (3 Credits)
The design of intermediate games and simulations, both for education as well as entertainment, will be explored in detail. Involves programming in a high-level scripting language and algorithmic development. Topics include 3D game/ simulation concepts, design components and processes, 3D game/ simulation worlds, 3D character/ vehicle/ terrain development, creating the user experience, core mechanics, and multi-tier client/ server support. A user- centric approach to design will be emphasized.] Prerequisite: CITA 212 or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), fall semester

CITA 314. Extended Reality Game Program. (3 Credits)
A study of the programming of real and virtual environments for games generated by computer graphics and wearables. Programming Virtual Reality (VR) as well as Augmented Reality (AR) games involves the study of VR and AR design principles, locomotion and comfort, teleportation, implementing and utilizing physics, and working with scriptable objects and input events. Learning the theory and methods to effectively design and program Extended Reality (XR) games introduces and reinforces a number of different skills: following processes, creative and critical thinking, utilizing functional and aesthetic criteria to create better XR games, effectively using feedback to modify designs, and writing code to implement XR games. Prerequisite: CITA 312 or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), spring semester

CITA 320. Network Administration. (3 Credits)
Students will use a variety of network management tools to manage, monitor, support and troubleshoot network operations. Topics will include performance issues, end-user accounts, data security, disaster recovery, supporting applications and documentation. Prerequisite: CITA 230 or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), fall semester

CITA 325. Network Defense & Countermeas.. (3 Credits)
Network Defense and Countermeasures provides the student with a solid foundation in network security fundamentals; while with the primary emphasis is on intrusion detection, the course also covers such essential practices as developing a security policy and then implementing that policy by performing Network Address Translation, packet filtering, and installing proxy servers, firewalls, and Virtual Private Networks. Students will learn to design, configure and deploy an IDS and analyze current network security risks. Prerequisite: CITA 270 or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), fall semester

CITA 340. Data Base Concepts. (3 Credits)
The course is a study of the theory, terminology, languages, and software associated with data base systems. Topics include data organization and structure, relational data-bases, data access methods, and database languages. Students will plan, analyze, design, develop, and test database systems. Current topics in database design and development are also discussed. Prerequisites: CITA 210, or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), spring semester

CITA 345. Advanced Database Concepts. (3 Credits)
This course builds on the introductory module in databases, Students will apply database concepts including advanced data modeling, transaction management, Big Data, and NoSQL, data warehousing, database connectivity and web technologies, and database administration and security. Prerequisite: CITA 245 (passing grade) or permission of the instructor. 3 credits (2 lecture hours, 2 lab hours).

CITA 350. Object-Oriented Systems. (3 Credits)
This is a project-oriented course that requires the installation and use of software found in business and industry. Students will gain experience implementing and deploying various industry-wide software products, including, but not limited to, operating systems, configuration management tools, and cloud solutions utilizing a variety of virtualization techniques. Prerequisite: CITA 210 or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), spring semester

CITA 360. Oper Systems & Software Deploy. (3 Credits)
This is a project-oriented course that requires the installation and use of software found in business and industry. Students will gain experience implementing and deploying various industry-wide software products, including, but not limited to, operating systems, configuration management tools, and cloud solutions utilizing a variety of virtualization techniques. Prerequisite: CITA 200, CITA 190 recommended, or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), spring semester

CITA 370. Network Design Concepts. (3 Credits)
This is a laboratory-oriented course in which students will design and implement network systems utilizing the various topologies, media, protocols and network hardware, such as bridges, switches, hubs, and routers. Prerequisite: CITA 230 or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), spring semester

CITA 375. Internet & Intranet Firewalls. (3 Credits)
Firewalls are the primary tools used to prevent unauthorized access to network resources. This course focuses on protecting the network using various firewall designs. Students will gain extensive hands-on experience installing and configuring firewalls. Students will learn how to allow access to key services while maintaining information security. Prerequisite: CITA 325 or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), spring semester

CITA 385. User Interface Design. (3 Credits)
Design, evaluation, and prototyping of user interfaces for a variety of computing devices will be covered. This course focuses on user-centered design for interfaces that promote usability, interactivity, and accessibility. A range of interface types will be considered to include those for desktop applications, Web applications, mobile devices, turnkey systems, and others as technology continues to advance. Design and prototyping projects will be included. Evaluation techniques will be applied to existing interfaces and those created by students as part of this course. Prerequisites: CITA 210, or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), fall semester

CITA 386. Game Interface Design. (3 Credits)
This course covers the creative and technical processes of designing interfaces specifically for electronic games. Design, evaluation, and prototyping of game interfaces for a variety of digital devices will be covered. This course focuses on designing interfaces that promote basic elements of interface design including aesthetics, functionality, usability, and accessibility. A range of game interface styles will be considered such as manual, visual, active, and passive. Evaluation techniques will be applied to existing game interfaces and those created by students as part of this course. Prerequisites: CITA 212 & CITA 210 or permission of the instructor. 3 credits (2 lecture hours, 2 lab hours), fall semester

CITA 395. Internship Orientation Seminar. (1 Credit)
This course will be taken in the semester prior to the student's internship experience. Topics include the role of the internship in the student's professional development, formulating personal and professional goals, the current employment outlook in the Information Technology field, employer expectations of an intern, formulating a job search strategy, the role of networking through the use of personal contacts and referrals, interviewing skills, the work environment in large, medium and small organizations. The documents and methods that will be used to evaluate the student during the internship will be clearly defined. Prerequisite: At least junior status, or permission of the instructor 1 credit (1 lecture hour), 15 weeks, fall and spring semester

CITA 405. Project Management. (3 Credits)
This course provides an introduction to project management. Students learn project management concepts and how to use appropriate tools and software to manage various types of projects from start to finish. Students are challenged with the wide range of issues professional project managers are required to master: planning, prioritizing, scheduling, budgeting, negotiation, organizing, controlling cost, and handling change. Project management applies to a wide spectrum of real-world projects both within and outside the technical sciences. This course emphasizes learning through lecture, homework, student participation and presentations. Class projects give students hands-on experience applying project management skills and use of software tools. Prerequisites: CITA 110 or CITA 101 and BSAD 300 or permission of instructor 3 credits (2 lecture hours, 2 laboratory hours), fall and spring semester

CITA 410. Multi-Media Computing. (3 Credits)
This course is a study of the simultaneous control of media elements including graphic, hypertext, digital audio, CD audio, MIDI, digital video and animation. Students will learn and apply the process of creating participant interactive or self-running computer presentations. Prerequisite: CITA 380 or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), fall semester

CITA 412. Advanced Game Design & Applica. (0 or 3 Credits)
An in-depth study of complex, object-oriented, 2D and 3D game development including, but not limited to: animation, character modeling, textures, terrains, collision detection, particle effects, lighting, audio, and net-working. Students work in teams to produce a functional digital game suitable for distribution. Prerequisite: CITA 312 or permission of the instructor 3 credits (2 lecture hours, 2 lab hours), spring semester

CITA 417. Game Engine Architecture. (3 Credits)
This course provides students with an in-depth exploration of game engine architecture. Students will learn state-of-the-art software architecture principles in the context of game engine design and investigate the subsystems typically found in an actual production game engine. Students will participate in individual hands-on lab exercises and also work in teams to design and build a functional game engine by designing and implementing engine subsystems. Understanding both the theory underlying the various subsystems that comprise a game engine and also the data structures and algorithms that are used to implement them will result in higher quality games being produced by students. Prerequisite: CITA 350 or permission of the instructor 3 credits (2 lecture hours, 2 lab hours), spring semester

CITA 425. Operating System Security. (3 Credits)
The course will provide in-depth explanations of operating system security features as well as systematic configuration guides for proper operating system configuration. This course also provides the knowledge and skills students need to maintain the integrity, authenticity, availability and privacy of data. Through extensive hands-on lab exercises, students will gain experience establishing user, file system, and network security for enterprise computing environments. Students will learn to use tools and utilities to assess vulnerabilities, detect configurations that threaten security and provide effective access controls. Prerequisites: CITA 325 or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), fall semester

CITA 430. Comp Integration & Interop. (3 Credits)
The study of system integration and the construction of system components that are designed to provide capabilities for cooperation in the accomplishment of given tasks. Topics covered include communication, synchronization, and representation of data. Methods of system integration and design for interoperability will be covered. Prerequisite: CITA 370 or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), fall semester

CITA 440. Design Managing Org Training. (3 Credits)
In this course students will apply theories of adult learning and instructional development to the design, delivery, and evaluation of training for organizational and end-user information systems. Topics include: needs assessment, instructional design and strategy, live and mediated instruction, implementation management, evaluation and follow-up methods, and evaluation of training strategies. Prerequisite: BSAD 300, or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), fall semester

CITA 450. Applied Database Manager. (3 Credits)
A study of object-oriented system applications including, but not limited to relational database concepts and methodology, SQL, ODBC, Access programming with VBA, client/server concepts, and SQL server. One or more graphical user interface, object-oriented languages will be used. Prerequisite: CITA 340 and CITA 350, or permission of the instructor 3 credits (2 lecture hours, 2 laboratory hours), fall semester

CITA 460. Organizational & End User IS. (3 Credits)
This course is a study of the management of organizational information systems. Relevant information technology and business concepts will be used to explore the role of information systems within organizations and the relationship of information systems to the external organizational environment. Emphasis will be on organizational results, attaining efficiency and effectiveness, and achieving competitive advantage in the global economy. In-formation systems management case studies will be utilized. Prerequisite: BSAD 300, senior status, or permission of the instructor 3 credits (3 lecture hours), fall semester

CITA 480. Internship Information Tech. (12 Credits)
Supervised fieldwork in a selected business, industry, government or educational setting. Students carry out a planned program of educational experiences under direct supervision of an owner, manager or supervisor of in-formation technology in an organization. Each intern will be supervised by a member of the CIT Department faculty in accordance with CIT Internship Guidelines. Written and oral reports of work experience activities will be required. Prerequisite: Enrolled in CIT Bachelor Degree Program, CITA 395 and senior status, or permission of the internship committee. 12 credits, fall, spring, or summer semester