2009

Computer Science/Information Technology (CSIT)

Montclair State University

intend to work on the dissertation, up to and including the semester of the defense. Credits are reported as IP (In Progress) while the dissertation is being written. At the conclusion of the dissertation defense, a final grade of Pass or Fail will be recorded. COUN 901 may be repeated until the time limitation for completion of the doctoral program as specified in the Doctoral Policy Manual has been reached.

COUN920	Title	Qualifying Examination Preparation.
	Prerequisites	Students with PhD in Counselor Education (CNED) only.
	Special Fee	Special fee.
CRTH151	Title	Creative Thinking.
	Number and type of credits	3 hours lecture.
CRTH151	Course Description	This course is an opportunity for students to access and harness the creative side of the brain. The course will be project-oriented and will include interactions with professional artists and thinkers who visit campus. The course encourages students to synthesize a theoretical and experiential approach to the creative process and pulls from a wide variety of disciplines, including the sciences, humanities, social sciences, and performing arts. Students will be required to attend 2-3 events outside of class time.
CSIT100	Title	Introduction to Computer Concepts.
	Prerequisites	MATH 051 or MATH 061 or satisfactory score on both of the mathematical components of the MSUPT.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	An introduction to the skills, concepts, and capabilities necessary to effectively use information technology across the curriculum through computer applications. Not for mathematics major elective credit or computer science elective credit. Meets Gen Ed 2002 - Computer Science. Previous course CMPT 109 effective through Spring 2014.
CSIT102	Title	New Student Experience in Computing and Campus Society.
	Special Fee	Special fee.
	Number and type of credits	1 hour lecture.
	Course Description	Introduces students to the University, the Department of Computer Science and

the culture of higher education. Students learn about campus resources and activities, the discipline of computer science, the hardware and software used in the discipline, careers for computer scientists, and development of good study skills. There is also emphasis on issues related to health, wellness, diversity, ethics, and a multicultural environment. Previous course CMPT 102 effective through Spring 2014.

CSIT104	Title	Computational Concepts.
	Prerequisites	MATH 100.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	An introduction to the concepts of information technology. Principles of computing, Internet and office application software, hardware and networking components, the role of IT in an organization, legal and ethical issues of computing. Previous course CSIT 110 effective through Spring 2014.
CSIT105	Title	Honors Seminar in Computing.
	Prerequisites	Departmental approval; MATH 051 or MATH 061 or satisfactory score on both the mathematical components of the MSUPT.
	Special Fee	Special fee.
	Number and type of credits	3 hours seminar.
	Course Description	Introduction to the theory, discipline, philosophy and applications of computing. The effect of computing upon the individual, the society, and the environment. Use of application tools including word processing, spreadsheets, data bases, and communications. Meets Gen Ed 2002 - Computer Science. Cross listed with HONP 105. Previous course CMPT 112 effective through Spring 2014.
CSIT111	Title	Fundamentals of Programming I.
	Prerequisites	MATH 100. MATH 112 may be taken as a corequisite or prerequisite.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Basic theory of digital computers. Syntax and semantics of a programming language. Algorithms: logic, design, testing and documentation. Previous course CMPT 183 effective through Spring 2014.
CSIT112	Title	Fundamentals of Programming II.
	Prerequisites	CSIT 111, CSIT 104 and MATH 112.

CSIT112	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Continuation of CSIT 111. Algorithm development involving user functions; subroutines, recursions, structures file manipulation. Previous course CMPT 184 effective through Spring 2014.
CSIT212	Title	Data Structures and Algorithms.
	Prerequisites	CSIT 112.
	Corequisites	MATH 122.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Creation and manipulation of in-memory data structures including graphs, lists, queues, sets, stacks and trees; searching, sorting and other algorithms for in-memory data structures. Meets the University Writing Requirement for majors in Computer Science and Science Informatics. Previous course CMPT 287 effective through Spring 2014.
CSIT230	Title	Computer Systems.
	Prerequisites	CSIT 112 and CSIT 104 and MATH 122.
	Number and type of credits	3 hours lecture.
	Course Description	This course aims to introduce the fundamental aspects of computer systems from the hardware and software point of view. Students will be exposed to the principles of computer architecture and organization within the framework of digital design and Assembly language. Recent modem computer technologies will also be stressed.
CSIT237	Title	Introduction to Undergraduate Inquiry.
	Prerequisites	CSIT 112.
	Special Fee	Special fee.
	Number and type of credits	1 hour lab.
	Course Description	Individual research in areas of computer science, information technology or science informatics agreed upon by the student and the instructor. The results of the research will be a basis of a poster presentation to be given by the student. Students must not accumulate more than 6 credits total in courses CSIT 297, CSIT 497, CSIT 498, MATH 497, MATH 498.

CSIT270	Title	Discrete Mathematics.
	Prerequisites	CSIT 111.
	Corequisites	MATH 122.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	The structures include sets, graphs, digraphs, trees, networks, lattices, matrices, semigroups and groups. Many practical business and scientific problems can be posed and solved by the use of these structures. Previous course CMPT 285 effective through Spring 2014.
CSIT296	Title	Topics in Programming Language.
	Prerequisites	CSIT 212 and CSIT 230.
	Special Fee	Special fee.
	Number and type of credits	1 hour lecture.
	Course Description	An introduction to a selected programming language with a view to learn the most important structures in that language. Each time the course is offered only one programming language will be taught, but the language could vary from one semester to another. The course could be taken more than once by the same student, provided the languages are different. May be repeated 4 times for a maximum of 5.0 credits. Previous course CMPT 296 effective through Spring 2014.
CSIT313	Title	Fundamentals of Programming Languages.
	Prerequisites	CSIT 212 and CSIT 230.
	Special Fee	Special fee.
CSIT313	Number and type of credits	3 hours lecture.
	Course Description	Syntax and semantics of modern programming languages with emphasis on programming in the large, functional, logic, and object-oriented paradigms. Common threads found in both imperative and non-imperative languages discussed. Previous course CMPT 484 effective through Spring 2014.
CSIT315	Title	Software Engineering I.
	Prerequisites	CSIT 212 and CSIT 230.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.

	Course Description	Utilization of software engineering principles and techniques for the specification, analysis, and design of high-quality complex software systems including both technical and non-technical aspects. Previous course CMPT 371 effective through Spring 2014.
CSIT335	Title	Introduction to Human-Computer Interaction (HCI).
	Prerequisites	CSIT 212 and CSIT 230.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Course content will include: science-based theories, models, and studies; and user interface design and development. Graphical user interfaces for desktop, web, and mobile devices. Conduct task analyses, usability tests, expert reviews, and continuing assessments of working products by interviews, surveys, and logging. Apply design processes and guidelines to develop professional quality.
CSIT337	Title	Internet Computing.
	Prerequisites	CSIT 112 and CSIT 230.
	Special Fee	Special fee.
	Number and type of credits	May be either 3 hours of lecture or 3 hours of seminar.
	Course Description	This course discusses and investigates the current web tools and technologies that are used in web site design. Focus will be on the markup languages of XHTML and XML; Dynamic HTML; Client side programming language JavaScript; Server side programming, Servlets, JavaServer pages and ASP. Previous course CMPT 250 effective through Spring 2014.
CSIT340	Title	Computer Networks.
	Prerequisites	CSIT 212 and CSIT 230.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	An introduction to principles and practice of computer networking, with emphasis on the Internet. The layered approach to network design. The structure and components of computer networks, packet switching, layered architectures, TCP/IP, physical layer, error control, window flow control, local area networks (Ethernet, Token Ring; FDDI), network layer, congestion control, and quality of service. Previous course CMPT 330 effective through Spring 2014.

CSIT345	Title	Operating Systems.
	Prerequisites	CSIT 212 and CSIT 230.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Process Management. Process synchronization and deadlock prevention. Memory Management. Interrupts processing. I/O Control. Previous course CMPT 481 effective through Spring 2014.
CSIT355	Title	Database Systems.
	Prerequisites	CSIT 212 and CSIT 230 and CSIT 270.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	A comprehensive collection of database organizations and design tools: file
CSIT355	Course Description	organizations and evaluations, database structures, schemata and implementations. Database security, operations and management. Previous course CMPT 483 effective through Spring 2014.
CSIT357	Title	Artificial Intelligence.
	Prerequisites	CSIT 212 and CSIT 270.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	A general, comprehensive coverage of the main areas constituting the field of artificial intelligence, introduction of computer vision, natural language processing (NLP), pattern recognition and neural networks. Previous course CMPT 388 effective through Spring 2014.
CSIT358	Title	Multimedia Computing.
	Prerequisites	CSIT 212 and CSIT 230 and CSIT 270.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	An introduction to computer multimedia, including video, audio, and graphics encoding creation and manipulation. Understanding of the variety of audio, image and video formats; using media creation tools. The course also covers streaming and multimedia in the world wide Web. Previous course CSIT 410 effective through Spring 2014.

CSIT379	Title	Computer Science Theory.
	Prerequisites	CSIT 212 and MATH 122.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Formal languages, theory, automata, Turing Machines. computability, the Church-Turing thesis, decidability, time and space complexity, and NP-completeness.
CSIT414	Title	Compiler Construction.
	Prerequisites	CSIT 379.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Introduction to the concepts and techniques used in the description of programming languages and in the construction of compilers. Topics include Language Theory, Scanners, Parsers, Semantics, Code Generation. Previous course CMPT 485 effective through Spring 2014.
CSIT415	Title	Software Engineering II.
	Prerequisites	CSIT 315.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	This course utilizes software engineering principles and techniques for the implementation, testing and maintenance of high-quality complex software systems, as designed in a previous course (CMPT 315). Previous course CMPT 372 effective through Spring 2014.
CSIT416	Title	IT Project Management.
	Prerequisites	CSIT 355.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	This course develops a foundation of concepts and solutions that supports the planning, scheduling, controlling, resource allocation, and performance measurement activities required for successful completion of a project.
CSIT429	Title	Parallel and Distributed Computing.
	Prerequisites	CSIT 345.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.

	Course Description	An overview of a variety of parallel and distributed architectures ranging
CSIT429	Course Description	from multi-core, and symmetric multiprocessors to clusters and grids. The appropriate programming techniques for these architectures, such as threads and message passing. Parallelization of sequential algorithms for common problems. Speedup analysis. Previous course CMPT 350 effective through Spring 2014.
CSIT430	Title	Databases for Internet Applications.
	Prerequisites	CMPT 250.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Introduction to fundamentals of databases with emphasis on Web-based applications. Database-related technologies for Internet applications. Practical projects for creating a database-driven application on the Web.
CSIT431	Title	Introduction to Robotics.
	Prerequisites	CSIT 379.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	An overview of the fundamental principles in autonomous robotics from the aspect of algorithms and computation. Includes theoretical concepts in robotic technology (inverse kinematics. actuation, sensing, manipulation, control and motion planning), complemented by hands on work with algorithms for robot communication and sensing. Investigation of current directions in robotics applications and ethics of robotics.
CSIT432	Title	Systems Administration.
	Prerequisites	CSIT 340.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	The administration and management of Linux Computer Systems. Includes installation; user/process management; configuration of services and device handling; introduction to C; (i) syntax of functions and basic structure, keywords, expressions, variables, scoping and lifetime, types, and type conversion, arrays and pointers, run-time stack, function invocation,

parameter passing, passing arrays, memory & segments (dynamic, static, automatic), dynamic allocation, (ii) compilation process; preprocessor, compiling object code, static and dynamic linking; file I/0, Streams, Reading and Writing files, command line options, combining using pipes and I/0 redirection, (iii) Profiling tools (Gprof), Binary Tools (LD, LDD, NM), Debugging (GDB, DDD); Basic Shell scripting, (iv) Build Tools (Make). Previous course CSIT 420 effective through Spring 2014.

CSIT437	Title	Web Services.
	Prerequisites	CSIT 337.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Distributed Information Systems and Middleware Enterprise Application Integration and web technologies, web services and related technologies, real-world examples REST architectural style, Web 2.0, coordination and composition. Previous course CSIT 470 effective through Spring 2014.
CSIT440	Title	Principles of Data Mining.
	Prerequisites	CSIT 112.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Introduction to Data Mining concepts, algorithms, and applications. Understanding the process of discovering new information in existing, large data collections. Exploration of large data sets and hands-on introduction to the discovery of interesting patterns.
CSIT445	Title	Computer Architecture.
CSIT445	Prerequisites	CSIT 345.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Introduction to chip technology, microprocessors, microcomputers, architecture, instruction sets and programming of microcomputers, and other bus-oriented computers. Previous course CMPT 385 effective through Spring 2014.
CSIT450	Title	Text Management.

	Prerequisites	CSIT 430.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Introduction to managing data in text form. Includes creating, manipulating and data mining documents and data warehouses, evaluating data quality and investigating new techniques in managing World Wide Web data.
CSIT451	Title	Mobile Computing.
	Prerequisites	CSIT 355.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Course content will include an introduction into mobile device programming including environment basics, application basics, creating user interfaces, how to deal with data, how to accommodate different devices, basic widgets and more advanced user interface parts for multimedia and maps, and app publication.
CSIT460	Title	Computer Security.
	Prerequisites	CSIT 340.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	An overview of the fundamental problems of computer security, followed by an in-depth analysis of the current solutions including encryption, public key schemes, testing and analyzing current network security and internet architecture based on security considerations. Meets the University Writing Requirement for majors in Information Technology. Previous course CMPT 320 effective through Spring 2014.
CSIT473	Title	Image Processing.
	Prerequisites	CSIT 379 and MATH 235.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	In this course, image analysis and processing techniques are introduced. One-dimensional and two-dimensional theories for image processing are discussed. Topics include image representation, convolution, equalization, image filtering, segmentation, compression, morphological and medical imaging. Previous course CMPT 351 effective through Spring 2014.

CSIT474	Title	Computer Graphics.
	Prerequisites	CSIT 379 and MATH 235.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	An introduction to computer graphics, including the algorithms to generate two-dimensional and three-dimensional graphical pictures. An overview of interactive graphics and graphics devices. Previous course CMPT 472 effective through Spring 2014.
CSIT475	Title	Scientific Computing.
	Prerequisites	CSIT 379.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Course content includes floating-point computations, numerical error analysis,
CSIT475	Course Description	interpolation, integration, solution of systems of linear equations, optimization, and initial-value problems of ordinary differential equations. Algorithms will be implemented using Matlab or numerical recipes in C. A variety of scientific examples will be used to illustrate scientific computing concepts.
CSIT490	Title	Honors Seminar in Computer Science.
	Prerequisites	CSIT 345.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Topics not usually covered within standard computer science courses. A written and an oral report are required. Previous course CMPT 490 effective through Spring 2014.
CSIT491	Title	Cooperative Education in Computer Science and Information Technology.
	Prerequisites	CSIT 340 and departmental approval.
	Special Fee	Special fee.
	Course Description	The application of the conceptual ideas from Computer Science and Information Technology in a real-life work environment. The co-op experience is a semester of full- or part-time work under the guidance of a workplace supervisor and a faculty advisor. At most three credits may be applied

towards the Computer Science or Information Technology majors. Previous course CMPT 499 effective through Spring 2014.

CSIT495	Title	Topics in Computer Science for Undergraduates.
	Prerequisites	CSIT 313 or CSIT 335 or CSIT 337 or CSIT 340 or CSIT 345 or CSIT 355 or CSIT 357 or CSIT 379.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Study of specialized topics in computer science. May be repeated once for a maximum of 6.0 credits as long as the topic is different. Previous course CMPT 495 effective through Spring 2014.
CSIT497	Title	Undergraduate Research I.
	Prerequisites	CSIT 313 or CSIT 315 or CSIT 335 or CSIT 337 or CSIT 340 or CSIT 345 or CSIT 355 or CSIT 357 or CSIT 379.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Individual research in areas of computer science and information technology, agreed upon by the student and the instructor. The results of the research will be a basis of a seminar or colloquium to be given by the student. Students must not accumulate more than 6 credits total in courses CSIT 497 and CSIT 498. Previous course CMPT 497 effective through Spring 2014.
CSIT498	Title	Undergraduate Research II.
	Prerequisites	CSIT 497 and departmental approval.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Individual research in areas of computer science and information technology, agreed upon by the student and the instructor. The results of the research will be a basis of a seminar or colloquium to be given by the student. Students must not accumulate more than 6 credits total in courses CSIT 497 and CSIT 498. Previous course CMPT 498 effective through Spring 2014.
CSIT501	Title	Computer Science Foundations I.
	Prerequisites	Graduate coordinator's permission.
	Special Fee	Special fee.
	Number and type of credits	4 hours lecture.
	Course Description	An introduction to programming using a structured high level language, design

of algorithms, character strings, recursion, data structures, numerical computing. May not be used for credit by Mathematics or Computer Science

CSIT501	Course Description	majors. Previous course CMPT 505 effective through Spring 2015.
CSIT502	Title	Comptuer Science Foundations II.
	Prerequisites	CSIT 501 and permission of graduate coordinator.
	Special Fee	Special fee.
	Number and type of credits	4 hours lecture.
	Course Description	A continuation of CSIT 501. Introduction to assembly language, addressing techniques, subroutine linkage, input/output and macros. Introduction to computer organization including memory, logic design and computer architecture. May not be used for credit by Mathematics and Computer Science majors. Previous course CMPT 506 effective through Spring 2015.
CSIT503	Title	Computer Science Foundations III.
	Prerequisites	CSIT 501 and CSIT 504 and permission of graduate coordinator.
	Special Fee	Special fee.
	Number and type of credits	4 hours lecture.
	Course Description	A continuation of CSIT 501. Design and analysis of data structures, pointers, linked representations, linear lists, trees, storage systems and structures, database design. Previous course CMPT 507 effective through Spring 2015.
CSIT504	Title	Computer Science Foundations IV.
	Prerequisites	Graduate program coordinator's permission.
	Special Fee	Special fee.
	Number and type of credits	4 hours lecture.
	Course Description	Sets, relations, functions, graphs, trees, propositional calculus, induction and recursion, applications to computer science. May not be used for credit by Mathematics or Computer Science majors. Previous course MATH 501 effective through Spring 2015.
CSIT514	Title	Compiler Construction.
	Prerequisites	CMPT 581 and departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.

	Course Description	Introduction to the formal description of programming languages, the theory of parsing, and the concepts and techniques used in the construction of compilers. Previous course CMPT 591 effective through Spring 2015.
CSIT515	Title	Software Engineering.
	Prerequisites	Departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Principles and methods for the analysis, design, implementation, testing, and verification of software systems. Topics include requirements analysis, domain analysis, implementation, testing, verification, and software management. Previous course CMPT 594 effective through Spring 2015.
CSIT529	Title	Parallel and Distributed Computing.
	Prerequisites	CSIT 545 and CSIT 571 and departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	This course provides a study of the state-of-art of parallel processing algorithms and architectures. Parallel processing uses multiple processors working together in a synchronized fashion to solve large problems fast. Previous course CMPT 680 effective through Spring 2015.
CSIT531	Title	Robotics.
	Prerequisites	Departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Fundamental principles in robotics from the aspect of algorithms and
CSIT531	Course Description	computation. Includes fundamentals in robotic technology (inverse kinematics, actuation, sensing, manipulation, control, and motion planning), algorithms for robot communication and sensing, and current directions in robotics applications.
CSIT535	Title	Human-Computer Interaction (HCI).
	Prerequisites	Departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.

Number and type of credits	3 hours lecture.
Course Description	Course content will include: science-based theories, models, and studies; and user interface design and development. Graphical user interfaces for desktop, web, and mobile devices. Assess usability by quantitative and qualitative methods. Conduct task analyses, usability tests, expert reviews, and continuing assessments of working products by interviews, surveys, and logging. Apply design processes and guidelines to develop professional quality user interfaces. Build low-fidelity paper mockups, and a high-fidelity prototype using contemporary tools and programming environments.

CSIT537

	Title	Web Development.
	Prerequisites	CSIT 501 or equivalent and departmental approval for students with Deferred or Conditional status. Starting Winter 2017: Full matriculation into the graduate program or department approval for students with deferred or conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	This course will discuss issues related to web tools, enterprise web services, and web design. It exams the current state of the arts web development technologies and tools that are used in developing web sites and web services. Previous course CSIT 570 effective through Spring 2015.

CSIT540

	Title	Computer Networks.
	Prerequisites	CSIT 545 and departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Physical and logical aspects of data communications: analog-digital, broadband-baseband, TDM-FDM, protocols, modulation techniques, hardware for communication. Previous course CMPT 596 effective through Spring 2015.

CSIT545

	Title	Computer Architecture.
	Prerequisites	Departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Basic computer organization and design, digital functions, data representation, microprogramming, CPU organization, the assembler language,

and addressing techniques. Required of majors. Previous course CMPT 580 effective through Spring 2015.

CSIT547	Title	Operating Systems.
	Prerequisites	CMPT 581 and departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Design and implementation of operating systems, multiprogramming, multiprocessor, device management, scheduling, virtual memory, case studies. Previous course CMPT 584 effective through Spring 2015.
CSIT550	Title	Text Management.
	Prerequisites	Undergraduate degree in a Computing Related Field, CMPT 505 or departmental approval for students with Deferred or Conditional status. Starting Winter 2017: Full matriculation into the graduate program or department approval for

CSIT550	Prerequisites	students with deferred or conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	An introduction to managing data in text form. Includes creating, manipulating and data mining document and data warehouses, evaluating data quality and investigating new techniques in managing World Wide Web data including advanced usage of XML technologies.
CSIT551	Title	Mobile Computing.
	Prerequisites	Departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Course content will include an introduction into mobile device programming including environment basics, application basics, creating user interfaces, how to deal with data, how to accommodate different devices, basic widgets and more advanced user interface parts for multimedia and maps, and app publication.
CSIT555	Title	Database Systems.
	Prerequisites	Departmental approval for students with Deferred or Conditional status.

	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Secondary storage devises. Data transfer. Primary and secondary access methods. Sequential and random access methods. File design. File organizations and corresponding processing. File maintenance. Sorting large files. Databases concepts. Required of majors. Previous course CMPT 586 effective through Spring 2015.
CSIT560	Title	Network Security.
	Prerequisites	CSIT 504 and CSIT 501 or equivalent; and departmental approval for students with Deferred or Conditional status. Starting Winter 2017: Departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	An overview of the fundamental problems of intra and inter network security, followed by an in-depth analysis of the current solutions including encryption, authentication, web application security, internet architectures. Testing, analyze current security solutions, based on the three fundamental concepts: Confidentiality, Integrity, and Availability. Previous course CSIT 520 effective through Spring 2015.
CSIT571	Title	Computer Algorithms and Analysis.
	Prerequisites	Departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Algorithms: definition, design and analysis; sorting and searching techniques and introductory dynamic programming studied as algorithms with complexity theory and optimization techniques applied. Required of majors. Previous course CMPT 583 effective through Spring 2015.
CSIT574	Title	Image Processing.
	Prerequisites	CSIT 545 and departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	This course provides an introductory and comprehensive treatment of pixel and image processing with applications to fine arts, face recognition, etc.

Topics include sampling and quantization, convolution, equalization, filtering, image segmentation, image operations, morphological image processing. Previous course CMPT 574 effective through Spring 2015.

CSIT575	Title	Computer Graphics.
	Prerequisites	CSIT 545 and departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	An introduction to computer graphics, including the algorithms to generate two-dimensional and three-dimensional graphical pictures. An overview of ray tracing, shading and color theory. Interactive graphics. Graphics devices. Previous course CMPT 575 effective through Spring 2015.
CSIT595	Title	Topics in Computer Science.
	Prerequisites	CSIT 545 and departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Recent developments in the field. Topics such as Monte Carlo methods, graphics, expert systems, security, networks and special areas of applications. May be repeated twice for a maximum of 9.0 credits as long as the topic is different. Previous course CMPT 585 effective through Spring 2015.
CSIT610	Title	Information Technology Project Management.
	Prerequisites	Departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	IT Project Management is a course designed to teach students the basic principles of project management as applied to the Information Technology field. The outcome of the course will provide the foundation for developing technology-based project plans, management and experience in project management.
CSIT615	Title	Advanced Topics in Software Engineering.

	Prerequisites	CSIT 515 or departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	This course examines (i) planned and systematic patterns of all actions necessary to provide adequate confidence that a product conforms to established requirements, and (ii) a set of activities designed to evaluate the process by which high-quality complex software products are developed. Previous course CMPT 694 effective through Spring 2015.
CSIT616	Title	Software Process Management.
	Prerequisites	Departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Software process management studies processes and concepts for planning and monitoring all software life-cycle phases. Topics include management models and structures, project planning including scheduling, effort estimation and risk management, project personnel and organization, project control (monitoring, measurement, correction and performance standards), software configuration management, and process description languages and tools.
CSIT635	Title	Advanced Human-Computer Interaction (HCI).
	Prerequisites	CSIT 535 or departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	This course will include an overview of the field of human-computer interaction, and- in a user-centered fashion - members of the class will
CSIT635	Course Description	choose and explore deeply a subfield of HCI (e.g. Technologies for Children, Technologies for Families, Augmented Reality). Students will critically assess, present, and improve upon recent research that is published in the most prestigious HCI conferences and journals.
CSIT655	Title	Advanced Database Systems.
	Prerequisites	CSIS 555 and departmental approval for students with Deferred or Conditional

		status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	To develop in-depth understanding of data base concepts and issues. The major emphasis of the course is on the conceptual (logical) organization, retrieval, and manipulation of data. Required of majors. Previous course CMPT 592 effective through Spring 2015.
CSIT656	Title	Scientific Databases.
	Prerequisites	Departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	The course aims to give students the tools and concepts they will need to work with scientific databases in an in-depth manner. It also aims to introduce student to advanced, state-of-the-art concepts as well as give the students the chance to explore scientific database issues within their fields of interest while still in their early stages of study.
CSIT670	Title	Advanced Computer Algorithms and Analysis.
	Prerequisites	CSIT 571 and departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Dynamic programming, game trees and backtracking techniques, branch and bound, polynomial evaluation and fast Fourier transform algorithms; complexity and analysis, and optimization techniques will be applied. NP-hard problems and NP-completeness. Previous course CMPT 683 effective through Spring 2015.
CSIT690	Title	Industry Internship in Information Technology Management.
	Prerequisites	Departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	This course will serve as the culminating experience for students enrolled in the Masters of Computer Science/ Applied Information Technology Concentration. Students will work with industry partners and faculty to analyze significant problems and work on significant projects in Information Technology, developing solutions towards these problems.

CSIT691	Title	Independent Study: Computer Science.
	Prerequisites	Departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Course Description	Independent study under the direction of a faculty member, offering the opportunity to pursue topics in computer science which may be outside the scope of regular curricular offerings or may be an extension of an existing course or courses. Approval must be obtained from the graduate coordinator or and faculty advisor. May be repeated once for a maximum of 6.0 credits. Previous course CMPT 690 effective through Spring 2015.
CSIT695	Title	Readings in Computer Science.
	Prerequisites	CMPT 581 and CSIT 555 and CSIT 571 and departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	1-4 hours seminar.
	Course Description	Guided study of selected topics in major field of interest. Previous course

CSIT695	Course Description	CMPT 695 effective through Spring 2015.
CSIT696	Title	Literature Survey in Computer Science.
	Prerequisites	Departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	Significant investigation of an area of computing research or practice, culminating in the creation of a comprehensive survey or tutorial. Surveys summarize and organize research results in a novel way that integrates and adds understanding to work in the field by classifying existing literature, developing a perspective on the area, and/or evaluating trends. A tutorial paper organizes and introduces work in the field by emphasizing the basic concepts of a field and providing concrete examples that embody these concepts.
CSIT697	Title	Master's Project in Computer Science.
	Prerequisites	Completion of the computer science required core courses and departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.

	Number and type of credits	3 hours lecture.
	Course Description	Analysis of a significant problem related to computing and design of a solution. Where appropriate, implementation and testing as well as documentation of the solution. Previous course CMPT 697 effective through Spring 2015.
CSIT698	Title	Master's Thesis.
	Prerequisites	Departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Course Description	Independent research project done under faculty advisement. Students must follow the MSU Thesis Guidelines, which may be obtained from the Graduate School. Students should take CSIT 699 if they don't complete CSIT 698 within the semester. Previous course CMPT 698 effective through Spring 2015.
CSIT699	Title	Master's Thesis Extension.
	Prerequisites	CSIT 698 and departmental approval for students with Deferred or Conditional status.
	Special Fee	Special fee.
	Course Description	Continuation of Master's Thesis Project. Thesis extension will be graded as IP (In Progress) until thesis is completed, at which time a grade of Pass or Fail will be given. Previous course CMPT 699 effective through Spring 2015.
CSND100	Title	Fields of Communication Sciences and Disorders.
	Number and type of credits	3 hours lecture.
	Course Description	An orientation to: practices in the field, philosophies of rehabilitation, areas of scientific inquiry and the relationship with other disciplines and specialties.
CSND101	Title	Fundamentals of Speech: Communication Requirement.
	Number and type of credits	3 hours lecture.
	Course Description	Understanding the process of oral communication and improving personal skills in speaking and listening. Developing clear, effective comprehension and expression of the spoken American-English language.
CSND103	Title	Fundamentals of Voice and Speech Production.
	Number and type of credits	3 hours lecture.
	Course Description	Theory and practice of efficient voice production and accurate articulation. Students receive guidance in the improvement of their own speech skills.
CSND200	Title	Techniques in Clinical Observation and Reporting.