

MASTER OF ARTS (M.A.) MAJOR IN COMPUTER SCIENCE (THESIS OPTION)

Major Program

The Master of Arts (M.A.) degree with a major in Computer Science is designed to prepare students for doctoral research, college teaching, careers in computer science and software engineering, and careers in digital forensics.

Application Requirements

The items listed below are required for admission consideration for applicable semesters of entry during the current academic year. Submission instructions, additional details, and changes to admission requirements for semesters other than the current academic year can be found on The Graduate College's website (<http://www.gradcollege.txstate.edu>). International students should review the International Admission Documents webpage (<http://mycatalog.txstate.edu/graduate/admission-documents/international>) for additional requirements.

- completed online ApplyTexas application
- \$40 nonrefundable application fee
- \$50 nonrefundable international evaluation fee (if applicable)
- baccalaureate degree from a regionally accredited university
- official transcripts required from **each institution** where course credit was granted
- minimum 2.75 GPA in your last 60 hours of undergraduate course work (plus any completed graduate courses)
- background course work
- official GRE scores required with a preferred minimum of 286 (verbal and quantitative sections combined) with no less than 140 in the verbal section and 148 in the quantitative section
 - The GRE may be waived if you hold a master's or doctoral degree from a regionally accredited U.S. institution. If you hold a master's or doctoral degree (or the equivalent thereof) from an accredited international institution, the GRE may be waived on an individual basis.
- resume/CV
- statement of purpose
- three letters of recommendation

TOEFL or IELTS Scores

Non-native English speakers who do not qualify for an English proficiency waiver:

- official TOEFL iBT scores required with a 78 overall
- official IELTS (academic) scores required with a 6.5 overall and
 - minimum individual module scores of 6.0

If you do not meet the scores above, you may qualify for English-based conditional admission if you meet the minimum scores below:

- official TOEFL iBT scores required with a 59 overall
- official IELTS (academic) scores required with a 5.5 overall and
 - minimum individual module scores of 5.5

Degree Requirements

The Master of Arts (M.A.) degree with a major in Computer Science requires 30 semester credit hours, including a thesis.

Background

Students are required to fulfill background course work if they do not have adequate undergraduate computer science background. The background requirements may be reduced if evidence is presented which shows that the applicant has taken equivalent courses elsewhere prior to enrollment at Texas State. Background work must be completed before enrolling in graduate courses.

The minimum undergraduate background requirements for computer science and software engineering majors are:

Code	Title	Hours
Computer Science ¹		
CS 1428	Foundations of Computer Science I	4
CS 2308	Foundations of Computer Science II	3
CS 2318	Assembly Language	3
CS 3339	Computer Architecture	3
CS 3358	Data Structures	3
CS 4318	Compiler Construction	3
or CS 4328	Operating Systems	
Advanced computer science electives (CS 3000-4000 level)		6
Mathematics ²		
MATH 5358	Applied Discrete Mathematics (or equivalent)	3
Calculus		8

¹ These courses must be completed with no grade less than "C" and no more than two "Cs."

² These courses must be completed with no grade less than "C."

Course Requirements

Code	Title	Hours
Required Courses		
CS 5329	Algorithm Design and Analysis	3
CS 5346	Advanced Artificial Intelligence	3
CS 5391	Survey of Software Engineering	3
CS 5306	Advanced Operating Systems	3
or CS 5310	Network and Communication Systems	
or CS 5332	Data Base Theory and Design	
CS 5318	Design of Programming Languages	3
or CS 5338	Formal Languages	
Electives		
Choose 3 hours of advisor-approved electives		3
Minor		
Choose a 6-hour advisor-approved minor		6
Thesis		
CS 5399A	Thesis	3
Select a minimum of 3 hours from the following:		3

CS 5199B	Thesis
CS 5299B	Thesis
CS 5399B	Thesis
CS 5599B	Thesis
CS 5999B	Thesis
Total Hours	30

Comprehensive Examination Requirements

All candidates for graduate degrees must pass one or more comprehensive examinations.

If a student elects to follow the thesis option for the degree, a committee to direct the written thesis will be established. The thesis must demonstrate the student's capability for research and independent thought. Preparation of the thesis must be in conformity with the *Graduate College Guide to Preparing and Submitting a Thesis or Dissertation*.

Thesis Proposal (http://www.gradcollege.txstate.edu/docs/Thesis_Diss_Guide.pdf)

The student must submit an official Thesis Proposal Form (<http://www.gradcollege.txstate.edu/forms.html>) and proposal to his or her thesis committee. Thesis proposals vary by department and discipline. Please see your department for proposal guidelines and requirements. After signing the form and obtaining committee members' signatures, the graduate advisor's signature if required by the program and the department chair's signature, the student must submit the Thesis Proposal Form with one copy of the proposal attached to the dean of The Graduate College for approval before proceeding with research on the thesis. If the thesis research involves human subjects, the student must obtain exemption or approval from the Texas State Institutional Review Board prior to submitting the proposal form to The Graduate College. The IRB approval letter should be included with the proposal form. If the thesis research involves vertebrate animals, the proposal form must include the Texas State IACUC approval code. It is recommended that the thesis proposal form be submitted to the dean of The Graduate College by the end of the student's enrollment in 5399A. Failure to submit the thesis proposal in a timely fashion may result in delayed graduation.

Thesis Committee

The thesis committee must be composed of a minimum of three approved graduate faculty members.

Thesis Enrollment and Credit

The completion of a minimum of six hours of thesis enrollment is required. For a student's initial thesis course enrollment, the student will need to register for thesis course number 5399A. After that, the student will enroll in thesis B courses, in each subsequent semester until the thesis is defended with the department and approved by The Graduate College. Preliminary discussions regarding the selection of a topic and assignment to a research supervisor will not require enrollment for the thesis course.

Students must be enrolled in thesis credits if they are receiving supervision and/or are using university resources related to their thesis work. The number of thesis credit hours students enroll in must reflect

the amount of work being done on the thesis that semester. It is the responsibility of the committee chair to ensure that students are making adequate progress toward their degree throughout the thesis process. Failure to register for the thesis course during a term in which supervision is received may result in postponement of graduation. After initial enrollment in 5399A, the student will continue to enroll in a thesis B course as long as it takes to complete the thesis. Thesis projects are by definition original and individualized projects. As such, depending on the topic, methodology, and other factors, some projects may take longer than others to complete. If the thesis requires work beyond the minimum number of thesis credits needed for the degree, the student may enroll in additional thesis credits at the committee chair's discretion. In the rare case when a student has not previously enrolled in thesis and plans to work on and complete the thesis in one term, the student will enroll in both 5399A and 5399B.

The only grades assigned for thesis courses are PR (progress), CR (credit), W (withdrew), and F (failing). If acceptable progress is not being made in a thesis course, the instructor may issue a grade of F. If the student is making acceptable progress, a grade of PR is assigned until the thesis is completed. The minimum number of hours of thesis credit ("CR") will be awarded only after the thesis has been both approved by The Graduate College and released to Alkek Library.

A student who has selected the thesis option must be registered for the thesis course during the term or Summer I (during the summer, the thesis course runs ten weeks for both sessions) in which the degree will be conferred.

Thesis Deadlines and Approval Process

Thesis deadlines are posted on The Graduate College (<http://www.gradcollege.txstate.edu>) website under "Current Students." The completed thesis must be submitted to the chair of the thesis committee on or before the deadlines listed on The Graduate College website.

The following must be submitted to The Graduate College by the thesis deadline listed on The Graduate College website:

1. The Thesis Submission Approval Form bearing original (wet) and/or electronic signatures of the student and all committee members.
2. One (1) PDF of the thesis in final form, approved by all committee members, uploaded in the online Vireo submission system.

After the dean of The Graduate College approves the thesis, Alkek Library will harvest the document from the Vireo submission system for publishing in the Digital Collections database (according to the student's embargo selection). **NOTE: MFA Creative Writing theses will have a permanent embargo and will never be published to Digital Collections.**

While original (wet) signatures are preferred, there may be situations as determined by the chair of the committee in which obtaining original signatures is inefficient or has the potential to delay the student's progress. In those situations, the following methods of signing are acceptable:

- signing and faxing the form
- signing, scanning, and emailing the form
- notifying the department in an email from their university's or institution's email account that the committee chair can sign the form on their behalf
- electronically signing the form using the university's licensed signature platform.

If this process results in more than one document with signatures, all documents need to be submitted to The Graduate College together.

No copies are required to be submitted to Alkek Library. However, the library will bind copies submitted that the student wants bound for personal use. Personal copies are not required to be printed on archival quality paper. The student will take the personal copies to Alkek Library and pay the binding fee for personal copies.

Master's level courses in Computer Science: CS

Courses Offered

Computer Science (CS)

CS 5100. Advanced Computer Science Internship.

This course provides advanced training supervised by computer scientists in internship programs approved by the department. Course cannot be counted toward any graduate degree, is open only to majors in the Department of Computer Science. May be repeated once and requires approval of the department chair. This course does not earn graduate degree credit.

1 Credit Hour. 0 Lecture Contact Hours. 1 Lab Contact Hour.

Course Attribute(s): Exclude from 3-peat Processing|Graduate Assistantship|Exclude from Graduate GPA

Grade Mode: Leveling/Assistantships

CS 5199B. Thesis.

This course represents a student's continuing thesis enrollments. The student continues to enroll in this course until the thesis is submitted for binding.

1 Credit Hour. 1 Lecture Contact Hour. 0 Lab Contact Hours.

Grade Mode: Credit/No Credit

CS 5299B. Thesis.

This course represents a student's continuing thesis enrollments. The student continues to enroll in this course until the thesis is submitted for binding.

2 Credit Hours. 2 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Credit/No Credit

CS 5300. Professional Development of Graduate Assistants.

This course is designed to develop and enhance the professional and technical skills of graduate teaching and instructional assistants. Topics covered may include, but are not limited to, teaching skills, technical skills, ethical and legal issues, and laboratory management. This course does not earn graduate degree credit.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Course Attribute(s): Graduate Assistantship|Exclude from Graduate GPA

Grade Mode: Leveling/Assistantships

CS 5301. Programming Practicum.

Intensive review of programming through data structures. Includes syntax, semantics, problem solving, algorithm development, and in-class exercises. May be repeated once. This course does not earn graduate degree credit. Prerequisite: Consent of instructor.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Course Attribute(s): Exclude from 3-peat Processing|Exclude from Graduate GPA|Leveling

Grade Mode: Leveling/Assistantships

CS 5302. Foundations of Data Structures and Algorithm Design.

This course serves as a foundation course for computer science master's degree students who need reinforcement of fundamental concepts covered by CS 3358. May be repeated once. This course does not earn graduate degree credit. Prerequisite: Instructor Approval.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Course Attribute(s): Exclude from 3-peat Processing|Exclude from Graduate GPA

Grade Mode: Leveling/Assistantships

CS 5303. Foundations of Computer Architecture.

This foundation course for CS master's degree students who need CS 3339 concept reinforcement covers fundamental hardware components. Topics include ALUs, single and multiple cycle datapath and control, RISC vs. CISC, pipelining, caches, I/O, virtual memory, and related performance issues. It may be repeated once and is non-graduate degree credit. Prerequisite: Instructor Approval.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Course Attribute(s): Exclude from 3-peat Processing|Exclude from Graduate GPA

Grade Mode: Leveling/Assistantships

CS 5305. Foundations of Operating Systems.

This foundation course is for CS master's students who need CS 4328 fundamental concept reinforcement. It covers the principles of operating systems, algorithms for CPU scheduling, memory management, cooperating sequential processes and device management. It may be repeated once. This course does not earn graduate degree credit. Prerequisite: Instructor Approval.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Course Attribute(s): Exclude from 3-peat Processing|Exclude from Graduate GPA

Grade Mode: Leveling/Assistantships

CS 5306. Advanced Operating Systems.

A study of modern operating systems including network, distributed, or real-time systems. Prerequisites: CS 3358 and CS 4328 all with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5310. Network and Communication Systems.

A study of network and communication systems. Verification and/or implementation of protocols will be required. Prerequisite: CS 3358 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5316. Data Mining.

This course covers fundamental concepts and techniques plus recent developments in data mining and information retrieval. It provides relevant research training and practice opportunities. May not be taken for credit if student received credit for CS 4315. Prerequisite: CS 3358 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5318. Principles of Programming Languages.

This course focuses on the principles of programming languages. Topics covered include programming paradigms, concepts of programming languages, formal syntax and semantics, and language implementation issues. Prerequisite: CS 3358 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5326. Advanced Studies in Human Factors of Computer Science.

Professional level presentation of techniques and research findings related to human-computer interactions. Prerequisite: CS 3358 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5329. Algorithm Design and Analysis.

Introduction to algorithm design and analysis, computational complexity, NP – completeness theory. Prerequisites: CS 3358 and MATH 2472 and MATH 3398 or MATH 5358, all with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5331. Crafting Compilers.

Overview of the internal structure of modern compilers. Research on compilation techniques. Topics include lexical scanning, parsing techniques, static type checking, code generation, dataflow analysis, storage management, and execution environments. Prerequisite: CS 3358 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5332. Data Base Theory and Design.

Computer system organization for the management of data; data models, data model theory, optimization and normalization; integrity constraints; query languages; intelligent database systems. Prerequisites: CS 3358 and CS 4328, all with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5334. Advanced Internet Information Processing.

Integration of popular scripting languages (Perl, JavaScript, PHP, and other CGI capable languages) and database programming languages (embedded database programming languages, JavaServlets, and PHP) to provide advanced information processing for Internet applications that demand both database support and sophisticated, application specific information processing. Prerequisite: CS 4332 or CS 5332 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5335. Research in Object-Oriented System Development.

The course covers the object-oriented methodologies for system analysis, design, implementation, testing, and other aspects of system development. Emphasis will be on using OO methodologies to manage the complexity of complicated software. Other topics like modeling, OODB, and OO languages will also be covered. Prerequisites: CS 3358, and either CS 4332 or CS 5332, all with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5338. Formal Languages.

Advanced topics in automata theory, grammars, Turing machines, decidability, and algorithmic complexity. Prerequisites: CS 3358 and MATH 3398 all with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5341. Advanced Network Programming.

Study of advanced concepts and programming skills in computer networks such as advanced TCP/IP, API, multicasting and broadcasting, reliable communications, advanced I/O functions and options.

Prerequisite: CS 5310 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5343. Wireless Communications and Networks.

Study of the fundamental aspects of wireless communications and wireless/mobile networks, introduction of wireless/mobile networking APIs. Prerequisites: CS 3358 with a grade of "B" or better, and CS 5310 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5346. Advanced Artificial Intelligence.

Knowledge representation; knowledge engineering; parallel and distributed AI; heuristic searches; machine learning and intelligent databases; implementation of systems in high-level AI languages. Prerequisite: CS 3358 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5351. Parallel Processing.

Introduction to the design and analysis of parallel algorithms, parallel architectures, and computers. Prerequisites: CS 3358 and CS 4328 all with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5352. Distributed Computing.

Study of advanced topics in distributed systems: concurrency control and failure recovery, management of replicated data, distributed consensus and fault tolerance, remote procedure calls, naming and security.

Prerequisites: CS 3358 and CS 4328 all with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5369B. Computer Vision.

This course covers the basic and recent topics in computer vision. Topics include classic computer vision features, object tracking and recognition, detection and segmentation, camera models, and image and video retrieval. Prerequisite: CS 3358 or equivalent, with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Course Attribute(s): Exclude from 3-peat Processing|Topics

Grade Mode: Standard Letter

CS 5369G. Web Service Engineering.

Advanced concepts and techniques for enabling Web application integration and interaction using Semantic Web and Web services. Concepts and techniques include service discovery ontology (RDF, DAML-S), XML-based interactions standards (ebXML, RossettaNet) and Web Services (WSDL, SOAP, UDDI, BPEL). Prerequisite: CS 3358 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Course Attribute(s): Topics

Grade Mode: Standard Letter

CS 5369J. Advanced Human Computer Interaction.

This course will cover state of the art human computer interaction topics such as perceptual compression, eye-gaze, and brain computer interfaces with emphasis on the human visual system, eye-tracking, and electroencephalography. Prerequisite: CS 3358 with a grade of "D" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Course Attribute(s): Topics

Grade Mode: Standard Letter

CS 5369L. Machine Learning and Applications.

Provides broad introduction to machine learning, including learning theory, and recent topics like support vector machines and feature selection. Covers basic ideas, intuition, and understanding behind modern machine learning methods. Discusses applications like face recognition, text recognition, biometrics, bioinformatics, and multimedia retrieval. Prerequisite: CS 3358 grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Course Attribute(s): Topics

Grade Mode: Standard Letter

CS 5369M. Software Evolution and Maintenance.

Software evolution and maintenance is one of the most important and complex activities in software engineering. Programmers rarely build software from scratch but often modify existing software to fix defects or add new features. This course studies the fundamentals of cutting-edge techniques and tools for software evolution and maintenance. Prerequisite: CS 3358 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Course Attribute(s): Exclude from 3-peat Processing|Topics

Grade Mode: Standard Letter

CS 5369Q. Recommender Systems.

This course covers various concepts of recommender systems, including personalization algorithms, evaluation tools, and user experiences. Discussion of how recommender systems are deployed in business applications, design of new recommender experiences, and how to conduct and evaluate research in recommender systems. Cannot take for credit if already took CS 4379Q. Prerequisite: CS 3358 with a grade of "C" or better or consent of instructor.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Course Attribute(s): Exclude from 3-peat Processing|Topics

Grade Mode: Standard Letter

CS 5369Y. Green Computing.

Reducing mobile device, cloud computing platform, and supercomputer energy consumption is a paramount, daunting problem. This course covers state-of-the-art green computing research, including energy-efficient hardware and software design, power-aware resource management and storage solutions, green data centers and mobile computing. Cannot be taken for credit if received CS 4379Y credit. Prerequisite: CS 3358 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Course Attribute(s): Exclude from 3-peat Processing|Topics

Grade Mode: Standard Letter

CS 5375. Multimedia Computing.

A study of the digital representation and processing of major multimedia data types: image, audio, and video. Compression techniques for the three data types, standards, and storage media. Prerequisite: CS 3358 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5376. Enterprise Application Integration.

Introduction to the integration of all services available on the Web. It emphasizes component-based integration frameworks based on J2EE specification (EJB, Servlets, JMS), inter-organization workflow integration frameworks, and XML framework. Students must have knowledge of object-oriented design, object-oriented programming language, databases, and networking. Prerequisite: CS 3358 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5378. Advanced Computer Security.

This course covers various aspects of producing secure computer information systems that provide guaranteed controlled sharing. Emphasis is on software models and design, including discovery and prevention of computing systems security vulnerabilities. Current systems and methods are examined and critiqued. Prerequisite: CS 3358 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5388. Advanced Computer Graphics.

A study of the algorithms and data structures used in representing and processing visual data. Prerequisite: CS 3358 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5389. Graphical User Interfaces.

Covers both abstract and practical treatments of using graphics to implement interactive computer/human interfaces. Includes a survey of the major GUI standards and tools. Prerequisite: CS 3358 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5391. Survey of Software Engineering.

A study of the software life cycle with emphasis on system analysis and design. Methodologies based on data flows and on objects will be surveyed. A component on professional ethics is included. Prerequisite: CS 3358 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5392. Formal Methods in Software Engineering.

The use of design and specification languages in producing software systems. Emphasis is placed on proving correctness of designs and implementations. Prerequisites: CS 3358 and CS 5391 all with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5393. Software Quality.

The latter half of the software life cycle is discussed. Topics include testing, performance evaluation, and software metrics. Appropriate software tools are studied and used. Prerequisite: CS 5391.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5394. Advanced Software Engineering Project.

Students produce a software project of significant size in a team environment. All aspects of the software engineering course sequence are integrated and put into practice. Prerequisite: CS 5391 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5395. Independent Study in Advanced Computer Science.

Open to graduate students on an independent basis by arrangement with the faculty member concerned. Course is not repeatable for credit. Prerequisite: CS 3358 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Credit/No Credit

CS 5396. Advanced Software Engineering Processes and Methods.

The essentials of software engineering processes, methods, and tools for the evolutionary design of complex interactive software are discussed. Overviews of other topics like quality concepts, SEI CMM, information technology, and network technology are covered. Student completes a literature survey of the latest software engineering analysis and design processes, methods, and tools. Prerequisite: CS 5391 with a grade of "C" or better.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Standard Letter

CS 5399A. Thesis.

This course represents a student's initial thesis enrollment. No thesis credit is awarded until the student has completed the thesis in CS 5399B.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Credit/No Credit

CS 5399B. Thesis.

This course represents a student's continuing thesis enrollment. The student continues to enroll in this course until the thesis is submitted for binding.

3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Credit/No Credit

CS 5599B. Thesis.

This course represents a student's continuing thesis enrollments. The student continues to enroll in this course until the thesis is submitted for binding.

5 Credit Hours. 5 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Credit/No Credit

CS 5999B. Thesis.

This course represents a student's continuing thesis enrollments. The student continues to enroll in this course until the thesis is submitted for binding.

9 Credit Hours. 9 Lecture Contact Hours. 0 Lab Contact Hours.

Grade Mode: Credit/No Credit