Computer Science

MASTER OF SCIENCE

Program Description
The Master of Science with a major in Computer Science is designed to prepare graduate professionals who can apply the necessary knowledge of computing to information requirements of organizations in business, government, industry and education. The program provides for the education of individuals who will develop, maintain, or manage complex computer-based information systems. This graduate program also enables students to emphasize either Geographic Information Sciences or Information Assurance in their plan of study.

The program provides the experienced professional with up-to-date specialized knowledge while developing those analytical skills necessary to stay abreast of the changing field of computing. The program also provides the recent baccalaureate graduate with additional applied and advanced knowledge, thus facilitating a more useful contribution to his/her career path. Specifically, graduates of the Computer Science MS program will be able to:

- apply the knowledge of computing to organizational information requirements in business, government, industry and education
- develop, maintain or manage complex computer-based information systems
- utilize their acquired analytical skills for life-long learning and advanced studies in computing

The degree requires a minimum of 36-semester hours of which at least 30 hours must be in computer science, including a three semester-hour graduate project and a formal technical report of the project.

Admission Requirements
Students seeking admission to the graduate degree program in computer science must submit the following to the Office of Graduate Studies and Research:

- An application and application fee
- Transcripts from regionally accredited institutions (international students will be required to submit relevant international transcripts)
- A personal goals statement (part of the application)
- GRE scores (within five years of the date of application)
- International students must submit additional documents to the Office of Graduate Studies. http://gradschool.tamucc.edu/international.htm

Students who have not completed all general prerequisites will be conditionally admitted subject to their completion of all foundation or prerequisite courses with grades of “B” or better. All newly-admitted students are required to attend the University Graduate Orientation.

Degree Requirements
The course of study leading to an MS degree in Computer Science is composed of four components:

I. General prerequisites (must be satisfied before the student can be formally and unconditionally accepted to the MS program).

II. Core courses.

III. Electives.

IV. Graduate Project and Technical Report.

I. General Prerequisites

1. Computer Science

Every student is expected to achieve certain minimum competencies in computing before being formally admitted to the MS degree program. Students who have not earned a baccalaureate degree in computer science are required to take the following 31 hours of foundation courses before being unconditionally accepted to the MS program.
2. Mathematics
Each student needs to achieve a minimum level of knowledge in mathematics to understand many concepts in computing and to keep abreast of the literature relating to his/her areas of interest in computing. Therefore, each student must complete introductory courses in discrete mathematics, statistics and calculus. At Texas A&M University-Corpus Christi these requirements are satisfied by:

<table>
<thead>
<tr>
<th>Course</th>
<th>Sem. Hrs.</th>
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</thead>
<tbody>
<tr>
<td>MATH 2413 Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 2305 Discrete Math</td>
<td>3</td>
</tr>
<tr>
<td>MATH 3342 Applied</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
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</tbody>
</table>

3. English
Every student is expected to achieve certain minimum competencies in English composition, especially in technical writing. In preparation for the technical reports that are required in the workplace, numerous reports are required during the course of study for the degree. In addition, the Graduate Proposal and Graduate Technical Report are part of the program. Students may satisfy the technical writing requirement by completing the following course:

<table>
<thead>
<tr>
<th>Course</th>
<th>Sem. Hrs.</th>
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</thead>
<tbody>
<tr>
<td>ENGL 5376 Professional</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
</tr>
</tbody>
</table>

Students who successfully completed ENGL 3301, Principles of Professional and Report Writing, while earning a bachelor’s degree in computer science may substitute ENGL 3301 for ENGL 5376.

4. Graduate course limits prior to completing foundation courses
A student may not take more than 9 graduate hours of computer science prior to completing all foundation courses.

5. Recommended course of study for students not having an undergraduate degree in computer science
For those students not having an undergraduate degree in computer science, the following prerequisite course of study is suggested:

**First Year**

**Fall**
- COSC 5311 Foundations in Problem Solving I 3
- MATH 2305 Discrete Math I 3
- MATH 2413 Calculus I 4

**Spring**
- COSC 5312 Foundations in Problem Solving II 3
- COSC 5313 Foundations of Computer Organization and Architecture 3
- COSC 5321 Data Structures 3
- ENGL 5376 Professional Writing 3

**Second Year**

**Fall**
- COSC 5331 Foundations of Computer System Software 3
II. Core Courses
The M.S. core is composed of 21 hours. All computer science students must complete each of the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Sem. Hrs.</th>
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</thead>
<tbody>
<tr>
<td>COSC 5330 Programming Languages</td>
<td>3</td>
</tr>
<tr>
<td>COSC 5334 Design and Analysis of Algorithms</td>
<td>3</td>
</tr>
<tr>
<td>COSC 5351 Advanced Computer Architecture</td>
<td>3</td>
</tr>
<tr>
<td>COSC 5352 Advanced Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>COSC 5370 Advanced Software Engineering</td>
<td>3</td>
</tr>
<tr>
<td>COSC 5394 Graduate Project Research and Proposal</td>
<td>3</td>
</tr>
<tr>
<td>COSC 5395 Graduate Project and Technical Report</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
</tr>
</tbody>
</table>

III. Electives (15 hrs.)
Electives are chosen by the student but are subject to approval by the student’s graduate faculty mentor. Electives should be taken that will support the student’s graduate project. No more than six hours of approved electives may come from courses taken at another university or from outside of computer science. Credit from a master’s degree earned at another institution will not be applied to a second master’s degree at Texas A&M University-Corpus Christi. Among the 4000 level courses in computer science, only COSC 4328 may be taken for graduate credit (See the undergraduate catalog for the course description). The number of hours of approved Directed Independent Study counted toward the M.S. degree is limited to six hours.

**Electives Option A** – Students seeking a General Computer Science M.S. must choose at least six of the 15 hours of electives from the following:
- COSC 5336 Database Management Systems
- COSC 5353 Compiler Design and Construction
- COSC 5345 System Simulation and Modeling
- COSC 5355 Data Communications and Networking
- COSC 5360 Parallel Computing

**Electives Option B** – Students wishing to concentrate their studies in the field of Geographic Information Science must choose at least six of the 15 hours of electives from COSC 5381 – COSC 5387.

**Electives Option C** – Students concentrating in Information Assurance must choose at least six of the 15 hours of electives from the following:
- COSC 5374 Computer Forensics
- COSC 5375 Information Assurance
- COSC 5376 Network Security
- COSC 5377 Applied Cryptography
- COSC 5379 Advanced Information Assurance

Students in this option are strongly encouraged to take all of these courses. The complete Information Assurance sequence, along with core courses and prerequisite courses, totals 39 hours.

IV. Graduate Project and Technical Report (COSC 5395)
The emphasis of the project will be on the demonstration of the skillful use of modern software development techniques to solve a problem. (See graduate project procedure.)

V. Chronological Procedure Leading to the MS Degree
1. Completion of a degree plan
Upon admission to the MS degree program in computer science, and prior to enrollment in any course, the student must contact the Graduate Academic Advi-
sor in the College of Science & Technology to have a degree plan completed. The student will then be assigned a faculty advisor from the computer science faculty. The student will arrange to see his/her advisor during the advisement period of each remaining semester until graduation to have the course schedule approved. Any changes to a student’s approved degree plan must be initiated through the student’s assigned faculty advisor.

2. **Progress toward the degree**
   
   Once admitted to the graduate degree program in computer science, a student must complete at least six semester hours of credit per year toward the degree until the degree is completed. Failure to make this minimum progress will result in dismissal from the degree program with possible readmission based on the catalog in effect at the time of readmission. A student who is actively pursuing a graduate project and has completed all other course work for the degree will be given relief from this requirement, but must register continuously for the project until it is completed.

3. **Graduate project procedure**
   
   When a student is within 15 semester hours of graduation, he/she may register for COSC 5394 to develop a proposal for the graduate project. After the proposal is approved by the project chairperson, the proposal must be submitted to the full project committee. This committee consists of three full-time Texas A&M University-Corpus Christi faculty members. The committee chairperson must be a computer science Ph.D.-degreed faculty member. The second committee member may be either a computer science or geographic information science Ph.D.-degreed faculty member. The third member may be an A&M-Corpus Christi faculty member from any discipline.
   
   After the approved graduate project proposal is placed in the student’s file, the student may register for COSC 5395. Once a student has registered for a graduate project, he/she must continue to register in each consecutive long semester until the project is completed. A student who does not complete a project in the semester for which he/she has registered will receive a grade of IP (In Progress). Failure to register for an unfinished project in the next semester will terminate the project and will require that the entire project process be repeated starting with the submission of a new project proposal.

4. **Final examination and technical report**
   
   After the student has completed all other requirements for the MS degree in computer science, he/she must schedule an oral exam over his/her graduate program of study. The oral exam will be administered by the graduate project committee and will focus heavily on the project itself.
   
   The graduate project, resulting in a technical report (see COSC 5395), may be completed in one semester; however, with continuous registration, a student will be allowed up to one calendar year to complete the project. Any extension beyond one year will require written justification on a semester-to-semester basis, to be approved by each member of the committee and the chairperson of computer science. All computer science graduate project defenses must be completed before the last day of the last full week of instruction.

**For Additional Information**

*Website:*  
http://csci.tamucc.edu/cosc

*Campus address:*  
Center for Instruction, Room 301; phone (361) 825-2474

*Mailing address:*  
Computer Science Program, Unit 5825  
College of Science and Technology  
Texas A&M University-Corpus Christi  
6300 Ocean Drive, Corpus Christi, Texas 78412-5825
GRADUATE COURSES

COSC 5305. 3 sem. hrs. (3:0)
A SURVEY OF COMPUTER SOFTWARE PACKAGES
A concentrated study of selected software packages. (Does not count toward total hours required for MS in Computer Science.) Fall.

COSC 5306. 3 sem. hrs. (3:0)
INTRODUCTION TO PROGRAMMING PRINCIPLES
Addresses modern programming and provides students with experience in at least one primary high-level programming language. Students will experience solving problems using computer programming. Students will study the program development cycle, modular design, style, syntax and semantics. (This course is designed for non-computer science majors. Does not count toward total hours required for MS in Computer Science. Does not count as computer science foundation course.) Spring.

COSC 5308. 3 sem. hrs. (3:0)
FOUNDATIONS IN NETWORK DESIGN AND MANAGEMENT
A broad-based introduction to the fundamentals and all major aspects involved in planning, implementing and managing a local area network (LAN). Both logical and physical LAN technologies are covered including media options, physical topologies, network architectures and communication protocols. Functions of network operating systems are studied and compared to current marketplace products. (Does not count toward total hours required for MS in Computer Science.) Fall.

COSC 5311. 3 sem. hrs. (3:0)
FOUNDATIONS IN PROGRAMMING AND PROBLEM SOLVING I
A concentrated introductory programming course at the graduate level. Intended for students with little background in computer science who wish to program a computer in support of research or other academic interests. (Does not count toward total hours required for MS in Computer Science.) Fall, Spring.

COSC 5312. 3 sem. hrs. (3:0)
FOUNDATIONS IN PROGRAMMING AND PROBLEM SOLVING II
A continuation of COSC 5311 completing the syntax of the language used as the programming tool in COSC 5311. An introduction to data structures in multiple computing platforms. (Does not count toward total hours required for MS in Computer Science.) Prerequisite: COSC 5311. Fall, Spring, Summer.

COSC 5313. 3 sem. hrs. (3:0)
FOUNDATIONS OF COMPUTER ORGANIZATION AND ARCHITECTURE
A study of internal computer concepts with respect to the functioning of the hardware subsystems and their roles in the computing process. An in-depth study of machine and assembly language. (Does not count toward total hours required for MS in Computer Science.) Prerequisite: COSC 5311 or Permission of Instructor. Fall, Spring.

COSC 5320. 3 sem. hrs. (3:0)
DESIGN AND IMPLEMENTATION OF COMPUTERIZED INSTRUCTIONAL SYSTEMS
Provides a broad introduction to the development of computer-based learning environments. Covers the theory and practice of using the computer both in the classroom and individually for learning. Covers a wide range of possibilities from multimedia presentation of material to constructive environments and computer-based instructional systems. Prerequisite: Permission of the Instructor. (Does not count toward total hours required for MS in Computer Science.) Summer.

COSC 5321. 3 sem. hrs. (3:0)
DATA STRUCTURES
A study of the logical structures used for the organization, storage and retrieval of data. These structures are addressed from both memory-resident and file-resident points of view. Algorithms for the creation, searching, and manipulation of standard data structures used in computing are stressed. (Does not count toward total hours required for MS in Computer Science.) Prerequisite: COSC 5311. Co-requisites: MATH 2305; COSC 5312. Fall, Spring.

COSC 5328. 3 sem. hrs. (3:0)
COMPUTER GRAPHICS
This course covers advanced computer graphics techniques. Students will be introduced to state-of-the-art methods in computer graphics. This course will focus on techniques for real-time rendering and animation. Prerequisite: COSC 4328 or equivalent. Spring.

COSC 5330. 3 sem. hrs. (3:0)
PROGRAMMING LANGUAGES
A study of the classification, design and structure of programming languages. Data, control, and modular abstraction facilities are considered for a variety of languages. Prerequisites: COSC 5331 and MATH 2305. Spring.

COSC 5331. 3 sem. hrs. (3:0)
FOUNDATIONS OF COMPUTER SYSTEM SOFTWARE
A study of various system software components such as operating systems and language processors. The general underlying design philosophies, implementation approaches, and uses are discussed primarily with respect to the interface role provided by the software between programmers or users and the hardware. (Does not count toward total hours required for MS in computer science.) Prerequisite: COSC 5311. Co-requisite: COSC 5321. Fall.

COSC 5334. 3 sem. hrs. (3:0)
DESIGN AND ANALYSIS OF ALGORITHMS
An advanced course that concentrates on the design and analysis of algorithms used to solve a variety of problems. The methods of design covered include such topics as: divide-and-conquer, the greedy method, dynamic programming, search and traversal techniques, and backtracking. Prerequisites: COSC 5321, MATH 2413, and MATH 2305. Spring.

COSC 5335. 3 sem. hrs. (3:0)
FOUNDATIONS OF DATABASES
A study of fundamental database management system concepts, terminology, and methodology for design and
implementation. Commercially available systems are discussed and used with emphasis upon the relational model. Proper application design techniques are stressed. (Does not count toward total hours required for MS in computer science.) Prerequisite: COSC 5312. Co-requisite: COSC 5321. Fall.

COSC 5336. 3 sem. hrs. (3:0) DATABASE MANAGEMENT SYSTEMS
A study of contemporary database management concepts. Performance (indexing, query optimization, update optimization), concurrency, security and recovery issues are discussed. Also includes the study of front-end environments that access the database. Prerequisites: COSC 5335 and COSC 5321. Spring.

COSC 5340. 3 sem. hrs. (3:0) HUMAN-COMPUTER INTERACTION
Graduate-level survey of the field of Human-Computer Interaction (HCI) focusing on design strategies for making software usable by real-world people for doing real-world work. Topics include the role of HCI in the software product life cycle, task analysis of the user’s work, architectures for human-computer dialogues, new and traditional approaches to user interface design, and user interface standards. Prerequisite: COSC 5331. Spring.

COSC 5345. 3 sem. hrs. (3:0) SYSTEM SIMULATION AND MODELING
A study of the simulation and modeling of selected continuous and discrete systems. Prerequisites: COSC 5311, MATH 2413, and MATH 3342. Spring.

COSC 5348. 3 sem. hrs. (3:0) EXPERT SYSTEMS
The overall goal of the course is to give the student the ability to design and program small expert systems while building a base for advanced study. Topics include programming techniques for expert systems, the design and construction of expert systems, the representation of knowledge, methods of inference, reasoning under uncertainty, inexact reasoning, classification, configuration, and diagnostic systems. Prerequisite: COSC 5321. Spring.

COSC 5350. 3 sem. hrs. (3:0) ADVANCED TOPICS IN DBMS
The study of emerging database technologies. Topics are chosen from data warehousing, distributed databases, spatial databases and web-based applications. Prerequisites: COSC 5336. Offered on sufficient demand.

COSC 5351. 3 sem. hrs. (3:0) ADVANCED COMPUTER ARCHITECTURE
An overview of computer architecture, which stresses the underlying design principles and the impact of these principles on computer performance. General topics include design methodology, processor design, control design, memory organization, system organization, and parallel processing. Prerequisite: COSC 5331. Fall.

COSC 5352. 3 sem. hrs. (3:0) ADVANCED OPERATING SYSTEMS
A study of operating system concepts, principles, and design. Techniques for managing memory, processors, devices and files are covered. Selected existing operating systems are discussed and contrasted. Prerequisite: COSC 5331. Spring.

COSC 5353. 3 sem. hrs. (3:0) COMPILER DESIGN AND CONSTRUCTION
This course introduces the basic concepts and mechanisms traditionally employed in language translators, with emphasis on compilers. Topics include strategies for syntactic and semantic analysis, techniques of code optimization and approaches toward code generation. Prerequisites: COSC 5330 and MATH 2305. Fall.

COSC 5354. 3 sem. hrs. (3:0) ARTIFICIAL INTELLIGENCE
Fundamental concepts and techniques for the design of computer-based, intelligent systems. Topics include: a brief history, methods for knowledge representation, heuristic search techniques, programming in LISP or Prolog. Prerequisite: COSC 5321 and MATH 2305. Fall.

COSC 5355. 3 sem. hrs. (3:0) DATA COMMUNICATIONS AND NETWORKING
Areas studied include principles of computer-based communication systems, analysis and design of computer networks, and distributed data processing. Prerequisite: COSC 5331. Fall.

COSC 5356. 3 sem. hrs. (3:0) THEORY OF COMPUTATION
An introduction to some of the theoretical foundations of modern computing. Topics include finite state machine concepts, formal grammars, and basic computability concepts. Prerequisites: COSC 5321 and MATH 2305. Summer.

COSC 5360. 3 sem. hrs. (3:0) PARALLEL COMPUTING
Survey of the models of concurrent processing. The corresponding concurrent programming languages and computer architectures are studied. Topics include processor interconnection and communication, concurrent algorithms and applications, algorithm performance, and concurrent programming. Prerequisite: COSC 5331. Fall.

COSC 5370. 3 sem. hrs. (3:0) ADVANCED SOFTWARE ENGINEERING
Areas studied include engineering principles and their application to the design, development, testing, and maintenance of large software systems, tools and processes for managing the complexities inherent in creating and maintaining large software systems. Prerequisite: COSC 5321 or equivalent. Fall.

COSC 5374. 3 sem. hrs. (3:0) COMPUTER FORENSICS
This course will introduce students to the fundamentals of computer forensics and various software tools used in cyber-crime analysis. Students will be introduced to established methodologies for conducting computer forensic investigations, as well as to emerging international standards for computer forensics. Applicable laws and regulations dealing with computer forensic analysis will also be discussed. Prerequisite: COSC 5312. Spring.

COSC 5375. 3 sem. hrs. (3:0) INFORMATION ASSURANCE
An introduction to information security and assurance. This course covers the basic notions of confidentiality,
integrity, availability, authentication models, protection models, secure programming, audit, intrusion detection and response, operational security issues, physical security issues, personnel security, policy formation and enforcement, access controls, information flow, legal and social issues, classification, trust modeling, and risk assessment. Prerequisite: COSC 5312 or approval of the Instructor. Fall.

COSC 5376 3 sem. hrs. (3:0)  
NETWORK SECURITY  
This course is a study of networking basics and security essentials with respect to information services provided over a computer network. The course covers the technical details of security threats, vulnerabilities, attacks, policies, and countermeasures such as firewalls, honeypots, intrusion detection systems, and cryptographic algorithms for confidentiality and authentication and the development of strategies to protect information services and resources accessible on a computer network. Prerequisites: COSC 5375 and approval of the Instructor. Spring.

COSC 5377 3 sem. hrs. (3:0)  
APPLIED CRYPTOGRAPHY  
This course includes an introduction to cryptographic algorithms and protocols for encrypting information securely, techniques for analyzing vulnerabilities of protocols, approaches to digital signatures and information digests, and implementation approaches for the most significant cryptographic methodologies. Prerequisite: COSC 5312 or approval of the instructor. Fall.

COSC 5379 3 sem. hrs. (3:0)  
ADVANCED INFORMATION ASSURANCE  
This course encompasses a broad range of topics involving information security, communications security, network security, risk analysis, operational security, health information privacy, criminal justice digital forensics, homeland security, the human element and social engineering, and applicable national and international laws. An in-depth information assurance capstone project or research paper will be required of each student to satisfy the information assurance graduate option requirements. Prerequisites: COSC 5376. Fall.

COSC 5381 3 sem. hrs. (3:0)  
CADASTRAL INFORMATION SYSTEMS  
A review of the evolution of European cadastral systems and land records traditions and alternatives. Examination of the goals and purposes of land tenure systems with attention to social, political, legal, economic, organizational, and technical issues. Exploration of U.S. modernization efforts and the problems of developing countries. Prerequisites: GISC 5300 and GISC 5301.

COSC 5382 3 sem. hrs. (3:0)  
POLICY AND LEGAL ASPECTS OF SPATIAL INFORMATION SYSTEMS  
A study of the current and emerging status of computer law in electronic environments. Covers issues related to: privacy, freedom of information, confidentiality, copyright, and legal liability; the impact of statute and case law on use of digital databases and spatial databases; and research of legal options of conflicts related to spatial data. Prerequisites: GISC 5300 and GISC 5301.

COSC 5383 3 sem. hrs. (3:0)  
DIGITAL SURFACE MODELS  
This course will provide an in-depth examination of digital surface models (DSMs) with an emphasis on digital terrain models (DTMs). The theory of DSMs will include data acquisition, type of surface or terrain, point distribution and density, interpolation procedures, data output, and applications of DSMs. Topics covered will include digital elevation models (DEMs), vertical datums, accuracy standards, enabling technologies, quality assessment and user requirements with an introduction to terrain analysis. Prerequisites: GISC 5300 and GISC 5301. Fall.

COSC 5384 3 sem. hrs. (3:0)  
GENERALIZATION OF TOPOGRAPHIC MAPS  
This course will cover principles of advanced cartographic generalization including cartometric evaluation and spatial and attribute transformations. Topics include an overview of vector based and raster based generalization and the mathematical foundations of topographic map design and generalization. Prerequisites: GISC 5300 and GISC 5301.

COSC 5385 3 sem. hrs. (3:0)  
ANALYTICAL AND DIGITAL PHOTOGRAMMETRY  
A study of the mathematical and geometric models of modern photogrammetry. Covers principles of stereoscopic vision, collinearity, epipolarity, epipolar geometry, ground control densification and extension by analytical aerotriangulation. Explores automation in photogrammetric procedures - digital aerotriangulation, automated data capture. Prerequisite: GISC 5300 and GISC 5301.

COSC 5386 3 sem hrs. (3:0)  
SEMINAR PROBLEMS IN REMOTE SENSING OF THE ENVIRONMENT  
Advanced problems in photo interpretation, photogrammetry and remote sensing within a GIS. Topics include utilization of expert computer systems, knowledge based environmental modeling, macro languages and spatial modeling languages. Operations and laboratories will cover mathematical operations on raster layers, convolution filtering, neighborhood analysis, principal components, proximity, contiguity and descriptor table manipulation. Capstone project includes the development of a remote sensing of the environment software program with a graphical user interface. Prerequisites: GISC 5300 and GISC 5301.

COSC 5387 3 sem. hrs. (3:0)  
DESIGN AND ANALYSIS OF GIS APPLICATIONS  
An advanced course that concentrates on the design and analysis of the development of GIS software. Course will utilize “Active X” map objects within JAVA, VB, Delphi or C++. Covers basic operation in GIS software design and software engineering procedures for final product distribution. Development of final product with associated data distributions files for stand alone, imbedded and web enabled applications. Prerequisites: GISC 5300 and GISC 5301.
Engineering Technology

Graduate courses in engineering technology are offered in support of graduate degree programs in computer science, environmental science and education. For details concerning these particular degree programs, consult the appropriate section of the catalog.

For Additional Information

Web site: http://entc.tamucc.edu/
Campus address: Science and Technology, Room ST 222, phone (361) 825-5849
Mailing address: Engineering Technology Program, Unit 5797
College of Science and Technology
Texas A&M University-Corpus Christi
6300 Ocean Drive, Corpus Christi, Texas 78412-5797

GRADUATE COURSES

ENTC 5490. 1-4 sem. hrs.
SELECTED TOPICS
Subject material variable. May be repeated for credit when topics are different. Prerequisites: Vary depending upon topic.

ENTC 5496. 1-4 sem. hrs.
DIRECTED INDEPENDENT STUDY
Requires a formal proposal of study to be completed in advance of registration, approval of supervising faculty, and chairperson. Prerequisites: Vary depending upon subject area.