

DEPARTMENT OF COMPUTER ENGINEERING

The Department of Computer Engineering offers a Doctor of Philosophy degree in Computer Engineering, a Master of Science degree in Computer Engineering, an Integrated Bachelor of Science/Master of Science program in Computer Engineering, and a Master of Science degree in Artificial Intelligence (through the College of AI, Cyber and Computing).

Degree-Specific Requirements

All program requirements should be unchanged from previous versions of the 2025-2027 Graduate Catalog. To confirm your degree requirements, you can visit DegreeWorks (<https://dworkswebprod.sis.utsa.edu/>) or consult your Graduate Advisor of Record.

- M.S. in Artificial Intelligence (p. 1)
- M.S. in Computer Engineering (p. 1)
 - Integrated Bachelor's/Master's Program (p. 2)
- Ph.D. in Computer Engineering (p. 3)

Master of Science Degree in Artificial Intelligence

UT San Antonio offers a graduate-studies program leading to the Master of Science degree in Artificial Intelligence. This program is administered by the College of AI, Cyber and Computer. Please refer to the College of AI, Cyber and Computer (<https://catalog.utsa.edu/graduate/aicybercomputing/>) section of this catalog for details about this program.

Master of Science Degree in Computer Engineering

The Master of Science degree in Computer Engineering is designed to offer students the opportunity to prepare for leadership roles in careers with industry, government, or educational institutions. Students enrolled in the M.S. degree program in Computer Engineering will have two options to obtain their degrees: (1) Thesis Option and (2) Non-Thesis Option. A thesis option is offered for students who want the opportunity to obtain expertise in research and who may be interested in pursuing a doctoral degree in computer engineering or electrical engineering. A non-thesis option is offered for students who want a practical industrial applications-oriented degree.

Program Admission Requirements

In addition to the University-wide graduate admission requirements, admission decisions will be based on a combination of the following:

- A bachelor's degree in electrical or computer engineering, or in related fields for exceptional candidates.
- A minimum grade point average of 3.0 in the last 60 semester credit hours of undergraduate studies.
- Students whose native language is not English must achieve a minimum score of 79 on the Test of English as a Foreign Language (TOEFL) iBT or 6.5 on the International English Language Testing System (IELTS).

Submission of the Graduate Record Examination (GRE) is optional but recommended for consideration of competitive scholarships. A student

who does not qualify for unconditional admission may be admitted on a conditional basis, as determined by the Computer Engineering Graduate Studies Committee. Applicants with an electrical or computer engineering background who wish to continue their education but do not intend to pursue the Master of Science degree in Computer Engineering are encouraged to seek admission as special graduate students.

Degree Requirements

The minimum number of semester credit hours required for the degree is 30 for the thesis option and 33 for the non-thesis option.

The courses are divided into three groups as follows:

Thesis Option

Code	Title	Credit Hours
A. Select any two core courses from Group A		6
Group A. The following four core courses of this group form the basis for the program:		
EE 5103	Engineering Programming	
EE 5113	VLSI System Design	
EE 5123	Computer Architecture	
EE 5193	FPGA and HDL	
B. Additional computer engineering courses from Group A or B (must include 1 semester credit hour of EE 6991 Research Seminar) ¹		12
Group B. Additional computer engineering courses:		
CS 5103	Software Engineering	
EE 5163	Digital Signal Processing	
EE 5223	Topics in Digital Design (may be repeated when topic varies)	
EE 5293	Topics in Microelectronics (may be repeated when topic varies)	
EE 5323	Topics in VLSI Design (may be repeated when topic varies)	
EE 5353	Topics in Multimedia Signal Processing (only Topic 1 and Topic 2)	
EE 5423	Topics in Computer Architecture (may be repeated when topic varies)	
EE 5453	Topics in Software Engineering (may be repeated when topic varies)	
EE 5523	Introduction to Cloud Computing	
EE 6991	Research Seminar	
CPE 6953	Independent Study	
or CPE 6952	Independent Study	
or CPE 6951	Independent Study	
C. Elective courses from Group A or B or C ¹		6
Group C. Free elective courses: any graduate-level electrical engineering course and the following courses		
CS 5113	Computer Graphics	
CS 5233	Artificial Intelligence	
CS 5363	Programming Languages and Compilers	
CS 5523	Operating Systems	
D. Master's Thesis (a minimum of 6 semester credit hours)		6
CPE 6983	Master's Thesis	
Total Credit Hours		30

¹ Chosen with approval of the Computer Engineering Graduate Program Committee.

Non-Thesis Option

Code	Title	Credit Hours
A. Select any two core courses from Group A		6
Group A. The following four core courses of this group form the basis for the program:		
EE 5103	Engineering Programming	
EE 5113	VLSI System Design	
EE 5123	Computer Architecture	
EE 5193	FPGA and HDL	
B. Additional computer engineering courses from Group A or B (must include 1 semester credit hour of EE 6991 Research Seminar) ¹		15
Group B. Additional computer engineering courses:		
CS 5103	Software Engineering	
EE 5163	Digital Signal Processing	
EE 5223	Topics in Digital Design (may be repeated when topic varies)	
EE 5293	Topics in Microelectronics (may be repeated when topic varies)	
EE 5323	Topics in VLSI Design (may be repeated when topic varies)	
EE 5353	Topics in Multimedia Signal Processing (only Topic 1 and Topic 2)	
EE 5423	Topics in Computer Architecture (may be repeated when topic varies)	
EE 5453	Topics in Software Engineering (may be repeated when topic varies)	
EE 5523	Introduction to Cloud Computing	
EE 6991	Research Seminar	
CPE 6953	Independent Study	
or CPE 6952	Independent Study	
or CPE 6951	Independent Study	
C. Elective courses from Group A or B or C ¹		9
Group C. Free elective courses: any graduate-level electrical engineering course and the following courses		
CS 5113	Computer Graphics	
CS 5233	Artificial Intelligence	
CS 5363	Programming Languages and Compilers	
CS 5523	Operating Systems	
D. Master's Project (a minimum of 3 semester credit hours)		3
CPE 6943	Graduate Project	
Total Credit Hours		33

¹ Chosen with approval of the Computer Engineering Graduate Program Committee.

One (1) credit hour of EE 6991 Research Seminar is required for both the thesis and non-thesis options, and up to two (2) credit hours of EE 6991 can be included. No more than three (3) credit hours of independent study can be included.

Degree plans must be consistent with the guidelines established by the Computer Engineering Graduate Program Committee. In general, undergraduate courses, general education courses, and courses satisfying provisional conditions for admission cannot be counted toward the total required degree credit hours.

Comprehensive Examination

Non-thesis degree candidates are required to submit a written report upon the completion of their Graduate Project to the student's advisory committee, chaired by a tenured or tenure-track graduate faculty member. In addition, an oral presentation of the project may be mandated by the advisory committee. Thesis degree candidates are required to pass an oral comprehensive examination that is administered in the form of a presentation of the thesis research to the student's advisory committee, chaired by a tenured or tenure-track graduate faculty member. Students must register for one semester credit hour of comprehensive examination for the semester in which the examination is to be taken, if they are not enrolled in other courses.

Integrated Bachelor of Science/Master of Science Program

The integrated B.S./M.S. (Bachelor of Science and Master of Science) program administered by the Department of Electrical Engineering and the Department of Computer Engineering is designed to make it possible for highly motivated and qualified B.S. students to obtain both an undergraduate degree and an advanced degree within an accelerated timeline. Through this program, motivated B.S. students can start working with their faculty advisors on research projects as early as in their senior year.

Program Admission Requirements

Applications to the B.S./M.S. program must be submitted after the completion of 75 semester credit hours of coursework.

The B.S./M.S. program applicants must have a minimum of 3.3 for both cumulative and major grade point averages. To apply for the program, students need to:

- Apply online under the category of Integrated B.S./M.S. (B.S. in Electrical Engineering or Computer Engineering, and M.S. in Electrical Engineering, Computer Engineering, or Advanced Materials Engineering); and
- Submit an official UT San Antonio transcript.

Submission of both recommendation letters and a personal statement is optional but highly recommended for consideration of scholarships.

Degree Requirements

B.S. Degree requirement: The current undergraduate degree programs in Electrical Engineering and Computer Engineering require 126 semester credit hours for completion, with fifteen of these hours (five 3-hour courses) as technical electives. Students accepted into the Integrated B.S./M.S. program will be required to complete 120 undergraduate credit hours and 6 graduate credit hours to replace two of the five undergraduate technical elective courses toward the B.S. degree. Undergraduate students wishing to voluntarily withdraw from the Integrated B.S./M.S. program must use a combination of five undergraduate technical electives and graduate organized courses to satisfy the original 126-hour regular degree program requirement in order to receive their B.S. degree. Students continuing on in the Integrated B.S./M.S. program will receive their B.S. degrees once they have earned 120

undergraduate credit hours and 6 credit hours of graduate organized courses. The 6 graduate credit hours taken as an undergraduate will be counted toward the M.S. degree requirement.

M.S. Degree requirement: A student enrolled in the Integrated B.S./M.S. program can graduate by completing requirements for a thesis or nonthesis (project) option.

(i) Thesis Option: Students must complete 30 credit hours, including 6 hours of thesis work.

(ii) Nonthesis Option: Students must complete 33 credit hours, including 3 hours of project work.

B.S./M.S. Classification

Once admitted to the Integrated B.S./M.S. program, students are allowed to take graduate courses as undergraduate students. Students admitted to the Integrated B.S./M.S. program will be reclassified from undergraduate to graduate student status when they have completed 126 semester credit hours of coursework (of any combination of graduate and undergraduate hours) toward their degrees. B.S./M.S. students can receive their B.S. degree upon completion of 126 semester credit hours, including two graduate courses, at which point the program will certify the student's eligibility to receive the B.S. degree and request the Graduate School to change the student status in the Student Information System.

Doctor of Philosophy Degree in Computer Engineering

A Doctor of Philosophy (Ph.D.) degree in Computer Engineering is an advanced research degree that focuses on the development and enhancement of computer systems, hardware, and software. Ph.D. candidates work closely with faculty advisors and often contribute to cutting-edge advancements in technology, including innovations in computer architecture, VLSI design, artificial intelligence, cybersecurity, and network systems.

Admission Requirements

The minimum requirements for admission to the Ph.D. in Computer Engineering degree program are as follows:

- A student is expected to hold a master's or bachelor's degree in Electrical Engineering or Computer Engineering before being granted admission to the program.
- Applicants must have a grade point average of 3.0 or better in their completed bachelor's (last 60 hours of coursework) or master's degree program;
- Students with degrees in related areas, including Computer Science, will be admitted to the program on a case-by-case basis. The transcripts of these students will be evaluated by the Doctoral Studies Committee (DSC) for Computer Engineering and, if needed, additional courses may be recommended as a condition for admission;
- Applicants who are transferring coursework from another institution or applicants admitted without an earned master's degree in Electrical or Computer Engineering may apply a maximum of 27 semester credit hours of previously earned graduate credits toward their doctoral degree. Each student's transcript will be evaluated by the DSC, and credits will be designated on a course-by-course basis to satisfy the formal coursework requirements of the degree;

- Students whose native language is not English must achieve a minimum score of 79 on the Test of English as a Foreign Language (TOEFL) iBT or 6.5 on the International English Language Testing System (IELTS); and
- Letters of recommendation (3) attesting to the applicant's readiness for doctoral study will be required for non-UT San Antonio ECE graduates.

A complete application includes the application form; official transcripts; letters of recommendation (for non-UT San Antonio ECE graduates); a résumé; a statement of research experience, interests, and goals; and the TOEFL or IELTS score (for those applicants whose native language is not English). Admission is competitive. Satisfying these requirements does not guarantee admission. Applications must be submitted online to UT San Antonio. Incomplete applications will not be considered.

Degree Requirements and Program of Study

The doctoral program in Computer Engineering requires that students complete a minimum of 54 semester credit hours beyond the master's degree or 81 credit hours beyond the bachelor's degree. The program includes courses that have been designed to provide advanced training in areas considered to form the foundation for the discipline of Computer Engineering, namely Computer Architecture, VLSI Design, and Engineering Programming. It includes 18 credit hours of courses selected among those listed below for each Computer Engineering curriculum area, 36 credit hours of Doctoral Research and Doctoral Dissertation, and 1 semester credit hour of Graduate Seminar. Additional degree requirements include passing a written qualifying examination, writing a doctoral dissertation, and passing a final examination/dissertation defense. Students with only a baccalaureate degree are required to have a minimum of 81 semester credit hours to graduate.

54 Semester Credit Hours beyond the Master's Degree

Code	Title	Credit Hours
A. Core courses:		6
An advanced graduate course (non-laboratory intensive) with a specified core course as prerequisite may be used, upon approval of the Graduate Advisor of Record, to satisfy the given core course requirement, if the student took the core (or equivalent) course for credit in a different degree program or at another institution.		
Select 6 semester credit hours from the following:		
EE 5103	Engineering Programming	
EE 5113	VLSI System Design	
EE 5123	Computer Architecture	
EE 5193	FPGA and HDL	
B. Graduate elective courses		12
1. Required Research Seminar		
At least one semester credit hour of EE 7931 Doctoral Research Seminar is required. EGR 6183 Engineering Education or EGR 6283 Mentored Teaching in Engineering can be taken as a substitute for EE 7931 Doctoral Research Seminar requirement. Up to 3 credit hours total are allowed from EE 7931 Doctoral Research Seminar and either EE 6951 or EE 6952 Independent Study combined.		
EE 7931	Doctoral Research Seminar ¹	
or EGR 6183	Engineering Education Methods	
or EGR 6283	Mentored Teaching in Engineering	
2. Additional Electives		

Select 9-11 additional semester credit hours from section A or the following courses:

EE 5163	Digital Signal Processing
EE 5223	Topics in Digital Design (Graph Theory and Networking)
EE 5223	Topics in Digital Design (Microcomputer-Based Systems)
EE 5223	Topics in Digital Design (PCI System Design)
EE 5263	Advanced Topics in Signal Processing and Machine Learning (AI in Engineering)
EE 5263	Advanced Topics in Signal Processing and Machine Learning (Machine Learning)
EE 5263	Advanced Topics in Signal Processing and Machine Learning (Statistical Inference)
EE 5263	Advanced Topics in Signal Processing and Machine Learning (Deep Learning)
EE 5263	Advanced Topics in Signal Processing and Machine Learning (Brain Inspired AI)
EE 5293	Topics in Microelectronics (Analog IC Design)
EE 5323	Topics in VLSI Design (Advanced VLSI Design)
EE 5323	Topics in VLSI Design (Low Power VLSI Design)
EE 5323	Topics in VLSI Design (VLSI Testing)
EE 5323	Topics in VLSI Design (VLSI Performance Analysis and Optimization)
EE 5423	Topics in Computer Architecture (Parallel and Distributed Computing)
EE 5423	Topics in Computer Architecture (RISC Processor Design)
EE 5423	Topics in Computer Architecture (Superscalar Microprocessor Architecture)
EE 5423	Topics in Computer Architecture (Fault Tolerance and Reliable System Design)
EE 5423	Topics in Computer Architecture (Computer Arithmetic)
EE 5423	Topics in Computer Architecture (Advanced Computer Architecture)
EE 5423	Topics in Computer Architecture (Architecture for Machine Learning)
EE 5423	Topics in Computer Architecture (Engineering Programming II)
EE 5453	Topics in Software Engineering (Large Domain-Specific Software Architectures)
EE 5453	Topics in Software Engineering (Embedded Software Systems Design)
EE 5453	Topics in Software Engineering (Embedded Software Testing and Quality Assurance)
EE 5453	Topics in Software Engineering (Advanced Engineering Programming)
EE 5453	Topics in Software Engineering (Computer & Network Security)
EE 5453	Topics in Software Engineering (IOT Security)

EE 5523	Introduction to Cloud Computing
EE 6931	Graduate Research Internship ²
EE 6932	Graduate Research Internship ²
EE 6933	Graduate Research Internship ²
EE 6951	Independent Study ³
or CPE 6951	Independent Study
EE 6952	Independent Study ³
or CPE 6952	Independent Study
EGR 6183	Engineering Education Methods ⁴
EGR 6283	Mentored Teaching in Engineering ⁴

Students with prior computer engineering industry experiences may be provided up to 6 elective course credits of Graduate Research Internship, depending on their years of experience. To receive this credit, the portfolio of experience will be examined by Computer Engineering Graduate Faculty and comprehensive examinations may be required.

C. Research 18

Select 18 semester credit hours of Doctoral Research courses.

CPE 7951	Doctoral Research
CPE 7952	Doctoral Research
CPE 7953	Doctoral Research

D. Dissertation 18

Select 18 semester credit hours of Doctoral Dissertation courses.

CPE 7991	Doctoral Dissertation
CPE 7992	Doctoral Dissertation
CPE 7993	Doctoral Dissertation

Total Credit Hours 54

81 Semester Credit Hours beyond the Bachelor's Degree

Code	Title	Credit Hours
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A. Core courses 6

Select 6 semester credit hours from the following:

EE 5103	Engineering Programming
EE 5113	VLSI System Design
EE 5123	Computer Architecture
EE 5193	FPGA and HDL

B. Graduate elective courses 39

1. Required Research Seminar

At least one semester credit hour of EE 7931 Doctoral Research Seminar is required. EGR 6183 Engineering Education or EGR 6283 Mentored Teaching in Engineering can be taken as a substitute for EE 7931 Doctoral Research Seminar requirement. Up to 3 credit hours total are allowed from EE 7931 Doctoral Research Seminar and EE 6951 or EE 6952 Independent Study combined.

EE 7931	Doctoral Research Seminar ¹
or EGR 6183	Engineering Education Methods
or EGR 6283	Mentored Teaching in Engineering

2. Additional Electives

Select 36-38 semester credit hours from Section A or the following:

EE 5163	Digital Signal Processing
EE 5223	Topics in Digital Design (Graph Theory and Networking)

EE 5223	Topics in Digital Design (Microcomputer-Based Systems)
EE 5223	Topics in Digital Design (PCI System Design)
EE 5263	Advanced Topics in Signal Processing and Machine Learning (AI in Engineering)
EE 5263	Advanced Topics in Signal Processing and Machine Learning (Machine Learning)
EE 5263	Advanced Topics in Signal Processing and Machine Learning (Statistical Inference)
EE 5263	Advanced Topics in Signal Processing and Machine Learning (Deep Learning)
EE 5263	Advanced Topics in Signal Processing and Machine Learning (Brain Inspired AI)
EE 5293	Topics in Microelectronics (Analog IC Design)
EE 5323	Topics in VLSI Design (Advanced VLSI Design)
EE 5323	Topics in VLSI Design (Low Power VLSI Design)
EE 5323	Topics in VLSI Design (VLSI Testing)
EE 5323	Topics in VLSI Design (VLSI Performance Analysis and Optimization)
EE 5423	Topics in Computer Architecture (Parallel and Distributed Computing)
EE 5423	Topics in Computer Architecture (RISC Processor Design)
EE 5423	Topics in Computer Architecture (Superscalar Microprocessor Architecture)
EE 5423	Topics in Computer Architecture (Fault Tolerance and Reliable System Design)
EE 5423	Topics in Computer Architecture (Computer Arithmetic)
EE 5423	Topics in Computer Architecture (Advanced Computer Architecture)
EE 5423	Topics in Computer Architecture (Architecture for Machine Learning)
EE 5423	Topics in Computer Architecture (Cloud Computing)
EE 5423	Topics in Computer Architecture (Engineering Programming II)
EE 5453	Topics in Software Engineering (Large Domain-Specific Software Architectures)
EE 5453	Topics in Software Engineering (Embedded Software Systems Design)
EE 5453	Topics in Software Engineering (Embedded Software Testing and Quality Assurance)
EE 5453	Topics in Software Engineering (Advanced Engineering Programming)
EE 5453	Topics in Software Engineering (Computer & Network Security)
EE 5453	Topics in Software Engineering (IOT Security)
EE 6931	Graduate Research Internship ²
EE 6932	Graduate Research Internship ²
EE 6933	Graduate Research Internship ²

EE 6951	Independent Study ³
or CPE 6951	Independent Study
EE 6952	Independent Study ³
or CPE 6952	Independent Study
EGR 6183	Engineering Education Methods ⁴
EGR 6283	Mentored Teaching in Engineering ⁴
Students with prior computer engineering industry experiences may be provided up to 6 elective course credits of Graduate Research Internship, depending on their years of experience. To receive this credit, the portfolio of experience will be examined by Computer Engineering Graduate Faculty and comprehensive examinations may be required.	
C. Research 18	
Select 18 semester credit hours of Doctoral Research courses.	
CPE 7951	Doctoral Research
CPE 7952	Doctoral Research
CPE 7953	Doctoral Research
D. Dissertation 18	
Select 18 semester credit hours of Doctoral Dissertation courses.	
CPE 7991	Doctoral Dissertation
CPE 7992	Doctoral Dissertation
CPE 7993	Doctoral Dissertation
Total Credit Hours 81	

¹ This course must be taken at least once, but no more than 3 credits will apply to the degree.

² No more than 6 semester credit hours of this course will apply to this degree.

³ This course may only be taken if EE 7931 Doctoral Research Seminar has already been taken. No more than 2 semester credit hours of this course will apply to this degree.

⁴ This course may only fulfill the additional electives requirement if it has not already been taken to replace EE 7931 Doctoral Research Seminar.

Advancement to Candidacy

The following describes the steps required in the Computer Engineering Ph.D. program to advance to the Ph.D. candidacy, the dissertation, and the dissertation defense examination. Upon successful completion of the oral qualifying examination, students advance to the Ph.D. candidacy and are allowed to take Doctoral Dissertation credit hours.

Written Qualifying Exam

The written qualifying examination is intended to test the depth of knowledge, critical thinking, and technical writing skills of Computer Engineering doctoral students. Full-time students should take the written qualifying examination by the end of their second semester of study. The exam is offered at the beginning of the Spring and Fall semesters. In order to take the written examination, students must have taken two core courses with a grade point average (GPA) of no less than 3.5. No courses with a GPA of less than 3.0 can be counted to satisfy the knowledge competency. An advanced graduate course (non-laboratory intensive) with a specified core course as a prerequisite may be used, upon the approval of the Graduate Advisor of Record, to satisfy the given core courses requirement if the student took the core (or equivalent) course for credit in a different degree program or at another institution. The written qualifying examination may include questions on fundamentals and applied topics related to the three Computer Engineering technical areas, namely computer architecture, VLSI design, and engineering

programming. Students must be able to answer all the applied questions in their technical area and selected questions from one alternative technical area. In addition, the students may be asked to carry out a critical review of engineering research publications. The written qualifying examination is administered by the Doctoral Studies Committee (DSC) with input from the faculty participating in the program. No more than two attempts to pass the written qualifying examination are permitted. Students who fail the written qualifying examination twice are terminated from the program. The results of the written qualifying examination are reported to the DSC and the Dean of the Graduate School.

Oral Qualifying Exam

Upon successful completion of the written qualifying examination, students are allowed to take Doctoral Research credit hours. Students must take their oral qualifying examination within two semesters after passing their written qualifying examination. The oral qualifying examination is a dissertation proposal defense. The dissertation proposal should describe the topic, the literature review, the proposed methodology, and the experimental approach, as well as highlight the novelty and potential contribution of the topic to the scientific field. The student's Dissertation Committee chair must approve the student's research proposal before scheduling the oral examination. No more than two attempts to pass the oral qualifying examination are permitted. Students who fail the oral qualifying examination twice are terminated from the program. The results of the oral qualifying examination are reported to the DSC and the Dean of the Graduate School.

Final Oral Dissertation Defense

Candidates must demonstrate their ability to conduct independent research by completing an original dissertation. The Dissertation Committee guides, critiques, and finally approves the candidate's dissertation proposal. The format of the dissertation must follow the doctoral degree regulations of the Graduate School as documented in the Graduate Catalog. The final oral defense consists of a public presentation of the dissertation work by the doctoral candidate followed by a question/answer period by his/her Dissertation Committee. Results of the oral defense are reported to the Dean of the Graduate School. Awarding of the degree is based on the approval of the candidate's Dissertation Committee and the recommendation of the Dean of the Graduate School, who certifies the completion of all University-wide requirements.

Computer Engineering (CPE) Courses

CPE 6941. Graduate Project. (0-0) 1 Credit Hour.

Prerequisite: Consent of the Graduate Advisor of Record and Project Advisor. A semester-long project with approval of a supervising faculty. Credit will be awarded upon successful submission of a written report. May be repeated for credit, but not more than 3 hours will apply to the Master's degree. Enrollment is required each term in which the project is in progress. This course has Differential Tuition.

CPE 6942. Graduate Project. (0-0) 2 Credit Hours.

Prerequisite: Consent of the Graduate Advisor of Record and Project Advisor. A semester-long project with approval of a supervising faculty. Credit will be awarded upon successful submission of a written report. May be repeated for credit, but not more than 3 hours will apply to the Master's degree. Enrollment is required each term in which the project is in progress. This course has Differential Tuition.

CPE 6943. Graduate Project. (0-0) 3 Credit Hours.

Prerequisite: Consent of the Graduate Advisor of Record and Project Advisor. A semester-long project with approval of a supervising faculty. Credit will be awarded upon successful submission of a written report. May be repeated for credit, but not more than 3 hours will apply to the Master's degree. Enrollment is required each term in which the project is in progress. This course has Differential Tuition.

CPE 6951. Independent Study. (0-0) 1 Credit Hour.

Prerequisite: Graduate standing and permission in writing (form available) from the instructor and the Graduate Advisor of Record. Independent reading, research, discussion, and/or writing under the direction of a faculty member. For students needing specialized work not normally or not often available as part of the regular course offerings. May be repeated for credit, but not more than 6 hours, regardless of discipline, will apply to the degree. This course has Differential Tuition.

CPE 6952. Independent Study. (0-0) 2 Credit Hours.

Prerequisite: Graduate standing and permission in writing (form available) from the instructor and the Graduate Advisor of Record. Independent reading, research, discussion, and/or writing under the direction of a faculty member. For students needing specialized work not normally or not often available as part of the regular course offerings. May be repeated for credit, but not more than 6 hours, regardless of discipline, will apply to the degree. This course has Differential Tuition.

CPE 6953. Independent Study. (0-0) 3 Credit Hours.

Prerequisite: Graduate standing and permission in writing (form available) from the instructor and the Graduate Advisor of Record. Independent reading, research, discussion, and/or writing under the direction of a faculty member. For students needing specialized work not normally or not often available as part of the regular course offerings. May be repeated for credit, but not more than 6 hours, regardless of discipline, will apply to the degree. This course has Differential Tuition.

CPE 6981. Master's Thesis. (0-0) 1 Credit Hour.

Prerequisite: Consent of the Graduate Advisor of Record and thesis director. Thesis research and preparation. May be repeated for credit, but not more than 6 hours will apply to the Master's degree. Credit will be awarded upon completion of the thesis. Enrollment is required each term in which the thesis is in progress. This course has Differential Tuition.

CPE 6982. Master's Thesis. (0-0) 2 Credit Hours.

Prerequisite: Consent of the Graduate Advisor of Record and thesis director. Thesis research and preparation. May be repeated for credit, but not more than 6 hours will apply to the Master's degree. Credit will be awarded upon completion of the thesis. Enrollment is required each term in which the thesis is in progress. This course has Differential Tuition.

CPE 6983. Master's Thesis. (0-0) 3 Credit Hours.

Prerequisite: Consent of the Graduate Advisor of Record and thesis director. Thesis research and preparation. May be repeated for credit, but not more than 6 hours will apply to the Master's degree. Credit will be awarded upon completion of the thesis. Enrollment is required each term in which the thesis is in progress. This course has Differential Tuition.

CPE 7951. Doctoral Research. (0-0) 1 Credit Hour.

Prerequisite: Ph.D. student standing and consent of instructor and the Graduate Advisor of Record. May be repeated for a maximum credit of 18 hours. This course has Differential Tuition.

CPE 7952. Doctoral Research. (0-0) 2 Credit Hours.

Prerequisite: Ph.D. student standing and consent of instructor and the Graduate Advisor of Record. May be repeated for a maximum credit of 18 hours. This course has Differential Tuition.

CPE 7953. Doctoral Research. (0-0) 3 Credit Hours.

Prerequisite: Ph.D. student standing and consent of instructor and the Graduate Advisor of Record. May be repeated for a maximum credit of 18 hours. This course has Differential Tuition.

CPE 7991. Doctoral Dissertation. (0-0) 1 Credit Hour.

Prerequisite: Consent of the Doctoral Advisor of Record and Dissertation Advisor. May be repeated for a maximum credit of 18 hours. This course has Differential Tuition.

CPE 7992. Doctoral Dissertation. (0-0) 2 Credit Hours.

Prerequisite: Consent of the Doctoral Advisor of Record and Dissertation Advisor. May be repeated for a maximum credit of 18 hours. This course has Differential Tuition.

CPE 7993. Doctoral Dissertation. (0-0) 3 Credit Hours.

Prerequisite: Consent of the Doctoral Advisor of Record and Dissertation Advisor. May be repeated for a maximum credit of 18 hours. This course has Differential Tuition.