FAU

FLORIDA ATLANTIC UNIVERSITY

PROGRAM CHANGE REQUEST
Graduate Programs

Department Compute and Electrical Eng. and Comp Sci.

College Engineering and Computer Science

UGPC Approval _____
UFS Approval _____
Banner Posted _____
Catalog _____

Program Name	Effective Date (TERM & YEAR)
PhD in Computer Science, PhD in Computer Engineering, PhD in Electrical Engineering	Fall 2017

Please explain the requested change(s) and offer rationale below or on an attachment

This proposal updates the catalog:
- waive GRE for PhD applicants that have a MS degree without thesis from FAU CEECS with GPA at least 3.8 and for PhD applicants that have a MS degree with thesis from FAU CEECS with GPA at least 3.7

Faculty Contact/Email/Phone

Dr. Mihaela Cardei
CEECS Department
mcardei@fau.edu

Consult and list departments that may be affected by the change(s) and attach documentation
NA

Approved by		Date
Department Chair	*(signature)*	01/23/2017
College Curriculum Chair	*(signature)*	1-23/2017
College Dean	*(signature)*	1/24/2017
UGPC Chair		
Graduate College Dean		
UFS President		
Provost		

Email this form and attachments to UGPC@fau.edu one week before the UGPC meeting so that materials may be viewed on the UGPC website prior to the meeting.

FAUprogramchangeGR, created August 2016

Doctor of Philosophy with Major in Computer Engineering or in Computer Science

The department offers a program of advanced graduate study leading to the Doctor of Philosophy degrees in Computer Engineering and in Computer Science. The graduate of this program will be able to meet the highest standards of preparation for leadership in the computer science or engineering profession, including research, teaching and leadership in high-technology industry and governmental agencies. A Ph.D. Applicant's Guide is available from the department.

Admission Requirements
Application for admission to doctoral study will be evaluated on an individual basis by the department's graduate programs committee. Usually, the following four criteria must be met:

1. The applicant should have a combined score (verbal + quantitative) of at least 300 on the Graduate Record Examination (GRE) and a GPA of at least 3.3 (out of 4.0 maximum) in previous graduate work. GRE scores more than five years old are normally not acceptable. The GRE requirement is waived for any student who has a MS degree without thesis from FAU CEECS with GPA at least 3.8 and for any student who has a MS degree with thesis from FAU CEECS with GPA at least 3.7.

2. The applicant must have a master's degree in Engineering, Computer Science or a related discipline awarded by a recognized institution. Thesis option is preferred. This requirement may be waived under exceptional circumstances (see B.S. to Ph.D. programs earlier in the College of Engineering and Computer Science section of the catalog).

3. The applicant must provide three reference letters (at least two from academia) that address the student's research potential, motivation, relative academic achievement and personality. Forms are supplied with applications for admission.

4. Applicants whose native language is not English must produce evidence of proficiency in written and spoken English. A score of 213 or more on the Test of English as a Foreign Language (TOEFL) is considered satisfactory.

Qualifying Examination
Note: The qualifying exams for the Ph.D. in Computer Science and Computer Engineering are the same except for the course selections (see the application form).

The qualifying exam is a written exam intended to assess whether or not a student is ready to conduct research at the doctoral level and is able to publish in international conferences and journals. The exam must be passed for formal admission into the doctoral program. Students seeking the Ph.D. degree are expected to take the exam during the second semester of their doctoral studies, excluding the summer semester.

The exam addresses the student's knowledge of graduate and undergraduate course material and basic mathematical concepts and engineering methods required for research and professional practice at the doctoral level. The exam consists of six problems (one from each course) related to material covered in recent FAU graduate and undergraduate CS/CE courses. The exam is administered two times a year in the fall and spring semesters. Two 3-hour sessions, morning and afternoon, cover tree courses each. The student can bring three 2-sided pages of notes and a simple calculator to each session, but no books, computers or phones. An overall minimum score of 70 percent or better is required to pass. A student failing the written exam may, upon re-application, take it a second time. Normally two failures will result in the student's dismissal from the Ph.D. program.

Application for Qualifying Exam
Students need to fill out and submit an application for the qualifying exam. In filling out the form, the student should list six courses, at most four of which may be at the graduate level and at least two of which must be at the undergraduate level and selected from one of the lists below. All courses must have been offered by the Department of Computer and Electrical Engineering and Computer Science during the preceding three years (courses from other departments may be accepted if approved by the student's advisor and the graduate committee), but the student may have taken them anywhere or prepared for them on their own. The student will also list a primary area of research and at least one secondary area.

The application must be approved by the student's advisor and then submitted to the graduate committee. Upon approving the application, the graduate committee will arrange for the exam preparation.

Undergraduate courses for Computer Engineering students:

Introduction to Logic Design	CDA 3201C
Introduction to Microprocessor Systems	CDA 3331C
Structured Computer Architecture	CDA 4102
Data Structures and Algorithm Analysis	COP 3530
Computer Operating Systems	COP 4610
Stochastic Models for Computer Science	STA 4821

Undergraduate courses for Computer Science students:

Introduction to Logic Design	CDA 3201C or
Structured Computer Architecture	CDA 4102
Data Structures and Algorithm Analysis	COP 3530
Computer Operating Systems	COP 4610
Design and Analysis of Algorithms	COT 4400
Formal Languages and Automata Theory	COT 4420
Stochastic Models for Computer Science	STA 4821

Admission to Candidacy
Students should apply for candidacy as soon as they become eligible. To be eligible, a student must:

1. Have passed the Qualifying Exam, and

2. Have maintained a minimum of 3.0 GPA in all courses attempted as a doctoral student.

Students may not register for dissertation credits until their admission to candidacy.

Degree Requirements
A minimum of 84 graduate credits (including a minimum of 33 dissertation credits) is required beyond a bachelor's degree. A master's degree in a related field is considered equivalent to 30 credits. A minimum of 21 credits of coursework is required beyond a master's degree. All courses must be approved by the student's advisor. Students lacking proper background may have to take additional courses to make up for the deficiencies. In addition to meeting the course requirement, a doctoral student must pass the Qualifying Examination, complete the dissertation under the supervision of the student's advisor and dissertation committee and pass the oral dissertation examination. Also a written dissertation proposal must be accepted by the dissertation committee at least six months prior to the oral dissertation examination. A doctoral candidate is expected to have at least one research paper published or accepted for publication in a fully refereed conference or journal prior to graduation. Every doctoral student must maintain a Research Portfolio containing research papers (book chapter, conference or journal contributions accepted or published, patents, non-refereed publications) done throughout the student's Ph.D. degree studies. The dissertation will be added to the Research Portfolio prior to graduation. The Portfolio must be approved by a graduate advisor

prior to graduation certification. The following rules apply to the courses taken (beyond the master's degree):

1. Of the 21-credit minimum of coursework, a minimum of 15 credits must be in Computer Science and Engineering courses and a minimum of 15 credits of 6000-level courses must be completed.

2. No more than 3 credits of directed independent study may be used to satisfy the minimum of 21 credits. In that case, the subject matter may not overlap the student's dissertation.

3. A course that is more than 10 years old at the time the degree is awarded cannot be counted toward the degree. This rule does not apply to the courses transferred from the master's degree.

4. A maximum of one 4000-level course may be allowed toward the degree with the approval of the student's advisor. This course must be passed with a minimum grade of "B." The courses taken to make up the deficiencies will not be counted toward the degree.

5. Students must register for a minimum of 33 credits of dissertation.

6. Students must have a GPA of 3.0 (out of 4.0 maximum) or better.

7. All courses in the degree programs must be completed with a grade of "C" or better.

Transfer Credits
Any transfer credits (from other institutions) toward the requirements for the Ph.D. degree must be approved by the department, the College and the University. The transfer credits must correspond to equivalent requirements and performance levels expected for the degree. A maximum of 30 credits can be transferred from a master's degree. In addition to the credits for a master's degree, no more than 6 credits of coursework can be transferred from another institution.

Residency Requirements
After passing the Qualifying Examination, a doctoral student must spend two consecutive semesters at FAU, i.e., must register for a minimum of 9 credits for each of those semesters, and at least one of those semesters must occur while the student holds candidacy status.

Time Limitation
A Ph.D. student who enters the program with a master's degree has no more than 10 years to complete all requirements for the Ph.D. degree.

Dissertation Committee
Students are encouraged to interact with faculty members of the department to select a dissertation advisor and research area/topic for their dissertation. After a student has passed both parts of the Qualifying Examination, a dissertation committee shall be formed to supervise the student's research work. The committee will consist of at least four faculty members who are familiar with the research area, at least three of whom are regular faculty members of the department. At least one member of the committee must be from outside the department (could also be from another institution or industry), and this member should have an academic or professional level compatible with the rest of the committee. The committee is chaired by the student's dissertation advisor. The chair of the committee must be from the department. Students are expected to work in close cooperation with their dissertation committee and to keep the committee members informed about their progress on a regular basis. The dissertation committee should meet with the student at least once a semester to review the progress of the research work.

Dissertation and Oral Defense
The dissertation must be written in the format specified by the Graduate College. A copy of the dissertation must be submitted to the Graduate College for approval of the dissertation format. Dissertations must be defended orally. A dissertation should be submitted to the members of the dissertation committee for their review at least two weeks before the oral defense. After an oral defense, the members of the dissertation committee vote on acceptance or rejection of the dissertation. The committee may also suggest that the student do some additional work so as to make the dissertation acceptable. The decision of the dissertation committee will be reported in the form of a satisfactory/unsatisfactory grade for dissertation credits.

DOCTORAL PROGRAM

Admission Requirements
Applicants for admission to doctoral study will be evaluated on an individual basis by the departmental graduate admissions committee. As a rule, the applicant must have:

1. At least a 3.3 (of a possible 4.0 maximum) grade point average in the last 60 credits attempted in the relevant field;

2. A combined score (verbal + quantitative) of at least 300 on the Graduate Record Examination (GRE). GRE scores more than five years old are normally not acceptable. The GRE requirement is waived for any student who has a MS degree without thesis from FAU CEECS with GPA at least 3.8 and for any student who has a MS degree with thesis from FAU CEECS with GPA at least 3.7.

3. A master's degree in Engineering or a related discipline awarded by a recognized institution (thesis options are preferred);

4. Two reference forms that document the applicant's research potential, motivation, relative academic achievement and personality;

Applicants whose native language is not English must be proficient in written and spoken English as evidenced by a score of 550 or more (CBT-213) on the Test of English as a Foreign Language (TOEFL).

It is possible that access to the program may be limited by available resources in the department.

Admission to Candidacy
To be considered for the doctoral candidacy:

1. The student must pass the Qualifying Examination (QE) administered semiannually by the department. The examination is based on electrical engineering coursework as outlined in the brochure: CEECS/EE Program Ph.D. Qualifying Examination. This QE must be taken by all students after completion of 9 credits of Ph.D. coursework. A student who fails the examination may be allowed a second attempt subject to departmental approval.

2. Following successful completion of the QE, the student must find a qualified faculty member in the department willing to chair the doctoral (dissertation) committee. The dissertation committee chair will then consult with the student to form the complete committee. Working with this dissertation committee chair, the student must complete the official Admission to Candidacy application along with the approved Plan of Study.

Candidacy approval will be based on:

1. The academic record of the student;

2. An approved (tentative) dissertation topic.

A student may not register for dissertation credit until the application for candidacy has been approved.

Degree Requirements
1. A minimum total of 84 credits, including 33 dissertation credits, is required beyond the bachelor's degree level. These must include at least 21 credits of coursework beyond the master's degree. At least 12 of these credits should be taken in the Electrical Engineering program at FAU.

2. No more than two courses at the 4000 level may be taken as part of the overall 84-credit Ph.D. program, limited to the following:

a. No more than one 4000 math course as approved by the CEECS department;
b. No more than one 4000 EE elective from the list of approved courses;
c. No more than one of any 4000-level courses, excluding EE undergraduate core courses.

3. At least 21 credits above the master's program requirement should be at the 5000 and 6000 levels.

4. Specific Focus Area coursework will be required. At least 12 of these credits should be taken in the Electrical Engineering program at FAU.

5. At least 6 credits in courses with math prefix are required as part of coursework beyond the bachelor's degree. These may include EEL 5613, Modern Control; EEE 5502, Digital Processing of Signals; EEL 6482, Electromagnetic Theory 1; EOC 5172, Mathematical Methods in Ocean Engineering 1.

6. A written dissertation proposal must be accepted by the dissertation committee, at least six months prior to defending the dissertation.

7. When the candidate submits the Application for Graduation, he/she must indicate the following as a check list: (a) Date of QE taken and candidacy filed; (b) Date of dissertation proposal presented and approved by the Ph.D. Committee and (c) Status of the Plan of Study.

8. Draft copy of the dissertation must be submitted for review by the Ph.D. Committee at least 15 days prior to the date of defending the dissertation. And the dissertation must be completed and orally defended.

It is expected that all doctoral candidates have at least one research paper published or accepted for publication in a fully refereed conference or journal prior to graduation. A patent relevant to the Ph.D. research topic/dissertation as approved by the U.S. Patent Office with an assigned number can substitute for the journal or conference publication requirement. Every doctoral student must maintain a Research Portfolio containing research papers (book chapter, conference or journal contributions accepted or published, patents, non-refereed publications) done throughout the student's Ph.D. degree studies. The dissertation will be added to the Research Portfolio prior to graduation. The Portfolio must be approved by a graduate advisor prior to graduation certification.

Transfer Credits
Any transfer credit toward requirements for the Ph.D. program must be approved by the department and the University. A maximum of 30 credits (which may include credits taken toward the master's degree with no more than 6 credits for the M.S. thesis) can be transferred into the student's program of study.

Residency Requirements
A student must spend at least two consecutive semesters as a full-time student at Florida Atlantic University registered for a minimum of 9 credits each semester.