FLORIDA ATLANTIC UNIVERSITY™

Graduate Programs—New CERTIFICATE PROGRAM

UGPC APPROVAL _____

UFS APPROVAL _____

CATALOG _____

DEPARTMENT: MATHEMATICAL SCIENCES	COLLEGE: CHARLES E. SCHMIDT COLLEGE OF SCIENCE

PROGRAM NAME:

Graduate Certificate in Cyber Security

EFFECTIVE DATE
(PROVIDE TERM/YEAR)

SPRING 2016

PLEASE EXPLAIN THE REQUESTED CHANGE(S) AND OFFER RATIONALE BELOW AND/OR ATTACHED:

Proposal: A Certificate Program in Cyber Security with Computer Science and Mathematics Tracks jointly offered by the Department of Computer and Electrical Engineering and Computer Science and Department of Mathematical Sciences - to establish a 12 credit Graduate Certificate in Cyber Security. The joint certificate program in Cyber Security has two tracks: Computer Science (CS) and Mathematics (Math).

I. **Tracks**

    A. **Cyber Security Certificate in Computer Science (CS Track)** will be issued to a student admitted to the CS Track Certificate Program if s/he successfully completes four (4) 3-credit courses as follows:
- Core courses: three (3) 3-credit courses from the CS Cyber Security courses listed in the attachment
- Elective course: one (1) 3-credit course from either the Math Cyber Security courses or from the CS Cyber Security courses listed in the attachment.

    B. **Cyber Security Certificate in Mathematics (Math Track)** will be issued to a student admitted to the Math Track Certificate Program if s/he successfully completes four (4) 3-credit courses as follows:
- Core courses: three (3) 3-credit courses from the Math Cyber Security courses listed in the attachment
- Elective course: one (1) 3-credit course from either the CS Cyber Security courses or from the Math Cyber Security courses listed in the attachment.

II. **Curriculum**

    The CS Cyber Security courses and the Math Cyber Security courses are listed in the attachment.

III. **Admission and Completion**

    A. **CS Track**: The certificate program will be open to students who have a BS degree in Computer Science or a related field of Science and Engineering, a GPA of at least 3.0 and must satisfy the prerequisites required for each course in the program. All four courses in the program must be completed with a GPA of 3.0 or better.

    B. **Math Track**: The certificate program will be open to students who have a Bachelor degree in Mathematics or a related field, a GPA of at least 3.0 and must satisfy the prerequisites required for each course in the program. All four courses in the program must be completed with a GPA of 3.0 or better.

Faculty contact, email and complete phone number: Rainer Steinwandt, rsteinwa@fau.edu, 561-297-3353	Consult and list departments that might be affected by the change and attach comments. Computer and Electrical Engineering and Computer Science (College of Engineering & Computer Science)

Approved by:

Department Chair: R. *[signature]*   *Date:* 10-13-15

College Curriculum Chair: *[signature]*   10-24-15

College Dean: *[signature]*   10-24-15

UGPC Chair: Wm R McDaniel *[signature]*   12-15-15

Graduate College Dean: Deborah Floyd *[signature]*   12-15-15

UFS President: _____

Provost: _____

Email this form and syllabus to *UGPC@fau.edu* one week before the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website prior to the meeting.

FAUprogramchangeGrad—Revised November 2012

Proposal: A Certificate Program in Cyber Security with Computer Science and Mathematics Tracks jointly offered by the Department of Computer and Electrical Engineering and Computer Science[1] and the Department of Mathematical Sciences[2]

Introduction and Rationale: According to Center for Strategic and International Studies, June 2014, the estimated annual cost of cybercrime to global economy is more than $400 billion, which is more than the national income of most countries in the world. The most significant part of this cost comes from its damage to national economies and to the performance of the private sectors.

Cybercrime related issues especially impact the State of Florida because a significant part of the state's economic development comes from tourism, international banking and high-tech industries. However, the number of scientists, engineers and experts with special skills in Cyber Security or with a Master's degree/certificate in Cyber Security is not on track with the need for such experts. In fact, high-tech industries from different division such as Information Technology, Financial Services, Digital Media or Interactive Entertainment, and Aviation & Aerospace can significantly benefit from this program. To name a few, we can refer to IBM, Symantec, Boeing and Lockheed Martin within Florida's high-tech corridor.

The Departments of Computer & Electrical Engineering and Computer Science and Mathematical Sciences, due to their extensive expertise and facilities, are uniquely positioned to offer a certificate degree in Cyber Security with two tracks: Computer Science (CS) and Mathematics (Math).

I.   Tracks

      A. ***Cyber Security Certificate in Computer Science (CS Track)*** will be issued to a student admitted [III.A]to the CS Track Certificate Program if s/he successfully completes four (4) 3-credit courses as follows:

           i. Core courses: three (3) 3-credit courses from the CS Cyber Security courses listed in [1]

           ii. Elective course: one (1) 3-credit course from either the Math Cyber Security courses listed in [2] or from the CS Cyber Security courses listed in [1].

      B. ***Cyber Security Certificate in Mathematics (Math Track)*** will be issued to a student admitted [III.B] to the Math Track Certificate Program if s/he successfully completes four (4) 3-credit courses as follows:

           i. Core courses: three (3) 3-credit courses from the Math Cyber Security courses listed in [2]

           ii. Elective course: one (1) 3-credit course from either the CS Cyber Security courses listed in [1] or from the Math Cyber Security courses listed in [2].

---

[1] College of Engineering and Computer Science
[2] College of Science

II. *Curriculum*

Following courses are offered for the Cyber Security Certificate Program.

[1] The CS Cyber Security courses required for the certificate program must be selected from the following list of 3-credit courses.
- CIS 6375 - Distributed Systems Security
- CIS 6370 - Computer Data Security
- COT 6116 - Secret Sharing Protocols
- CTS 6319 - Cyber Security: Measurement and Data Analysis

[2] The Math Cyber Security courses required for the certificate program must be selected from the following list of 3-credit courses.
- MAD 5474 - Introduction to Cryptology and Information Security
- MAD 6478 - Cryptanalysis
- MAD 6607 - Coding Theory
- MAS 6217 - Number Theory and Cryptography

III. *Admission and Completion*
   A. *CS Track*: The certificate program will be open to students who have a BS degree in Computer Science or a related field of Science and Engineering, a GPA of at least 3.0 and must satisfy the prerequisites required for each course in the program. All four courses in the program must be completed with a GPA of 3.0 or better.
   B. *Math Track*: The certificate program will be open to students who have a Bachelor degree in Mathematics or a related field, a GPA of at least 3.0 and must satisfy the prerequisites required for each course in the program. All four courses in the program must be completed with a GPA of 3.0 or better.