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Bulletin #: _____
Academic Year: _____

FLORIDA INTERNATIONAL UNIVERSITY
UNDERGRADUATE PROGRAM PROPOSAL

New *Undergraduate Track*

INSTRUCTIONS: Please Type. Fill out this form **completely.**

School/College Engineering and Computing

Div./Dept. Electrical and Computer Engineering

Track Name: Cyber Defense

Degree Name: _____

☐ B.A. ☐ B.S. ☐ Other _____

Proposed Implementation Date: 1/1/2020

PROPOSAL REQUESTED BY:

Faculty Contact Alexander Perez-Pons (Type Name) (Signature) 10/16/2019

aperezpo@fiu.edu (Email address) 7-7253 (Phone Number)

Chair (Dept./Div.) Dr. Shekhar Bhansali (Type Name) (Signature) 10/17/2019

Chair (Curr. Comm. Dr. Wei-Chiang Lin (Type Name) (Signature) ____/____/20___

College/School Dean Dr. John Volakis (Type Name) (Signature) ____/____/20___

JOINT HEARING REQUIRED. PLEASE SUBMIT ORIGINAL FORM.

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NEW *UNDERGRADUATE TRACK*

PLEASE SUBMIT THIS FORM WITH YOUR PROPOSAL

Please fill out the coversheet in its entirety.

The proposal must include the following elements:

I. Track Description
II. Rationale for new track: types of students, expected number of students and documentation, community need/relevance
III. Impact of this track on other units
IV. Required Courses – Tracks within a major or degree must include a common core curriculum that accounts for 15% of the total credit requirement.
V. The structure of the New Track must follow the Board of Governors Policy for New Degree Program Authorization.
VI. Resources Required: Faculty, Library, Facilities including laboratories
VII. Budget requirements
VIII. Proposed Catalog Copy

CHECK LIST

	Yes	No
1. Do all courses exist in the current catalog?	☑	☐
2. If courses are not in the current catalog, are they proposed in the same Curriculum Committee Bulletin as this proposal?	☐	☑
3. If courses are not in the current catalog or proposed in this same bulletin, were they approved in a previous curriculum bulletin?	☐	☑
If yes, attach a separate sheet indicating each course number, name, Bulletin number and Bulletin date.		
If the answers to 1, 2, and 3 are no, do not submit the proposal. Address the course issues first.		
4. Do courses listed have the correct course prefixes, official titles, course numbers and number of credits?	☑	☐
5. Do you have the written approval/acknowledgement to include courses taught in departments/schools other than the proposing department? (You must have written approval before submitting this document.)	☐	☑
If the answer to #5 is yes, the written approval(s)/acknowledgment(s) must be attached to the proposal.		

Track Description

The proposed Cyber Defense track as part of the Electrical and Computer Engineering offering will serve to conform to the requirements of the Centers of Academic Excellence in Cybersecurity (CAE) guidelines to achieve Department of Homeland Security (DHS)/national Security Agency (NSA) designation for Excellence in Cybersecurity Education. The courses selected for the proposed track will serve to provide students with the required knowledge units associated with a cybersecurity program. All of the courses are existing course in the catalog and are found among other tracks in the ECE catalog. Once a student completes the Cyber Defense tracks, they would have also completed the Cybersecurity track, affording them the opportunity to pursue a third track.

II. Rationale for new track: types of students, expected number of students and documentation, community need/relevance

The new track would only concern Electrical and Computer Engineering students in the Computer Engineering program that are interested in the cybersecurity track. These students already take these courses within other tracks, but not concentrated into a single track, which the proposed track would permit. The addition of the new track would allow the department to award students a certificate upon graduation and completion of the Cyber Defense track, indicating that their education conforms to the expectation and acquisition of the required knowledge unit to be from a Center of Excellence in Cybersecurity. There is no expectation of any impact to the number of students that already take these courses to acquire the certificate, but because these courses are not within a single track, it often creates ambiguity on which courses conform to the required courses to obtain the certificate. The department has been granting students this certificate for over five years, so it would not impact the department, students or any other stakeholder, instead it would clearly indicate to students which set of courses are required to obtain the certification.

III. Impact of this track on other units

There is no impact to the unit, as all of the courses already exist within various other tracks in ECE, but combining them into the Cyber Defense track would afford students the ability to be awarded a certificate indicating that they have graduated from a program designated as a Center of Education in Cybersecurity.

IV. Required Courses – Tracks within a major or degree must include a common core curriculum that accounts for 15% of the total credit requirement.

The track does not impact the common core of courses shared among all other available tracks offered in the unit. The courses composing the proposed Cyber Defense track already exist within other tracks and are grouped into the proposed track to conform to the requirements of addressing the required knowledge unit for the awarding of the certification. Therefore, it includes a common core curriculum that accounts for 15% of the total credit requirement.

V. The structure of the New Track must follow the Board of Governors Policy for New Degree Program Authorization.

It conforms to the policy.

VI. Resources Required: Faculty, Library, Facilities including laboratories

There are no impacts on the current resources available in the department. It will not impact faculty, library or laboratories as all of these courses are regularly taught in the department as part of other tracks. The formation of the proposed Cyber Defense tracks will not increase any additional demands on available resources.

VII. Budget requirements

There are no budget requirements in the formation of the proposed Cyber Defense track.

VIII. Proposed Catalog Copy

Cyber Defense

TCN 4211 Telecommunication Networks	3
TCN 4081 Telecommunication Network Security	3
EEL 4802 Introduction to Digital Forensics	3
EEL 4804 Introduction to Malware Reverse Engineering	3
EEL 4806 Ethical Hacking and Countermeasures	3
EEL 4730 Programming Embedded Systems	3
EEL 4734 Embedded Operating Systems	3

Cyber Security:

EEL 4806 Ethical Hacking and Countermeasures	3
EEL 4802 Introduction to Digital Forensics Engineering	3
EEL 4804 Introduction Malware Reverse Engineering	3

Digital Forensics:

EEL 4806 Ethical Hacking and Countermeasures	3
EEL 4802 Introduction to Digital Forensics Engineering	3
EEE 4754 Introduction to Mobile Forensics	3
EEE 4750 Introduction to Image and Video Forensics	3
EEE 4752 Introduction to Network Forensics and Incident Response	3

Internet of Things:

TCN 4211 Telecommunication Networks	3
EEE 4510 Introduction to Digital Signal Processing	3
COP 4610 Operating Systems Principles	3
COP 4655 Mobile Application Development	3
EEE 4717 Introduction to Security of Internet of Things	3
EEL 4740 Embedded Computing Systems	3
TCN 4271 Ubiquitous and Embedded Sensor Network-Centric Telecommunications	3

Entrepreneurship:

EEL 4933 Engineering Entrepreneurship	3
EEL 4151 Engineering Business Plan Development	3
EEL 4351 Economic Decision-making in Engineering	3

Artificial Intelligence and Big Data

CNT 4147 IoT & Sensor Big Data Analytics	3
CNT 4151 IoT & Sensor Data Visualization	3
CNT 4155 IoT & Sensor Programming with Python	3
CNT 3153 IoT & Analytics with Cloud Services	3
CNT 4153 IoT Applied Machine Learning	3
CNT 4149 Sensor & IoT Data Analysis with Deep Learning	3
CNT 4145 Sensor IoT Analytics	3

Pre-Medical Concentration for B.S. in Electrical and Computer Engineering

The B.S. in Electrical or Computer Engineering Pre-Med Concentration is designed for motivated students who have dual interests in engineering and medical careers.

Student are required to complete all the courses in this concentration plus the core requirements for a B.S. degree in Electrical or Computer Engineering and other ECE engineering concentration credits.

Biology

BSC 2010 General Biology I	3
BSC 2010L General Biology I Lab	1
BSC 2011 General Biology II	3
BSC 2011L General Biology Lab II	1

General Chemistry

CHM 1046 General Chemistry II	3
CHM 1046L General Chemistry Lab II	1

Organic Chemistry

CHM 2210 Organic Chemistry I	4
CHM 2210L Organic Chemistry Lab I	1

Cyber Security:

EEL 4806 Ethical Hacking and Countermeasures	3
EEL 4802 Introduction to Digital Forensics Engineering	3
EEL 4804 Introduction Malware Reverse Engineering	3

Digital Forensics:

EEL 4806 Ethical Hacking and Countermeasures	3
EEL 4802 Introduction to Digital Forensics Engineering	3
EEE 4754 Introduction to Mobile Forensics	3
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CNT 4153 IoT Applied Machine Learning	3
CNT 4149 Sensor & IoT Data Analysis with Deep Learning	3
CNT 4145 Sensor IoT Analytics	3

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Biology

BSC 2010 General Biology I	3
BSC 2010L General Biology I Lab	1