DO NOT TYPE IN THIS BOX

Bulletin #: 6

Academic Year: 2022-23

FLORIDA INTERNATIONAL UNIVERSITY
UNIVERSITY CURRICULUM COMMITTEE
Proposal for a Course Change

PART I. FILL OUT THIS SECTION COMPLETELY

1. School/College College of Engineering and Computing

Div./Dept. in Which Taught Knight Foundation School of Computing and Information Sciences

2.

CNT	4	403	N/A	3
Alpha Prefix	1st Digit	Last 3 Digits	"C"-lec-lab "L"-Lab	Cr. Hrs.

3. Present Course Title Computing and Network Security

PART II. FILL OUT CHANGE INFORMATION ONLY

Change Effective 1 / 1 / 20 24

4a. New Course Title

b. New Abbreviated course Title *(for computer class schedules, transcripts)*

LIMITED TO 25 Characters *(including spaces)*

5a.

			N/A
New Alpha Prefix	New 1st Digit	New Last 3 Digits	Change "C"-lec-lab "L"-Lab

5b. Change Credit Hours: From ____ **To** ____

6. New Catalog Description/Major Topics *(not to exceed 200 characters including spaces in the box below)*
College of Medicine and College of Law: Attach description not exceeding 1,000 characters including spaces.

7. New Prerequisite(s): CGS 3767

8. New Corequisite(s):

9. Explain Reclassification Request:

CNT4403 does not require second level programming knowledge. Hence, changing the prerequisite from "(COP3804 or COP3307 or COP2270) and CGS3767" to "CGS3767" will allow students to enroll in CNT4403 early and expedite their minor completion.

10. Did you attach a copy of the course justification and course syllabus that contains the changes you are requesting? NO ☐ YES ☑

11. Does this proposed change impact the assessment process of a program or certificate? If yes, then send notification to assessment@fiu.edu. NO ☑ YES ☐

PROPOSAL REQUESTED BY:

Faculty Contact Nagarajan Prabakar — Nagarajan Prabakar Digitally signed by Nagarajan Prabakar Date: 2023.03.22 23:44:14 -04'00' — 3 / 22 / 20 23
(Type name) (Signature)

prabakar@fiu.edu — 348-2033
(Email address) (Phone number)

Chairperson (Dept./Div.) Jason Liu — Jason Liu 2023.03.24 13:24:30 -04'00' — 3 / 23 / 20 23
(Type name) (Signature)

Chairperson (Curr. Comm.) Alex Afanasyev — 3 / 25 / 20 23
(Type name) (Signature)

College/School Dean John Volakis — ____ / ____ / 20 23
(Type name) (Signature)

Submit one original form. Attach one copy of the course justification and a draft of the course syllabus reflecting any changes requested in this Proposal for a Course Change. The syllabus should include the course description, objectives, learning outcomes, major topics, and textbooks. Where applicable, please ensure that the changes you are requesting are included in the syllabus and supporting documentation.

FIU Engineering & Computing
FLORIDA INTERNATIONAL UNIVERSITY

To: Mary Cossio
Faculty Senate

From: Dean or Assoc. Dean and College Curriculum Cmte. Chair

Subject: Memo in Lieu of Curriculum Chair and Dean Signatures for Bulletin #6

Date: March 25, 2023

As instructed by the Faculty Senate, this memo will serve as approval of the attached proposals for Bulletin #6 by our Curriculum Committee Chair, Alexander Afanasyev, and the Dean for College of Engineering and Computing (John L. Volakis), in lieu of physical signatures. The proposals in this Bulletin were approved by our Curriculum Committee on March 23, 2023.

Justification for the prerequisite change of

CNT 4403 Computing and Network Security

CNT4403 does not require second level programming knowledge.

Hence, changing the prerequisite from "(COP3804 or COP3307 or COP2270) and CGS3767" to "CGS3767" will allow students to enroll in CNT4403 early and expedite their minor completion.

Please note that the corequisite remains unchanged (CGS4285).

Knight Foundation School of Computing and Information Sciences

Course Title: Computing and Network Security **Date:** 3/22/2023

Course Number: CNT 4403

Number of Credits: 3

Subject Area: Security	**Subject Area Coordinator:** Amin Kharraz **email:** ak@cs.fiu.edu
Catalog Description: Fundamental concepts and principles of computing and network security, symmetric and asymmetric cryptography, hash functions, authentication, firewalls and intrusion detection, and operational issues.	
Textbook: "Principles of Computer Security: Security+ and Beyond" by Wm. Arthur Conklin, et al. McGraw Hill Higher Education (ISBN: 0072255099)	
References: "Introduction to Computer Security" by Matt Bishop Addison Wesley (ISBN: 0321247442)	
Prerequisites Courses: CGS 3767	
Corequisites Courses: CGS 4285	

Type: Required (CY, IT)

Prerequisites Topics:

- Java programming
- Fundamental concepts of operating systems
- Shell scripting
- Basic network concepts, including TCP/IP

Course Outcomes:

1. Be familiar with basic concepts in information security
2. Master the concepts related to applied cryptography, including symmetric cryptography and asymmetric cryptography
3. Be familiar with public key infrastructure
4. Master the theory and common types of access control
5. Master the key factors involved in authentication
6. Be familiar with runtime communication techniques such as intrusion detection systems
7. Be familiar with policy and operational issues in security
8. Be exposed to vulnerabilities, attacks, auditing, and forensics

Knight Foundation School of Computing and Information Sciences
CNT 4403
Computing and Network Security

Outline

Topic	Number of Lecture Hours	Outcome
• Basic security concepts o Security services: confidentiality, integrity, availability, etc o Design principles o System/security life-cycle o Security implementation mechanisms o Information assurance analysis model	3	1
• Cryptography o Symmetric cryptosystems o Asymmetric cryptosystems o Hash functions o Digital signatures	8	2
• Access control o Access control matrix model o Discretionary access control (DAC) o Mandatory access control (MAC) o Role-based access control (RBAC)	4	4
• Authentication o Password o Challenge-response o Biometric o Two-factor authentication	4	5
• Trusted intermediaries o Public key infrastructure (PKI) o Certification authorities	3	3
• Runtime communication security o Firewall o Auditing o Intrusion detection	4	6
• Operational issues o Disaster recovery o Legal issues	3	7
• Policy o Creation and maintenance of policies o Prevention o Avoidance	3	7
• Attacks o Social engineering o Denial of service o Protocol attacks o Active and passive attacks o Malware	3	8

• Miscellaneous topics
  ○ Forensics
  ○ Web security and vulnerabilities
	4	8

Assessment Plan for the Course & how Data in the Course are used to assess Program Outcomes

Student and Instructor Course Outcome Surveys are administered at the conclusion of each offering, and are evaluated as described in the School's Assessment Plan: https://abet.cs.fiu.edu/csassessment/

Course Outcomes Emphasized in Laboratory Projects / Assignments

	Outcome	Number of Weeks
1	Cryptography and PKI Outcomes: 2, 3	3
2	Authentication Outcomes: 1, 5	2
3	Access control Outcomes: 4, 7	2
4	Runtime communication security Outcomes: 6	3
5	Attacks and vulnerability analysis Outcomes: 8	1

Oral and Written Communication: No significant coverage

Number of written reports:

Approximate number of pages for each report:

Number of required oral presentations:

Approximate time for each presentation:

Knight Foundation School of Computing and Information Sciences
CNT 4403
Computing and Network Security

Social and Ethical Implications of Computing Topics

No significant coverage

Topic	Class time	Student performance measures

Theoretical Contents

Topic	Class time
Cryptography	0.6
Access control model	0.1

Problem Analysis Experiences

1.

Solution Design Experiences

1. Design of access control policy for a given system

Knight Foundation School of Computing and Information Sciences

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Knight Foundation School of Computing and Information Sciences
CNT 4403
Computing and Network Security

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Grading Category Weights

15% Assignments & in-class exercises

10% Virtual labs

10% Quizzes

5% Discussion Forums

30% Midterm exam

30% Final exam

Grading Scale

Letter	Range (%)	Letter	Range (%)	Letter	Range (%)
A	93 or above	B	83 - 86	C	73 - 76
A-	90 - 92	B-	80 - 82	D	60 - 72
B+	87 - 89	C+	77 - 79	F	59 or less