DO NOT TYPE IN THIS BOX
Bulletin # : _____
Academic Year : _____

FLORIDA INTERNATIONAL UNIVERSITY
UNIVERSITY CURRICULUM COMMITTEE
Proposal for a New Course

1. **School/College** Engineering and Computing
   Div./Dept. in Which Taught Electrical & Computer Engineering

2. | EEE | 4 | XXX | | 3 |
   |---|---|---|---|---|
   | Alpha Prefix | 1st Digit | Last 3 Digits | "C"-lec-lab "L"-Lab | Cr. Hrs. |

   CIP Code *(Leave this blank):* _____

   EEL 4804 **Keyed PS & CAT**

3. **Grading Method (select one):** ☒ Graded ☐ Pass/Fail

4a. **Course Title** Introduction Malware Reverse Engineering

b. **Abbreviated course Title** *(for computer class schedules, transcripts)* Intro Malware Reverse Eng
   LIMITED TO 25 Characters *(including spaces)*

5. **Statewide Course Numbering Subject Matter Area** EEE

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

   This course familiarize the student with the practice of performing reverse engineering on suspicious files and firmware present on various devices (computer to DVD player) and understand its impact.

7. **Attach detailed syllabus course outline and course justification on separate page(s).**

8. **Prerequisite(s):** EEE-4xxx (Digital Forensics Engineering)

9. **Corequisite(s):** _____

10. **Objective(s) of Course:**

    To give the student a hands-on exposure to the latest tools and techniques to find, extract, and analyze malicious code from various types of hardware and to provide analysis on the way the malware interacts with any associated network, identifying the type of information being targeted.

11. **Does this course duplicate/overlap other courses at FiU?** ☒ No ☐ Yes
    If yes, please explain: _____

12. **What other closely related department(s) have been consulted about this course?**

_____

PROPOSAL REQUESTED BY:

Faculty Contact Dr. Alexander Pons (Type name) _____ (Signature) 9 / 23 / 20 13
aperezpo@fiu.edu (Email address) 3053482683 (Phone number)

Chairperson (Dept./Div.) Dr. Shekhar Bhansali (Type name) _____ (Signature) 9 / 23 / 20 13

Chairperson (Curr. Comm.) ~~Dr. Nagarajan Prabakar~~ Tsouklas (Type name) _____ (Signature) 9 / 23 / 20 13

College/School Dean Dr. Amir Mirmiran (Type name) _____ (Signature) 9 / 24 / 2013

Submit one original form. Attach one copy of the course syllabus containing: course description, objectives, learning outcomes, major topics and textbooks.

Department of Electrical and Computer Engineering

EEE 4XXX – Introduction to Malware Reverse Engineering

Catalog Description

The objective of this course is to familiarize students with the practice of performing reverse engineering on suspicious files and firmware by utilizing static and dynamic techniques and procedures. The student will gain an understanding of how firmware is compromised and how to validate and restore its integrity. Analytical information such as environment changes (file, system, network, and process), communication with the rest of the network and the malware's impact on mobile devices will be closely observed and analyzed for actionable information.

Catalog Objectives

- To give the student an understanding of Malware Reverse Engineering approaches.
- To give the students a hands-on exposure to the latest tools and techniques to find, extract, and analyze malicious code from various types of hardware.
- To provide analysis on the way the malware interacts with any associated networks, identifying the type of information being targeted.

Prerequisites

Working knowledge of computer programming, EEE-4993: Digital Forensics Engineering, or Instructor approval.

Recommended Textbooks

- Practical Malware Analysis: The Hands-On Guide to Dissecting Malicious Software by Michael Sikorski and Adrew Honig (Feb 29, 2012), ISBN: 1593272901
- Reversing: Secrets of Reverse Engineering by Eldad Eilam (April 15, 2005), ISBN: 0764574817

Topics covered

- Ethical Issues in Security
- Extraction and Analysis of Malware from various devices ranging from computer to DVD Player.
- Sandboxing executable and extracting information by performing runtime analysis.
- Obfuscation techniques .
- Analysis using IDA Pro Disassembler
- Analyzing malicious browser based exploits.
- Analyzing firmware from various hardware including switches and routers

Class schedule
Twice a week 75 minutes class with hands-on lab as part of the lectures

Contribution of course to meeting the professional component
Engineering science – 90% (math/science required for creative applications)
Engineering design – 10% (decision making process of devising a system, component or process to meet a desired need).

Relationship of course to program outcomes:
In the course EEE 4XXX – Introduction to Malware Reverse Engineering, the student will have to show

1. An ability to apply knowledge of mathematics, science, and engineering
2. An ability to design and conduct experiments, as well as to analyze and interpret data
3. An ability to identify, formulate, and solve engineering problems
4. An understanding of professional and ethical responsibility
5. Recognition of the need for, and an ability to engage in life-long learning
6. Knowledge of contemporary issues
7. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice

Person who prepared this description and date of preparation:
Dr. Faisal Kaleem