

About course

The goal of this course is

- Inspire and excite students about cybersecurity
- To provide hands on exposure to selected topics in cybersecurity

Cybersecurity is a vast field. In this course the students are exposed to the various branches and job opportunities in cybersecurity. Course focuses on x86 assembly, basic reverse engineering, web application security, penetration testing, secure coding and automating exploits using Python in a practical manner.

Syllabus**Unit 1: Introduction and x86 Assembly**

Various branches of cybersecurity, job opportunities, preparing for a career in cybersecurity. x86 Assembly, compiling and executing assembly programs.

Unit 2: Basic reverse engineering

Ethical and legal aspects of reverse engineering, identify common techniques and approaches for basic reverse engineering, disassembler and debugger aided debugging, reverse engineering high level languages.

Unit 3: Web Security

Introduction to web application, client side security issues, server side security issues, OWASP top 10 attacks and defense mechanism using secure coding practices.

Unit 4: Pen-Testing web applications

How to manually perform pen tests, common vulnerabilities to look for, documenting results, automation of pen tests by using open source tools.

Unit 4: Automating exploits using Python

Introduction to Python, Introduction to various libraries in python useful for automation, automate web based tasks using python

TEXTBOOKS/ REFERENCES:

1. Bruce Dang, Alexandre Gazet, Elias Bachaalany and Sebastien Josse, Practical Reverse Engineering, First Edition, Wiley Publishers, 2014.
2. Dafydd Stuttard and Marcus Pinto, The Web Application Hacker's Handbook: Finding and Exploiting Security Flaws, 2011.
3. Al Sweigart, Automate the Boring Stuff with Python, No Starch Press, 2015

1	Introduction to Ethical Hacking
2,3	Getting started with Assembly Programming (x86 32 bit)
4,5	Intermediate x86 Assembly
6,7,8	Reverse Engineering basics
9	Introduction to bomb labs
10,11	Web Security basics
12,13	Client Side Attacks
14,15,16	Server side attacks
17,18	Introduction to Pen Testing
19	Documenting Pen Test
20,21	Using python for automation