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## description: Elective Course Introduction to Incident Response (5 ECTS)

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## Lecture planning

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### Course: Introduction to Incident Response (5 ECTS)

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#### General Information

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This document is written using Github.

Teaching material will primarily be English, but the teaching will be in Danish.

#### Goals

The module is an introduction to Incident Response that will describe the basics of incident response. This will include the terms, tools and processes used by professionals.

See more about the course in the official curriculum.

#### Exam:

Exams 6/5, 7/5 and 13/5

#### Teaching Methods:

- Lecture lessons
- Group exercises and cases, including practical exercises with laptop

#### Teaching dates - Spring 2024:

Teaching dates: thursdays 12:45 - 16:45 in GBG.E512

26/2, 12/3, 19/3,26/3,2/4,9/4,23/4,30/4

#### Hardware

Since we are going to be doing exercises, each team will need laptops.

Read more about these at <https://github.com/kramse/kramse-labs>

#### Course reading list

This course uses a few books and a number of supporting resources.

Primary literature:

- *Intelligence-Driven Incident Response (IDIR)*, Scott Roberts, Rebekah Brown, ISBN: 9781098120689 **2nd edition 2023** - short IDIR
- *Forensics Discovery (FD)*, Dan Farmer, Wietse Venema 2004, Addison-Wesley 240 pages. This book is currently available for "free" via: <http://fish2.com/security/>
- *Computer Security Incident Handling Guide*, NIST SP 800-61 Rev. 2, August 2012  
<https://doi.org/10.6028/NIST.SP.800-61r2>

It is recommended to get these books. Note: we won't read all chapters and pages.

Also the course will use internet links and pages.

Supporting Internet resources

- The Linux Command Line: A Complete Introduction, 2nd Edition, William Shotts  
Download -- internet edition <https://sourceforge.net/projects/linuxcommand>
- The Debian Administrator's Handbook, Raphaël Hertzog and Roland Mas  
<https://debian-handbook.info/> - shortened DEB
- The JavaScript Object Notation (JSON) Data Interchange Format RFC8259  
<https://tools.ietf.org/html/rfc8259>
- Intelligence-Driven Computer Network Defense Informed by Analysis of Adversary Campaigns and Intrusion Kill Chains, Eric M. Hutchins , Michael J. Cloppert, Rohan M. Amin, Ph.D.  
Lockheed Martin Corporation  
<https://www.lockheedmartin.com/content/dam/lockheed-martin/rms/documents/cyber/LM-White-Paper-Intel-Driven-Defense.pdf>
- The Diamond Model of Intrusion Analysis, Sergio Caltagirone, Andrew Pendergast, Christopher Betz  
<http://www.activeresponse.org/wp-content/uploads/2013/07/diamond.pdf>
- Development of a virtualized security operations center, Robert de Céspedes, George Dimitoglou  
<https://dl.acm.org/doi/abs/10.5555/3512489.3512501>

Other relevant papers and documents can often be found in the NIST publications, Special Publications series 800:  
<https://csrc.nist.gov/publications/sp800>

Example the [Guide to Computer Security Log Management SP800-92](#)

Attacks on infrastructure:

- [Smashing The Stack For Fun And Profit](#), Aleph One
- *An Evening with Berferd: In Which a Cracker is Lured, Endured, and Studied* , Bill Cheswick, AT&T Bell Laboratories  
<http://www.cheswick.com/ches/papers/berferd.pdf>
- [Return-Oriented Programming: Systems, Languages, and Applications](#)  
Ryan Roemer, Erik Buchanan, Hovav Shacam and Stefan Savage University of California, San Diego
- [MITRE ATT&CK](#) a globally-accessible knowledge base of adversary tactics and techniques based on real-world observations, read the [ATT&CK 101 Blog Post](#)
- [Enterprise Survival Guide for Ransomware Attacks](#), Shafqat Mehmood, SANS Information Security Reading Room
- [TCP Synfloods - an old yet current problem, and improving pf's response to it](#)  
Henning Brauer, BSDCan 2017
- *A Graduate Course in Applied Cryptography* By Dan Boneh and Victor Shoup <https://toc.cryptobook.us/>

Computer Forensics, Incident Response, Intrusion Detection

- [Incident Handler's Handbook](#)  
by Patrick Kral, SANS Information Security Reading Room
- [An Intrusion-Detection Model](#), Dorothy E. Denning  
IEEE Transactions on Software Engineering ( Volume: SE-13 , Issue: 2 , Feb. 1987 )
- ENISA Presenting, correlating and filtering various feeds Handbook, Document for teachers <https://www.enisa.europa.eu/>

- ENISA Forensic analysis, Network Incident Response <https://www.enisa.europa.eu/>
- ENISA Network Forensics, Handbook, Document for teachers <https://www.enisa.europa.eu/>

Policies, governance and best Practice

- [Campus Network Security: High Level Overview](#) , Network Startup Resource Center
- [Campus Operations Best Current Practice](#), Network Startup Resource Center
- [CIS Controls](#) Requires giving your email
- [PCI Best Practices for Maintaining PCI DSS Compliance v2.0 Jan 2019](#)
- [NIST Special Publication 800-63B Digital Identity Guidelines: Authentication and Lifecycle Management](#)
- [IT Security Guidelines for Transport Layer Security \(TLS\)](#)

## Planning

The detailed plan is below with a table summarizing lessons

Date	Theme	Description	Litterature / Preparation
26/2	<b>0. Getting Started</b>	Welcome, goals and expectations Prepare Tools - bring laptop. Get the books Find some basic logs on your computers, introduce incidents and some statistics	Get the books. Chapters IDIR 1-2 will be discussed
12/3	<b>1. Basics of Incident Response</b>	Incident Response Cycle, Kill Chain, Mitre ATT&CK	Chapters IDIR 3
19/3	<b>2. Find, Fix, F3EAD started</b>	F3EAD and exploit phases - artifacts found	Chapters IDIR 4-5
26/3	<b>3. Mitigate and Monitor</b>	Mitigate, Remediate, Monitoring LifeCycle	Chapters IDIR 6
2/4	<b>4. Structured Incident Response and IoCs</b>	Going from Indicators of Compromise into escalating and handling incidents	Chapters IDIR 7
9/4	<b>5. Malware and Incident Response</b>	Malware in relation to Incident Response. Ransomware, some basic analysis and tools	Chapters IDIR 8
23/4	<b>6. Reporting on Incident Response</b>	Collecting and disseminate results from incidents	Chapters IDIR 9
30/4	Two subjects this day!		
	<b>7. Threat Hunting and Intelligence</b>	Basic Threat Hunting and how to share threat intelligence	Chapters IDIR 10
	<b>8. The Way Forward: Building an Intelligence Program</b>	Describe the process for implementing an efficient incident response in an organisation	Chapters IDIR 11