

# Welcome to the University of Twente!

EIT Digital Master in Cyber Security



# Who we are (overview)



**Andreas Peter**

Associate Professor  
SCS group



**Jan Schut**

Supporting Staff  
EEMCS



**Monique Romarck-Wargers**

Supporting Staff  
EEMCS



**Rainer Harms**

Associate Professor  
NIKOS group

# EIT Digital Cyber Security Master

1 <sup>st</sup> year (UT as entry node)	2 <sup>nd</sup> year (UT as exit node)
12 students	4 students

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Coordination  
(curriculum)  
&  
Track mentor



**Andreas Peter**

Coordination  
(administration)



**Jan Schut**



**Monique Romarck-Wargers**

I&E part



**Rainer Harms**

# EIT Digital Cybersecurity Master

1 <sup>st</sup> year (UT as entry node)	2 <sup>nd</sup> year (UT as exit node)
12 students	4 students

Communication (also among yourselves)

**([eit-entry-2019@lists.utwente.nl](mailto:eit-entry-2019@lists.utwente.nl))**      **([eit-exit-2019@lists.utwente.nl](mailto:eit-exit-2019@lists.utwente.nl))**

Not yet activated! I'll inform you when the mailing lists work!

# Dedicated Website

- **We have established a dedicated website for you:**

<https://www.4tu.nl/cybsec/en/EIT/>

- **You can find the study plan forms for both entry and exit students there**
- **After this kick-off, I will also upload these slides**

# I&E components

- **Rainer Harms is responsible for the I&E component of your studies.**
- **Here is his welcome message to you:**  
“Welcome to the University Twente, also from my side.

I am Rainer Harms, coordinator for the EIT Innovation & Entrepreneurship education at UTwente. Many of you will be seeing me later this year in the Business Development Lab 1&2.

But before that I'd like to meet you to give you some orientation about your Innovation & Entrepreneurship studies.

Please join me **Monday, Sep 2, 12:45 – 13:30 at Ravelijn 2504**. It is not mandatory, but a good occasion to ask some organizational questions. Sometime next week I'll send you the slideset for that day.”



# ENTRY YEAR STUDENTS

UNIVERSITY OF TWENTE.



# Entry Students: Curriculum (Quarter 1)

The recommended study load per quarter is 15 EC!

	<b>Mandatory Courses</b>
Starting Quarter 1	Cyber Risk Management (201500026), 5 EC Security and Cryptography (201500027), 5 EC [I&E] Basics: I&E Finance EIT students (201700180), 5 EC

	<b>Elective Courses</b>
Starting Quarter 1	Economics of Security (201500028), 5 EC System Validation (192140122), 5 EC Basic Machine Learning (201600070), 5 EC (only in combination with Cyber Data Analytics in Q4)

**Remember to enroll at TU Delft! If you have questions regarding this, then please check our FAQ:**

<https://www.4tu.nl/cybsec/en/faq/>

# Entry Students: Curriculum (overview)

Year 1 (mostly 5 EC)				(external)
Q1	Q2	Q3	Q4	July/August
CRM	SoS	InS	PET	
Crp	<i>I&amp;E-CoE</i>	<i>I&amp;E-BDL II</i>	SyS	<i>EIT</i>
<i>I&amp;E-Basics</i>	<i>I&amp;E-BDL I</i>	-	-	<i>Summer</i>
Electives: Pick <b>at least two</b> of the following courses!				
EoS	Bio	CCS (→ Q4)	CDA (req. MaL)	<b>School (4 EC)</b>
SyV	CSM	STR	E-Law	
MaL (→ CDA)	DiS	SeV (req. SyV)	SSI [I.a.]	
<i>I&amp;E-BrM</i>	<i>I&amp;E-EMD</i>	BCL [I.a.]	-	
<i>I&amp;E-EnL</i>	-	MWN ... <u>and more</u>	-	

## Q1:

CRM = Cyber Risk Management  
 Crp = Security and Cryptography  
*I&E-Basics* = *I&E Finance*  
 EoS = Economics of Security  
 MaL = Machine Learning  
 SyV = System Validation  
*I&E-BrM* = *Brand Management*  
*I&E-EnL* = *Entrepreneurial Leadership*

## Q3:

InS = Internet Security  
*I&E-BDL II* = *Business Development Lab II*  
 CCS = Cyber Crime Science  
 STR = Software Testing and Reverse Engineering  
 SeV = Security Verification  
 BCL = Blockchain & Distr. Ledger Tech.  
*MWN* = *Mobile and Wireless Networking I*

## Q2:

SoS = Software Security  
*I&E-CoE* = *Computer Ethics (counts as I&E)*  
*I&E-BDL I* = *Business Development Lab I*  
 Bio = Introduction to Biometrics  
 CSM = Cyber Security Management  
 DiS = Distributed Systems  
*I&E-EMD* = *Empirical Methods for Designers*

## Q4:

PET = Privacy-Enhancing Technologies  
 SyS = System Security  
 CDA = Cyber Data Analytics  
 E-Law  
 SSI = Security Services for IoT

**Total: ≥ 60 ECTS**



# EXIT YEAR STUDENTS

UNIVERSITY OF TWENTE.

# Exit Node Students: Curriculum

	<b>Mandatory Courses</b>
Starting Quarter 1	<i>none</i>
Starting Quarter 2	Computer Ethics (191612680), 5 EC I&E Study EIT (201800525), 6 EC
	<b>Elective Courses (at least 15 EC)</b>
Starting Quarter 1	Secure Data Management (192110940), 5 EC Economics of Security (201500028), 5 EC System Validation (192140122), 5 EC Security Verification (201500039), 5 EC Cyber Risk Management (201500026), 5 EC Fundamentals of Quantum Information (201500030), <b>4 EC</b> Basic Machine Learning (201600070), 5 EC Internet of Things (201700075), 5 EC
Starting Quarter 2	Introduction to Biometrics (201500040), 5 EC Security Verification (201500039), 5 EC Cyber Security Management (201500041), 5 EC Quantum Cryptography (201600016), 5 EC Cloud Networking (201400177), 5 EC Distributed Systems (192130112), 5 EC Advanced Machine Learning (201600071), 5 EC
	<b>Graduation</b>
Q2/Q3/Q4 Starting ASAP	Research Topics EIT (201800524), 4 EC Master Thesis (together with a company), 30 EC

# 4TU Cyber Security Certificate

- In total  $\geq 80$  EC on Cyber Security topics are required!
- Both study years count (even if you did one of these at a different university)!

**Remember to enroll at TU Delft! If you have questions regarding this,  
then please check our FAQ:**

**<https://www.4tu.nl/cybsec/en/faq/>**

# Other Things ...

- **Information on courses**

(<https://osiris.utwente.nl/student/OnderwijsCatalogus.do>)

- **Timetables**

(<https://rooster.utwente.nl>)

- **Canvas (UT) and Brightspace (TUD)**

(<https://canvas.utwente.nl/>)

(<http://brightspace.tudelft.nl>)

(→ contact teacher, if problem)

# Final Degree Project

## Overview

- Master thesis (30 EC)
- Research topics EIT (4 EC), consists of:
  - General state-of-the-art and devised research questions
  - Research methodology and planning
- $\geq 2$  months (usually 6 months) “internship” at company/external research institute (part of master thesis)
- In total: 34 EC

# Our Contacts (Overview)



UNIVERSITY OF TWENTE.





# Final Degree Projects (Examples)

- At SIDN: SIDeKlCk – Suspicious Domain Classification in the .nl Zone  
(<http://eprints.eemcs.utwente.nl/26196>)
- At Riscure: Techniques and Experiments to Explore Effects of Electromagnetic Fault Injection on a 32-bit High Speed Embedded Device Microprocessor's Instruction Execution  
(<http://eprints.eemcs.utwente.nl/25105/>)
- At SecurityMatters: C&C botnet detection over SSL  
(<http://eprints.eemcs.utwente.nl/25104/>)
- At NXP: Secure and privacy-preserving national eID systems with Attribute-based credential technologies  
(<http://eprints.eemcs.utwente.nl/25099>)
- At KPMG: Exploring security vulnerabilities of unmanned aerial vehicles  
(<http://eprints.eemcs.utwente.nl/26889/>)

# Next steps (next to study plan): internships

- Take a look at our contacts (previous slides) and check yourself for suitable companies; good suggestion: ask professors in your domain of interest!
- We'll also send project announcements to the mailing lists!
- Discuss your ideas/options with your program mentor!
- Foreseen timeline:
  - September: Identify suitable companies/internships
  - October/November: Negotiate internship agreement and find UT supervisor
  - November to January: work on research topics
  - February to July: work on master thesis
  - August: final presentation and graduation
- ... do your best to get the internship at your chosen company!

# Contact

## **Coordination (curriculum) & Program Mentor:**

Andreas Peter ([a.peter@utwente.nl](mailto:a.peter@utwente.nl))

## **Coordination (administration):**

Jan Schut ([j.schut@utwente.nl](mailto:j.schut@utwente.nl))

Monique Romarck-Wargers ([m.m.w.wargers@utwente.nl](mailto:m.m.w.wargers@utwente.nl))

## **I&E component:**

Rainer Harms ([r.harms@utwente.nl](mailto:r.harms@utwente.nl))



**Hands-on Hack1ng**

Software Explo1tation

D1gital Incident Investigation

Code Break1ng

&

**Hacking Competitions**

<http://scs.ewi.utwente.nl/home/TwenteHackingSquad/>