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

UNIVERSITY OF TWENTE.
# EIT Digital Cyber Security Master

<table>
<thead>
<tr>
<th>1st year (UT as entry node)</th>
<th>2nd year (UT as exit node)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 students</td>
<td>4 students</td>
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<tr>
<td><strong>EIT Digital Cybersecurity Master</strong></td>
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Coordination (curriculum)
& Track mentor

Andreas Peter

Coordination (administration)

Jan Schut  
Monique Romarck-Wargers

I&E part

Rainer Harms

Univeristy of Twente.
# EIT Digital Cybersecurity Master

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Communication (also among yourselves)

(eit-entry-2019@lists.utwente.nl)  (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
The recommended study load per quarter is 15 EC!

<table>
<thead>
<tr>
<th>Mandatory Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting Quarter 1</td>
</tr>
<tr>
<td>Cyber Risk Management (201500026), 5 EC</td>
</tr>
<tr>
<td>Security and Cryptography (201500027), 5 EC</td>
</tr>
<tr>
<td>[I&amp;E] Basics: I&amp;E Finance EIT students (201700180), 5 EC</td>
</tr>
</tbody>
</table>

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

Remember to enroll at TU Delft! If you have questions regarding this, then please check our FAQ: [https://www.4tu.nl/cybsec/en/faq/](https://www.4tu.nl/cybsec/en/faq/)
### Entry Students: Curriculum (overview)

<table>
<thead>
<tr>
<th>Year 1 (mostly 5 EC)</th>
<th>(external)</th>
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</thead>
<tbody>
<tr>
<td><strong>Q1</strong></td>
<td><strong>Q2</strong></td>
</tr>
<tr>
<td>CRM</td>
<td>SoS</td>
</tr>
<tr>
<td>Crp</td>
<td>I&amp;E-CoE</td>
</tr>
<tr>
<td>I&amp;E-Basics</td>
<td>I&amp;E-BDL I</td>
</tr>
<tr>
<td><strong>Electives:</strong> Pick at least two of the following courses!</td>
<td><strong>EIT</strong></td>
</tr>
<tr>
<td>EoS</td>
<td>Bio</td>
</tr>
<tr>
<td>SyV</td>
<td>CSM</td>
</tr>
<tr>
<td>MaL (→ CDA)</td>
<td>DiS</td>
</tr>
<tr>
<td>I&amp;E-BrM</td>
<td>I&amp;E-EMD</td>
</tr>
<tr>
<td>I&amp;E-EnL</td>
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</table>

**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

**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

**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

**Q4:**
- PET = Privacy-Enhancing Technologies
- SyS = System Security
- CDA = Cyber Data Analytics
- E-Law
- SSI = Security Services for IoT

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**Total:** ≥ 60 ECTS
EXIT YEAR STUDENTS
## Exit Node Students: Curriculum

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

**Total:** ≥ 60 ECTS
4TU Cyber Security Certificate

- In total >= 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

• ≥2 months (usually 6 months) “internship” at company/external research institute (part of master thesis)

• In total: 34 EC
Our Contacts (Overview)

KPMG
nedap technology that matters
SAP
SECURITY MATTERS
NXP
SIDN
innovar
Cobblue cybersecurity
riscure
THALES
PHILIPS Research
Deloitte.

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FOX IT
Final Degree Projects (Examples)

- At SIDN: SIDekICk – 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/)

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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!

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Contact

Coordination (curriculum) & Program Mentor:
Andreas Peter (a.peter@utwente.nl)

Coordination (administration):
Jan Schut (j.schut@utwente.nl)
Monique Romarck-Wargers (m.m.w.wargers@utwente.nl)

I&E component:
Rainer Harms (r.harms@utwente.nl)
Twente Hacking Squad (THS)

Hands-on Hacking
Software Exploitation
Digital Incident Investigation
Code Breaking
&
Hacking Competitions

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

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