Welcome to the University of Twente!

EIT Digital Master in Cybersecurity
Who we are (overview)

Andreas Peter
Assistant 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 Cybersecurity Master

<table>
<thead>
<tr>
<th>1&lt;sup&gt;st&lt;/sup&gt; year (UT as entry node)</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; year (UT as exit node)</th>
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</thead>
<tbody>
<tr>
<td>9 students</td>
<td>5 student</td>
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EIT Digital Cybersecurity Master

<table>
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<tr>
<th></th>
<th>1st year (UT as entry node)</th>
<th>2nd year (UT as exit node)</th>
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<tbody>
<tr>
<td>Students</td>
<td>10 students</td>
<td>5 student</td>
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</tbody>
</table>

**Coordination (curriculum) & Track mentor**
- Andreas Peter

**Coordination (administration)**
- Jan Schut
- Monique Romarck-Wargers

**I&E part**
- Rainer Harms

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EIT Digital Cybersecurity Master

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Communication (also among yourselves)
(eit-entry-2018@lists.utwente.nl)  (eit-exit-2018@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
ENTRY YEAR STUDENTS
# Entry Students: Curriculum (Quarter 1)

The recommended study load per quarter is 15 EC!

## Mandatory Courses

| 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 |

## Elective Courses

| 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/](https://www.4tu.nl/cybsec/en/faq/)
# Entry Students: Curriculum (overview)

<table>
<thead>
<tr>
<th>Year 1 (mostly 5 EC)</th>
<th>(external)</th>
<th>July/August</th>
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<tbody>
<tr>
<td><strong>Q1</strong></td>
<td><strong>Q2</strong></td>
<td><strong>Q3</strong></td>
</tr>
<tr>
<td>CRM</td>
<td>SoS</td>
<td>InS</td>
</tr>
<tr>
<td>Crp</td>
<td>CoE</td>
<td>I&amp;E-BDL II</td>
</tr>
<tr>
<td>I&amp;E-Basics</td>
<td>I&amp;E-BDL I</td>
<td>-</td>
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**Electives:** Pick one I&E course and one Cybersecurity course!

<table>
<thead>
<tr>
<th>(School (4 EC))</th>
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<tbody>
<tr>
<td>EoS</td>
<td>Bio</td>
</tr>
<tr>
<td>SyV</td>
<td>CSM</td>
</tr>
<tr>
<td>MaL (→ CDA)</td>
<td>DiS (→ BCL)</td>
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<td>-</td>
<td>-</td>
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| | **Q1:** | **Q2:** | **Q3:** | **Q4:** |
| CRM = Cyber Risk Management | SoS = Software Security |
| Crp = Security and Cryptography | CoE = Computer Ethics |
| I&E-Basics = I&E Finance | I&E-BDL I = Business Development Lab I |
| EoS = Economics of Security | Bio = Introduction to Biometrics |
| MaL = Machine Learning | CSM = Cyber Security Management |
| SyV = System Validation | DiS = Distributed Systems |

**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

**Q2:**
- SoS = Software Security
- CoE = Computer Ethics
- I&E-BDL I = Business Development Lab I
- Bio = Introduction to Biometrics
- CSM = Cyber Security Management
- DiS = Distributed Systems

**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.
- I&E-GSBD = Glob. Strategies & Business Developm.

**Q4:**
- PET = Privacy-Enhancing Technologies
- SyS = System Security
- CDA = Cyber Data Analytics
- SSI = Security Services for IoT
- I&E-ISF = Inf. Sys. for the Fin. Services Industry
- I&E-EMD = Empirical Methods for Designers

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

<table>
<thead>
<tr>
<th>Starting Quarter 1</th>
<th>Mandatory Courses</th>
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<tbody>
<tr>
<td>none</td>
<td></td>
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<table>
<thead>
<tr>
<th>Starting Quarter 2</th>
<th>Mandatory Courses</th>
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<tbody>
<tr>
<td>Computer Ethics (191612680), 5 EC</td>
<td></td>
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<tr>
<td>Research Topics EIT (201600088), see below</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Elective Courses (at least 15 EC)</th>
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<tbody>
<tr>
<td>Starting Quarter 1</td>
</tr>
<tr>
<td>Secure Data Management (192110940), 5 EC</td>
</tr>
<tr>
<td>Economics of Security (201500028), 5 EC</td>
</tr>
<tr>
<td>System Validation (192140122), 5 EC</td>
</tr>
<tr>
<td>Fundamentals of Quantum Information (201500030), 4 EC</td>
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</tbody>
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| 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 |

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<tr>
<th>Graduation</th>
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<tbody>
<tr>
<td>Q2/Q3/Q4</td>
</tr>
<tr>
<td>Research Topics EIT (6 EC I&amp;E part, 4 EC CS part), 10 EC</td>
</tr>
<tr>
<td>Starting ASAP</td>
</tr>
<tr>
<td>Master Thesis (together with a company), 30 EC</td>
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**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 (10 EC), consists of:
  • General state-of-the-art and research questions (4 EC)
  • I&E Minor thesis (6 EC) → Rainer Harms

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

• In total: 40 EC
Our Contacts (Overview)
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 announcement to the mailing lists!

- Discuss your ideas/options with me!

- Foreseen timeline:
  - 1st half of September: Identify suitable companies/internships
  - September/October: Negotiate internship agreement and find UT supervisor
  - October to January: work on research topics and I&E minor thesis (→ R. Harms)
  - 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)

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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