Faculty Electrical Engineering, Mathematics and Computer Science

MSc Computer Science - specialisation Cyber Security

4TU Cyber Security

Degree	MSc Computer Science
Credits	120 ECTS, 24 months
Language of instruction	English
International students	20%

The 4TU Cyber Security Master specialisation is offered by Delft University of Technology and the University of Twente. Cyber security is a multidisciplinary field with computer science at its core. For example, it involves cryptography, formal methods, secure software engineering, and machine learning. It also touches on a broad range of supporting disciplines, such as ethics, law, economics, criminology, management, and psychology

Our society critically depends on cyber space for almost everything, including banking, transport & logistics, air travel, energy, telecommunications, flood defences, health care, social networks, and even warfare. The consequences of cyber security failures could be disastrous and the demand for cyber security specialists is therefore high and rising.

Cyber security is about the assessment of cyber risks and the design & implementation of countermeasures. Good cyber security measures start with the prevention of attacks, using for example firewalls and awareness campaigns. Since “100% security” is far too expensive, the next stage of cyber security is the timely detection of attacks using for example intrusion detection tools and data analytics. The last stage is the recovery from attacks using for example incident response methods and backups. Cyber risk management is about balancing these three stages of cyber security measures, in order to reach acceptable risk levels in various cyber domains.

TU Delft

What you will learn

This specialisation will give you a broad and strong background in cyber security. Developing secure and privacy friendly systems is a challenging task. Analysing the security and privacy of existing systems is challenging as well. You will acquire scientific knowledge combined with practical skills. Security graduates have a profound understanding of security and privacy risks in ICT systems and are able to model and evaluate these risks. Security graduates have also gained insight into the multi-disciplinary aspects of security and privacy such as ethics, psychology, law, and governance. Specialist knowledge and understanding of certain sub-fields are also aspects of the security and privacy discipline, e.g. cybercrime or security in mobile systems and practical experience conducting scientific research into security and privacy.

Career prospects

As a cyber security student, you will not have any problems finding a job. You can work for a variety of organizations, including the police, ministries, the IT security industry, auditors, research organizations and universities, both in the Netherlands and abroad.

Curriculum

To enrol in the specialisation Cyber Security at TU Delft, you need to apply for the master Computer Science and choose either the Data Science & Technology track or the Software Technology track. In order to meet the Cyber Security requirements, you need to choose 5 out of 10 common core courses from the track you are following, as well as the Cyber Security courses mentioned in the curriculum below.

The following (track) common core courses are compulsory for TU Delft students (choose 5 out of 10):			
Data Science and Technology: Cyber Data Analytics, Data Visualisation, Pattern Recognition, AI Techniques, Web Science & Engineering, Multimedia Search and Recommendation, Software Architecture, Advanced Algorithms, Distributed Computing Systems, Embedded Real-Time Systems		**Software Technology:** Compiler Construction, Distributed Algorithms, Embedded Real-Time Systems, Behaviour Change Support Systems, 3D Computer Graphics and Animation, Advanced Algorithms, Multimedia Search and Recommendation, Security and Cryptography, Web Science & Engineering, Pattern Recognition	
Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**
Cyber Risk Management (5 EC)	Biometrics (5 EC)	Applied Security Analysis (5 EC)	Cyber Data Analytics (5 EC)
Security and Cryptography (5 EC)	Cyber Security Management (5 EC)	Cyber Crime Science (5 EC)	Digital Forensics (5 EC)
Secure Data Management (5 EC)	Computer Ethics (5 EC)	Network Security (5 EC)	E-Law (5 EC)
Security Verification (5 EC)	Language-Based Software Security (5 EC)	Software Testing and Reverse Engineering (5 EC)	Privacy Enhancing Technologies (5 EC)
Fundamentals of Quantum Information (5 EC)	Quantum Communication and Cryptography (4 EC)		
Economics of Security (5 EC)			
Graduation Project (45 EC)			
1 EC = 28 hours of study, according to the European Credit Transfer System (ECTS). Total number of credits in the Cyber Security specialisation: 120 EC For more information on all courses, please visit: https://www.4tu.nl/cybsec/			

For further information
Please visit the website for all details, complete requirements, deadlines and contact information:

www.4tu.nl/cybsec

Contact persons:
Dr. Christian Doerr (Delft)
C.Doerr@tudelft.nl

Prof.dr. Pieter Hartel (Twente)
Pieter.Hartel@utwente.nl

EEMCS Faculty
Mekelweg 4
2628 CD Delft
www.eemcs.tudelft.nl

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