

Master in cybersecurity

Focus Cryptanalysis and Forensics

The programme is organised around **five specific and complementary key disciplines**: (1) Cryptography, (2) Systems and Networks, (3) Legal, ethical, and human aspects, (3) Security management, and (5) Secure software engineering.

The **first year** of the Master is dedicated to a **common set of courses**. Several seminars and elective courses ensure the **curriculum is dynamic and remains up to date**. For instance, 10 credits can be chosen as **elective courses**, selected from courses already taught in the participating academic institutions.

In the second year, half of the programme's credits are for courses in one of **two focuses**: 'system design and analysis', which is dedicated to the design and thorough analysis of secure systems, and 'corporate strategies', which is dedicated to more concrete applications. Both focuses are built on the **students' personal involvement and self-learning, through several projects**. A significant part of the skills involved is acquired during the **mandatory long-term work placement in a professional environment** (typically 12 weeks).

Students take part in **projects and challenges** that further add to the expertise and practical know-how required in the IT industry. They apply the concepts covered in lectures, and learn new material by solving proposed challenges.

At the end of the programme, students prepare a **Master's dissertation** under the supervision of a professor who is an active researcher in the field.

Bloc 1 | M-SECUC | MA-SECU

Cours obligatoires

ELEC-H504	Network Security Jean-Michel DRICOT (Coordinator) ⌚ 5 credits [lecture: 24h, practical work: 12h] 📅 second term 🗨 English
INFO-F307	Génie logiciel et gestion de projets Frédéric PLUQUET (Coordinator) ⌚ 5 credits [lecture: 24h, practical work: 7h, project: 89h] 📅 second term 🗨 French
INFO-F309	Administration de systèmes Sébastien COLLETTE (Coordinator) ⌚ 5 credits [lecture: 24h, practical work: 24h, project: 30h] 📅 second term 🗨 French
INFO-F405	Introduction to cryptography Christophe PETIT (Coordinator) and Gilles VAN ASSCHE ⌚ 5 credits [lecture: 24h, tutorial classes: 24h, project: 30h] 📅 first term 🗨 English
INFO-F514	Protocols, cryptanalysis and mathematical cryptology Olivier MARKOWITCH (Coordinator), Liran LERMAN and Christophe PETIT ⌚ 5 credits [lecture: 24h] 📅 second term 🗨 English
INFO-Y111	Computer system security Ramin SADRE ⌚ 5 credits [lecture: 30h, tutorial classes: 15h] 📅 second term
INFO-Y112	Machine learning and data mining Benoit FRENAY ⌚ 5 credits [lecture: 30h, practical work: 15h] 📅 first term
INFO-Y113	Management of security Thibault Debatty (Coordinator) and Wim MEES ⌚ 5 credits [lecture: 24h, practical work: 24h] 📅 second term
INFO-Y114	Legal aspects of IT security Amélie LACHAPELLE ⌚ 5 credits [lecture: 30h] 📅 first term
INFO-Y115	Secure software design and web security Romain ABSIL (Coordinator) ⌚ 5 credits [lecture: 30h, practical work: 20h] 📅 first term

Cours à option - Electives (10 crédits)

TEMP-0000	Cours extérieurs au programme ⌚ 10 credits 📅 academic year 🗨 French
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Master in cybersecurity

Focus Cryptanalysis and Forensics

Bloc 2 | M-SECUC | MA-SECU

Cours obligatoires

- ELEC-H423 **Mobile and wireless networks** | Jean-Michel DRICOT (Coordinator)
5 credits [lecture: 36h, practical work: 24h] first term English
- INFO-Y116 **Aspects éthiques de l'informatique et de la sécurité informatique** | Marie-des-Neiges Ruffo (Coordinator)
5 credits [lecture: 30h] second term
- MEMO-Y117 **Master thesis** | Thibault Debatty (Coordinator)
20 credits [mfe/tfe: 240h] academic year

Cours spécifiques

- INFO-Y118 **Mobile and embedded computing** | Ramin SADRE
5 credits [lecture: 30h, tutorial classes: 30h] second term
- INFO-Y119 **Forensics and reverse engineering** | Thibault Debatty (Coordinator)
5 credits [lecture: 24h, practical work: 24h] first term English
- INFO-Y120 **Data analysis for cybersecurity** | Bruno Dumas, Benoit FRENAY, Renaud Lambiotte and Florentin ROCHET
5 credits [lecture: 30h, practical work: 15h] first term English
- INFO-Y121 **Privacy enhancing technologies** | Olivier POREIRA and François-Xavier STANDAERT
5 credits [lecture: 30h, tutorial classes: 30h] first term
- STAG-F009 **Security analysis internship** | Jean-Michel DRICOT (Coordinator) and Olivier MARKOWITCH
10 credits [work placement: 120h] first and second terms French

Master in cybersecurity

Focus Corporate Strategies

The programme is organised around **five specific and complementary key disciplines**: (1) Cryptography, (2) Systems and Networks, (3) Legal, ethical, and human aspects, (3) Security management, and (5) Secure software engineering.

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Bloc 1 | M-SECUS | MA-SECU

Cours obligatoires

- ELEC-H504 **Network Security** | Jean-Michel DRICOT (Coordinator)
 ⌚ 5 credits [lecture: 24h, practical work: 12h] 📅 second term 🗨 English
- INFO-F307 **Génie logiciel et gestion de projets** | Frédéric PLUQUET (Coordinator)
 ⌚ 5 credits [lecture: 24h, practical work: 7h, project: 89h] 📅 second term 🗨 French
- INFO-F309 **Administration de systèmes** | Sébastien COLLETTE (Coordinator)
 ⌚ 5 credits [lecture: 24h, practical work: 24h, project: 30h] 📅 second term 🗨 French
- INFO-F405 **Introduction to cryptography** | Christophe PETIT (Coordinator) and Gilles VAN ASSCHE
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 ⌚ 5 credits [lecture: 30h, practical work: 15h] 📅 first term
- INFO-Y113 **Management of security** | Thibault Debatty (Coordinator) and Wim MEES
 ⌚ 5 credits [lecture: 24h, practical work: 24h] 📅 second term
- INFO-Y114 **Legal aspects of IT security** | Amélie LACHAPELLE
 ⌚ 5 credits [lecture: 30h] 📅 first term
- INFO-Y115 **Secure software design and web security** | Romain ABSIL (Coordinator)
 ⌚ 5 credits [lecture: 30h, practical work: 20h] 📅 first term

Cours à option - Electives (10 crédits)

- TEMP-0000 **Cours extérieurs au programme**
 ⌚ 10 credits 📅 academic year 🗨 French

Master in cybersecurity

Focus Corporate Strategies

Bloc 2 | M-SECUS | MA-SECU

Cours obligatoires

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⌚ 5 credits [lecture: 36h, practical work: 24h] 📅 first term 🗨 English
- INFO-Y116 **Aspects éthiques de l'informatique et de la sécurité informatique** | Marie-des-Neiges Ruffo (Coordinator)
⌚ 5 credits [lecture: 30h] 📅 second term
- MEMO-Y117 **Master thesis** | Thibault Debatty (Coordinator)
⌚ 20 credits [mfe/tfe: 240h] 📅 academic year

Cours spécifiques

- INFO-Y122 **Security Analysis: from audits to red teaming** | Jérôme DOSSOGNE (Coordinator)
⌚ 5 credits [lecture: 30h, practical work: 30h] 📅 first term
- INFO-Y123 **Human factors in information security** | Jérôme DOSSOGNE (Coordinator)
⌚ 10 credits [lecture: 60h, practical work: 60h] 📅 first term 🗨 English
- INFO-Y124 **Corporate information security** | Charles CUVELLIEZ (Coordinator)
⌚ 5 credits [lecture: 30h, practical work: 30h] 📅 second term
- STAG-F010 **Internship in Cybersecurity** | Yasser El Jasouli (Coordinator)
⌚ 10 credits [work placement: 120h] 📅 first and second terms 🗨 French

Master in cybersecurity

Focus Erasmus Mundus joint master in Cybersecurity (CYBERUS)

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Bloc 1 | M-SECUM | MA-SECU

The first year is to be followed at Université de Bretagne Sud (UBS).

HULB-0000

[Cours externe à l'Université](#)

🕒 60 credits 📅 academic year

Master in cybersecurity

Focus Erasmus Mundus joint master in Cybersecurity (CYBERUS)

Bloc 2 | M-SECUM | MA-SECU

Cours obligatoires

- ELEC-H423 **Mobile and wireless networks** | Jean-Michel DRICOT (Coordinator)
 5 credits [lecture: 36h, practical work: 24h] first term English
- ELEC-H550 **Embedded System Security** | Jan Tobias Mühlberg (Coordinator)
 5 credits [lecture: 24h, practical work: 36h] first term English
- INFO-F536 **Current issues in European digital security** | Olivier MARKOWITCH (Coordinator) and Jean-Michel DRICOT
 5 credits [seminars: 12h] first term English
- INFO-F537 **Cryptanalysis** | Gilles VAN ASSCHE (Coordinator)
 5 credits [lecture: 36h] first term English
- INFO-Y119 **Forensics and reverse engineering** | Thibault Debatty (Coordinator)
 5 credits [lecture: 24h, practical work: 24h] first term English
- MEMO-F543 **Master thesis and internship in cybersecurity** | Olivier MARKOWITCH (Coordinator) and Jean-Michel DRICOT
 30 credits [work placement: 120h, mfe/tfe: 240h] second term English

Cours à options

Ou tout autre cours de MASTER avec l'accord du titulaire et du président de jury

One course chosen from the following

- GEST-S482 **The digital firm** | Nicolas VAN ZEEBROECK (Coordinator) and Vincent LION
 (optional) 5 credits [lecture: 36h, tutorial classes: 24h] first term English
- GEST-S706 **Entrepreneurship** | Olivier WITMEUR (Coordinator) and Ant BOZKAYA
 (optional) 5 credits [lecture: 24h] second term English
- INFO-F409 **Learning dynamics** | Tom LENAERTS (Coordinator)
 (optional) 5 credits [lecture: 24h, project: 60h] first term English
- INFO-H415 **Advanced databases** | Esteban ZIMANYI (Coordinator)
 (optional) 5 credits [lecture: 24h, tutorial classes: 24h, practical work: 12h] first term English
- INFO-H420 **Management of Data Science and Business Workflows** | Dimitrios SACHARIDIS (Coordinator)
 (optional) 5 credits [lecture: 24h, tutorial classes: 36h] first term English
- INFO-Y082 **Distributed and mobile programming paradigms** | Elisa GONZALEZ BOIX
 (optional) 6 credits [lecture: 26h, tutorial classes: 26h, project: 30h] first term English
- INFO-Y115 **Secure software design and web security** | Romain ABSIL (Coordinator)
 (optional) 5 credits [lecture: 30h, practical work: 20h] first term

One course chosen from the following

TEMP-0000
(optional)

Cours extérieurs au programme

🕒 5 credits 📅 academic year 🗨️ French

TEMP-0000
(optional)

Cours extérieurs au programme

🕒 10 credits 📅 academic year 🗨️ French

TEMP-0000
(optional)

Cours extérieurs au programme

🕒 15 credits 📅 academic year 🗨️ French

