

SCIENCES, TECHNOLOGIES, SANTÉ, INGÉNIERIE

# Parcours Cybersecurity 2e année

Master Informatique



Niveau d'étude  
visé  
Bac +5



ECTS  
60 crédits



Durée  
1 an



Composante  
UFR IM2AG  
(informatique,  
mathématiques  
et  
mathématiques  
appliquées),  
Grenoble  
INP, Institut  
d'ingénierie et  
de management  
- UGA,  
Grenoble INP  
- Ensimag  
(Informatique,  
mathématiques  
appliquées et  
télécommunications),  
UGA



Langue(s)  
d'enseignement  
Anglais



Bi-langue  
Partiellement en  
anglais

## Présentation

Cybersecurity is a second year program (semesters 9 and 10) of the Mathematics and Computer science masters. Courses are in English and the program follows a first year master 1 in mathematics or Computer science or equivalent.

The economical impact of losses due to cybercriminality is estimated to several hundreds of billions of euros per year (445 billions of dollars, according to a McAfee/CSIS study in 2014) with a large increase in attacks, for instance identity and data thefts and malicious attacks.

Vulnerabilities and Protections are covered, with for instance:

- Robustness of critical infrastructures when facing cyberattacks (e.g., stuxnet, wannacry)
- Robustness of security components when facing software vulnerabilities and data leakage (e. g., heartbleed)
- Privacy protection and cloud infrastructure security
- Robust design and evaluation of security components
- Detection of vulnerabilities in protocols for hardware and software components

Topics covered in the training include additional areas of Cybersecurity, such as cryptology, forensics, fuzzing or anonymization, especially for embedded systems and distributed architectures

Train cybersecurity experts (including data privacy aspects) with a bac + 5 degree, able to evolve immediately in an industrial environment and who can also pursue a thesis.

The course is labelled "Core AI" by ↗ MIAI.

This course is taught by research professors (lecturers, university professors), associate professors and professionals in the field.

**Formation internationale :** Formation tournée vers l'international

## Dimension internationale

### Etudier à l'international en échange

Dans le cadre de cette formation, vous avez la possibilité de partir étudier durant un semestre ou une année dans un établissement partenaire de l'UGA à l'international.

Le correspondant relations internationales de votre composante pourra vous renseigner.

Plus d'informations sur : ↗ <https://international.univ-grenoble-alpes.fr/partir-a-l-international/partir-etudier-a-l-etranger-dans-le-cadre-d-un-programme-d-echanges> ↗ /

Possibilité de faire un ↗ double diplôme avec l'↗ Université de Swansea.

## Organisation

### Stages

**Stage :** Obligatoire

**Durée du stage :** 6 months

The students of the common core General mathematics will have had a supervised research work at semester 10. The

students of the common core Applied maths will have had a practicum and a project at semester 10.

**Stage à l'étranger :** En France ou à l'étranger

## Admission

### Conditions d'admission

The second year is accessible on file (and / or interview) to candidates who have validated the 1st year of a compatible course or through a validation of studies or acquired under the conditions determined by the university or training

Public continuing education : You are in charge of continuing education :

- if you resume your studies after 2 years of interruption of studies
  - or if you followed a formation under the regime formation continues one of the 2 preceding years
  - or if you are an employee, job seeker, self-employed
- If you do not have the diploma required to integrate the training, ↗ you can undertake a validation of personal and professional achievements (VAPP)

## Candidature

Do you want to apply and register? Note that the procedure differs depending on the degree considered, the degree obtained, or the place of residence for foreign students.

↗ Find out which procedure applies to me and apply

## Et après

### Poursuite d'études

Depending on the nature of their practicum, students may wish to pursue research in a doctoral thesis.

## Métiers visés

- Ingénieur en cybersécurité
- Ingénieur en sécurité des systèmes d'information
- Ingénieur spécialisé en audit sécurité des systèmes d'information
- Ingénieur technico-commercial en sécurité informatique
- Ingénieur R&D spécialisé en cybersécurité.

## Infos pratiques

### Contacts

#### Responsable pédagogique

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#### Responsable pédagogique

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#### Secrétariat de scolarité

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#### Secrétariat de scolarité

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## Lieu(x) ville

📍 Grenoble

## Campus

📍 Grenoble - Domaine universitaire

## En savoir plus

Site du parcours Cybersecurity

↗ <http://cybersecurity.imag.fr/>

# Programme

## Spécificités du programme

Program under construction - pending CFVU vote

### Master 2e année parcours classique

#### Semestre 9

	Nature	CM	TD	TP	Crédits
UE Software security, secure programming and computer forensics	UE	19,5h		19,5h	3 crédits
UE Security architectures	UE	48h		30h	6 crédits
UE Cryptographic engineering, protocols and security models, data privacy, coding and applications	UE	36h	18h	24h	6 crédits
UE Threat and risk analysis, IT security audit and norms	UE	19,5h		19,5h	3 crédits
UE Physical Security : Embedded, Smart Card, Quantum & Biometrics	UE	39h	18h	21h	6 crédits
UE Advanced Security	UE	24h		24h	6 crédits
UE Advanced Cryptology	UE	24h	12h	12h	6 crédits

#### Semestre 10

	Nature	CM	TD	TP	Crédits
UE Internship Cybersecurity	UE				30 crédits

### Master 2e année parcours Graduate School

#### Semestre 9

	Nature	CM	TD	TP	Crédits
UE GS_MSTIC_Ethique de la recherche	UE				6 crédits
UE Software security, secure programming and computer forensics	UE	19,5h		19,5h	3 crédits
UE Security architectures	UE	48h		30h	6 crédits
UE Cryptographic engineering, protocols and security models, data privacy, coding and applications	UE	36h	18h	24h	6 crédits
UE Threat and risk analysis, IT security audit and norms	UE	19,5h		19,5h	3 crédits

UE Physical Security : Embedded, Smart Card, Quantum & Biometrics	UE	39h	18h	21h	6 crédits
UE Advanced Security	UE	24h		24h	6 crédits
UE Advanced Cryptology	UE	24h	12h	12h	6 crédits

## Semestre 10

	Nature	CM	TD	TP	Crédits
UE Internship Cybersecurity	UE				30 crédits