Master 2 CyberSecurity

Welcome kickoff meeting

Clément Pernet (Ensimag)
Laurent Mounier (UFR IM²AG)
Septembre 18, 2023
The Master 2 Cybersecurity

A second year Master specialization in the field of Cybersecurity

International: taught in english

Two possible majors:

▶ Mention Mathématiques et applications
▶ Mention Informatique

Cooperated by

▶ UFR IM2AG, Faculté des Sciences, UGA
▶ Ensimag, Grenoble INP - UGA
Goal: training experts on the field of cybersecurity:

Cryptography: symmetric, asymmetric, post-quantum
  ▶ Mathematics Foundations
  ▶ Cryptographic primitives and protocols: principle and analysis
  ▶ Security models and security proofs, attacks

Security:
  ▶ software security : vulnerability, forensic, static analysis
  ▶ hardware security: embedded systems, quantum cryptography
  ▶ security architectures: PKI, blockchain, network

Audit and risk analysis:
  ▶ Pentesting
  ▶ Standardized methods:: E-BIOS ISO2700x, etc
  ▶ Threats and models of attacks
<table>
<thead>
<tr>
<th>Units (UE)</th>
<th>ECTS</th>
<th>Semestre</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Software Security</strong> secure programming and computer forensic</td>
<td>3</td>
<td>S9</td>
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<tr>
<td><strong>Security Architectures</strong> network, system, key management,</td>
<td>6</td>
<td>S9</td>
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<tr>
<td>blockchains, cybersecurity of industrial IT</td>
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<tr>
<td><strong>Cryptographic Engineering</strong>, protocols and security models,</td>
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<td>S9</td>
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<tr>
<td>data privacy, coding and applications</td>
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<tr>
<td><strong>Security Audit and Risk Analysis</strong></td>
<td>3</td>
<td>S9</td>
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<tr>
<td><strong>Hardware and embedded systems security</strong></td>
<td>6</td>
<td>S9</td>
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<tr>
<td><strong>Elective course: Advanced Crypto or Security</strong></td>
<td>6</td>
<td>S9</td>
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<tr>
<td><strong>Internship: &gt; 5 months in a company or research lab</strong></td>
<td>30</td>
<td>S10</td>
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<td>International students</td>
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<td>Master 1 UGA</td>
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<td>M1 Maths Générales</td>
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<td>M1 Applied Maths</td>
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<td>M1 MoSIG</td>
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<td>M1 Informatique</td>
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<td>Engineer school, Grenoble INP</td>
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<td>Ensimag</td>
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<td>Phelma</td>
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You will likely become

- Engineers experts in cybersecurity:
  - Audit, Pentesting
  - Consulting
  - Experts

- State/government agencies employees:
  - ANSSI
  - Ministère des Armées

- PhD students:
  - In a research laboratory
  - Often with an industrial partner
  - PhD’s are finally well recognized on the job market especially in the field
Welcome to a dynamic industrial and academic network

<table>
<thead>
<tr>
<th>Local industrial partners</th>
<th>National industrial partners</th>
<th>Research labs</th>
<th>Institutes and federations</th>
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<tbody>
<tr>
<td>ST Microelectronics</td>
<td>Thalès</td>
<td>LIG, LJK, Verimag, TIMA, IF</td>
<td>Cybersecurity Institute UGA</td>
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<tr>
<td>ATOS</td>
<td>Consensys</td>
<td>LCIS, GSCOP, Cerag</td>
<td>IRT nano-elec</td>
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<td>Worldgrid</td>
<td>C-S</td>
<td>Inria</td>
<td>Cyberskills@UGA</td>
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<td>Schneider Electric</td>
<td>Orange labs</td>
<td>CEA-LETI (CESTI), CEA-LIST</td>
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<td>Quarkslab, ...</td>
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<td>MathWorks, ...</td>
<td>EDF, SNCF</td>
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<td>National industrial partners</td>
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<td>ANSSI, ...</td>
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Good news: your skills are highly wanted

- Cybersecurity job shortage: since over 10 years, and not to end soon
- Estimates of over 3.5M vacant full time positions worldwide
- Among the top priorities for France 2030 investments:
  → Compétences et Métiers d’Avenir program (Cyberskills@UGA)
- Typically over 60% of our students have job option before graduating
Organization and regulations

- Main site for the program: https://cybersecurity.imag.fr

Regulations

- Evaluation in most courses: 50% final exam + 50% lab work/ mid-terms
- Lab works/ mid-term exams are mandatory: Justified absence = ABJ = 0/20. Unjustified absence = ABI = FAILED
- To validate each semester: no less than 10/20 average
- Threshold: no course below 7/20
- Second session exams: to improve on the final exam grade of the courses of your choice if the semester is not passed.
- Final jury for the diploma: mid-September 2014
Elective course

**Advanced Security**  Laurent Mounier

**Advanced Cryptography**  Pierre Karpman and Emmanuel Peyre

- 5+ weeks to make up your mind
- Presentation meeting in October
- Decision by October 25th
Organization of the coming year

Semester 9

Part 0: Refresh week Sept 18–22
Part 1: Regular program. 5 weeks Sept 25 – Oct 27
Part 2: Regular + elective courses. 8 weeks Nov. 6 – Jan 10

Exams: Week of Jan 15–20

Semester 10: Internship

- At least 5 months
- Starting in February 2024
- Defenses: first week of September 2024
  → start now looking for an internship
Planning on ADE: https://edt.grenoble-inp.fr/2023-2024/exterieur/?resources=11151

Semester 9 planning: 14 weeks

5 semaines : du 25 Septembre au 27 Octobre
moins Jeudi 12 octobre, FEEL

7 semaines : du 6 Novembre au 22 Décembre
Moins vendredi 17 novembre GreHack

Semaine du 19 Septembre 2023

Lundi Mardi Mercredi Jeudi Vendredi
8h15-9h45 9h45-11h15 11h15-12h45 RATTRAPAGE GBCY9U03 Crypto Eng.
13h00-14h30 14h30-16h00 16h00-17h30 RATTRAPAGE GBCY9U03 Embedded Sec.

Semaine du 8 janvier 2024

Lundi Mardi Mercredi Jeudi Vendredi
8h15-9h45 9h45-11h15 11h15-12h45 12h45-14h15 RATTRAPAGE GBCY9U03 Crypto Eng.
14h15-15h45 15h45-17h15 17h15-18h45 RATTRAPAGE GBCY9U05 Embedded Sec.
Semester 10: Internship

- Instructions available on https://cybersecurity.imag.fr
- **Warning** Procedure depends on your registration (UFR or Ensimag)
  - **Ensimag:** https://e-stages.grenoble-inp.fr/
  - **UFR:** im2ag-gestion-stages@univ-grenoble-alpes.fr
    - information sheets, then e-signatures on the work contract

- A comfortable planning:
  1. Prospection in October and November
  2. Application before Christmas break
  3. Paperwork in January
  4. Start in February
  5. a bit of slack: 5 months required in a period of 7 months

- We maintain a page on chamillo with internship offers, but

- Search also on your side, and if need, ask us for assistance

- Further information:
  - https://www.ssi.gouv.fr/guide/panorama-des-metiers-de-la-cybersecurite/
  - https://www.ssi.gouv.fr/guide/les-profils-de-la-cybersecurite/
Registration

- Either at UFR IM²AG (ex M1 students and international students)
- or Ensimag (ex Ensimag 2A or Phelma 2A students)

Please always use your institutional address (@univ-grenoble-alpes.fr or @grenoble-inp.fr)

**Choice the Major of your Master degree**

- Computer Science
- Mathematics and applications
https://international.univ-grenoble-alpes.fr

> Section « Votre séjour à l’UGA »  > « Getting Organized » section

- Logement, titres de séjour, assurances, dispositifs d’aide et de soutien, espaces d’accueil, etc.
- Guides et fiches pratiques pdf téléchargeables
- Accommodation, residence permits, insurances, support services, services centers, etc.
- Welcome guides and info sheets available

Accueil :

Welcome:

Grenoble
Bâtiment iCampus – Welcome Center
1025 Avenue Centrale
Campus Saint-Martin-d’Hères
Tram B & C « Bibliothèques Universitaires »

Valence
Site Briffaut
DSDA, Bâtiment 2
Site Latour-Maubourg
Maison de l’Etudiant

Temps d’infos rentrée : vos démarches à l’arrivée

- Assurances, compte en banque, assurance maladie, etc.
- Chaque semaine en septembre (programme sur le portail international de l’UGA)
- Insurances, bank account, healthcare system, etc.
- Each week in September (program on UGA international website)

Info sessions: first steps upon arrival
**Rule of conduct**

**Fraud and plagiarism** are strictly forbidden

- Team work is not copy/paste
- Applies to all documents subject to an evaluation (Lab reports, exams and internship reports)
- When detected, triggers a disciplinary commission
- Sanctions from simple warning to permanent expulsion from any public higher education institution

**Fight against Gender based Violence and discrimination:**

Gender-Based violence and harassment, disability, racism, anti-semitism, homophobia, transphobia, religious discrimination...

- During class and lectures
- In your student life
- In your internship
- During student events

→ **Zero tolerance**

2023-11-17 (day off): Grehack http://grehack.fr/
2023-10-12 (day off) : FEEL
  https://ensimag.grenoble-inp.fr/fr/entreprises/feel-2020
2024-03-26  Forum International de la Cybersécurité https://www.forum-fic.com/
Contact

Head of the M2 Cybersecurity Program

- Laurent Mounier: Laurent.Mounier@univ-grenoble-alpes.fr (UGA)
- Clément Pernet: Clement.Pernet@univ-grenoble-alpes.fr (Grenoble INP – UGA)

For any question, address your message to both of us.

Scolarity staff

- Carine Beaujolais: Carine.Beaujolais@univ-grenoble-alpes.fr
- ???(hiring in process): m2cybersec@ensimag.fr