



Master of Applied
Cybersecurity

"Society needs you!"

Prof. Dr. Hasan DAĞ, Programme Coordinator



Erasmus Mundus
Joint Master Degree

CYBERMACS

Tuition waiver to all students.

Additionally, 1400 €/month scholarship for selected students.

APPLY NOW!



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WHY CyberMACS?

Dramatic rise in cyber-attacks has made cybersecurity a major global concern. Cybercrime is estimated to cost the world economy about \$1 trillion in 2020. In February 2021, a cyber-attack targeted a water treatment facility in Florida to change chemical levels in the water supply. In May 2021, a ransomware attack targeted the largest fuel pipeline in the USA. Cyber-attacks come in all shapes, including worldwide data breaches affecting companies and people. For instance, a social media app cyber-attack resulted in 1.3 million users' information leakage. Changing the landscape of cybersecurity threats requires the urgent need for comprehensive, dynamic, and applied cybersecurity education to qualify cybersecurity professionals to prevent, mitigate, and manage threats.

CyberMACS proposes a full-time 2-year joint European MSc programme (120 ECTS) focusing on "Applied Cybersecurity" to provide a solid background within cybersecurity, focusing on educating future cybersecurity experts to detect, prevent, mitigate, and manage cyber-attacks. Students will be trained on the basics of cybersecurity in the first year; then, opportunities will be provided for specialisation in the second year following the compulsory winter/summer schools and a mandatory internship. Besides specialisation tracks, students will receive training in soft skills such as entrepreneurship and complete their degrees with master theses.

To guarantee CyberMACS's vision of high-quality education, three European higher educational institutions combine their complementary competencies: Kadir Has University (KHAS), SRH Berlin University of Applied Sciences (SRH), and Ss. Cyril and Methodius University-Skopje, North Macedonia (UKIM). CyberMACS is a solid institutional cooperation for European excellence in higher education with a high-level integrated & transnational study programme on applied cybersecurity targeting the best students worldwide.



Consortium: Three Universities From Three Countries

CyberMACS universities are located in three cities and countries:

1. **Istanbul, Turkey** - Kadir Has University
2. **Skopje, North Macedonia** - Ss. Cyril and Methodius University, UKIM
3. **Berlin, Germany** - SRH Berlin University of Applied Sciences

Istanbul, Turkey (Kadir Has University) Kadir Has University (KHAS) was founded in 1997 in Istanbul. The university is the center of education, culture, and art, with its five faculties (Art and Design, Communication, Economics and Administrative Sciences, Engineering and Natural Sciences, and Law), School of Graduate Studies, Research Centers, and Rezan Has Museum. It is dedicated to becoming a leader in educational and cultural fields in Türkiye and establishing itself as an international centre for research and scientific development. KHAS's master's program on cybersecurity works in collaboration with KHAS CCIP (Cybersecurity and Critical Infrastructure Protection), a research centre dedicated to developing innovative solutions for the cybersecurity of critical infrastructures. It is located in the European side and historical center of Istanbul, and its campus is in the Fatih, Cibali neighbourhood on the coast of the Golden Horn that can be easily reached from every point of Istanbul. KHAS is also very close to all amenities of Istanbul, like festivals, exhibitions, and academic and business events. As one of the largest metropolises in the world, Istanbul is an excellent center of attraction.



Skopje, North Macedonia (Ss. Cyril and Methodius University, UKIM) Ss. Cyril and Methodius University, UKIM is the largest state university in the country, located in the center of Skopje. It was founded in 1949 and comprises 22 faculties and 5 research institutes. The University provides the most significant part of ICT experts for the Macedonian labour market. Besides being the capital of the Republic of North Macedonia, Skopje is also a leading city in terms of culture, economy, and education. The city has many historical places, one of the common points of Western and Eastern cultures. Due to its geographical location, Skopje is also rich in natural beauty.

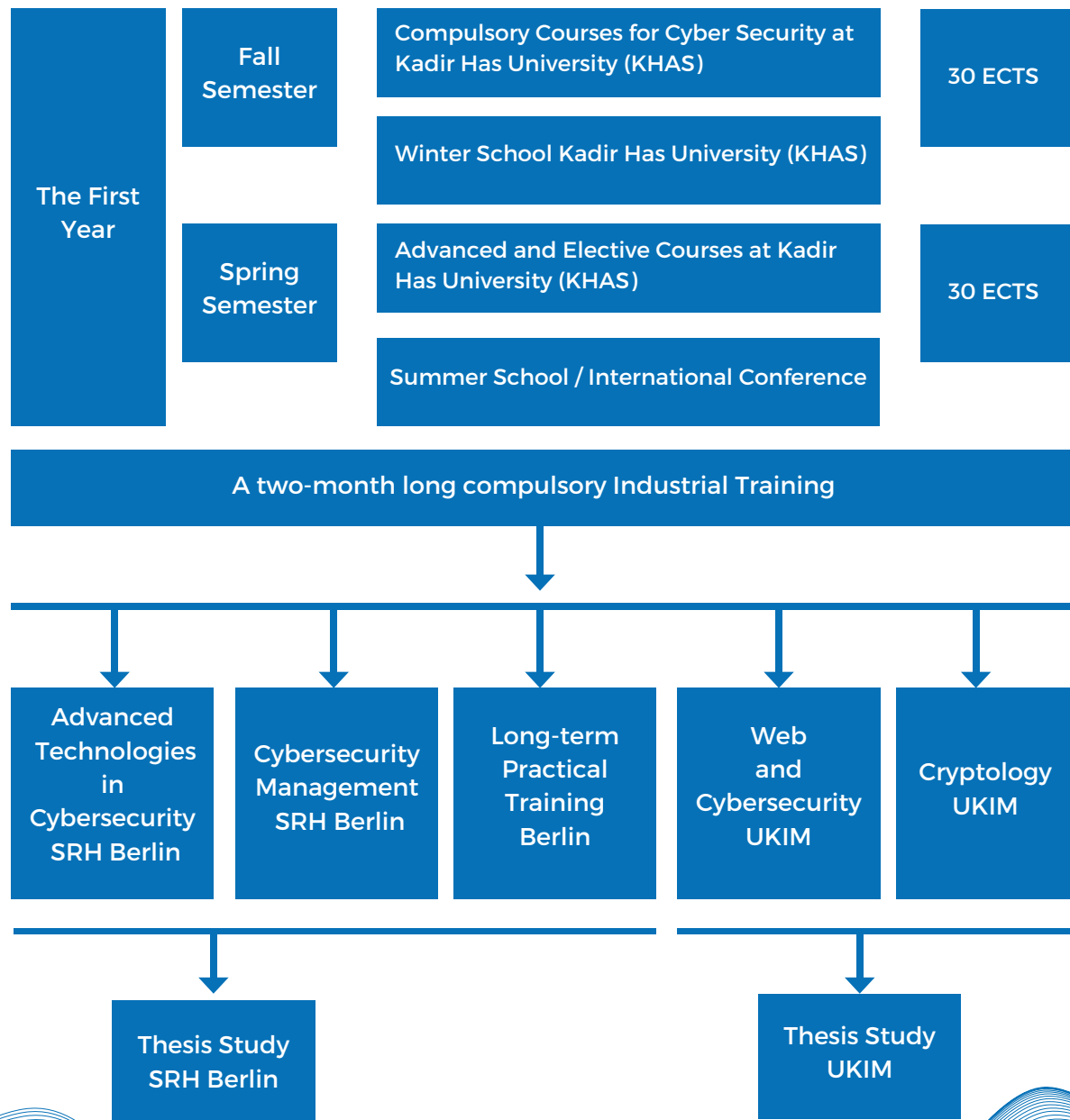


Berlin, Germany (SRH Berlin University of Applied Sciences) SRH Berlin is one of the oldest and largest private universities in Germany, located in the city's center. It is divided into 6 schools located in Berlin, Hamburg, and Dresden. The cybersecurity department in SRH enjoys excellent relations with the industry including big players in cybersecurity, such as Deutsche Telekom AG, Siemens AG, Bosch AG, and Deutsche Bahn AG. Among European capitals, Berlin is still one of the most affordable cities for students and it is a melting pot of different cultures. The city also offers close contact with international firms and start-ups, especially in technology enterprises.



Programme Structure and Curriculum

CyberMACS is a full-time 2-year European-funded Master of Science (MSc) Programme (120 ECTS) focusing on “Applied Cybersecurity”.



Programme Structure and Mobility

The main idea or the philosophy of the Joint European Master Programme is to have students be exposed to different cultures, be trained by as many other institutions and professors as possible, and exchange ideas / experiences with students worldwide. Thus, each student in the program must have at least two compulsory mobilities.

CyberMACS academic structure follows a joint program which is an outcome of solid cooperation of partner universities by combining different disciplines and sub-branches of cybersecurity that can be studied at various universities.

The Master's thesis is written under the joint supervision of both the first- and second-year universities. The language of instruction in all universities is English.

The students will start all together at KHAS with the active support of the University of Groningen, SRH and UKIM and acquire core competencies in both basics of computer science and cybersecurity, but also soft skills such as communication skills, research methods, and project development skills will be provided. During the second year, with respect to your mobility, you will specialise in cybersecurity management, applied technologies in cybersecurity, cryptology or web and cybersecurity. In this vein, the consortium represents all relevant branches necessary for theoretical research and practical applications in cybersecurity.

Summary:

- Students will be trained on the basics of cybersecurity in their first year in Istanbul, Türkiye (Kadir HAS University, KHAS), to complete 60 ECTS.
 - A compulsory Winter School will last a week between the Fall and Spring semesters.
 - Right after the Spring semester, there will be a Summer School for the first intake, and from the second intake onward, there will be an International Conference for all students to participate in.
 - Lastly, in the first year, the students are to complete a compulsory 2-month-long practical training in the institutions approved by the relevant committees.
 - Students who enrol in KHAS need to complete at least 30 ECTS from one of the full partner institutes before going for a year-long study at another institute.
- For the specialisation in the second year, students go either to Berlin, Germany (SRH Berlin University of Applied Sciences) or Skopje, North Macedonia (Ss. Cyril and Methodius University, UKIM). The specialisation areas are below:
 - Web and Cybersecurity (UKIM) [30 ECTS]
 - Cryptology (UKIM) [30 ECTS]
 - Advanced Technologies in Cybersecurity (SRH Berlin) [30 ECTS]
 - Cyber Security Management (SRH Berlin) [30 ECTS]
 - Long-term Practical Training in an approved institution (Berlin) [30 ECTS]
- Master thesis [30 ECTS].
- Degree Options (Two-dual degrees, one by KHAS-SRH and one by KHAS-UKIM).

The CyberMACS programme is designed based on the employability need of the students. The programme encourages a proactive mindset through innovative teaching and training methods such as joint courses, interactive labs, hands-on training, and competition.

CyberMACS Outcomes

CyberMACS aims to educate professional engineers who can take on the most demanding R&D tasks and drive the development of future products and services. More specifically, the learning outcomes are the following:

- Students have a theoretical understanding of information security and practical skills for designing and critically analysing secure computing systems.
- Students understand the architectural principles of distributed services and applications. They can design, analyse, and implement cloud-based and distributed computing systems.
- Students have in-depth knowledge of their chosen specialisation area and can apply it to solving technical and scientific problems. They can contribute to the knowledge and practices in their field.
- Students have strong software development skills and other technical and professional skills that enable them to take responsible roles in an industrial research and development environment, and they are qualified to continue doctoral studies in academia.

Career Goals

There is a massive shortage of cybersecurity professionals both in Europe and worldwide. Furthermore, the need is growing every year. As more and more companies and institutions are looking for professionals who can develop products and services against cyber threats, CyberMACS responds to this demand for graduating engineers and scientists who can be innovative entrepreneurs, and possess intercultural communication and social skills.

You can work as: cybersecurity expert, cybersecurity analyst, data protector, cybersecurity vulnerability assessor, security architect or product integrator, system penetration tester, incidence response expert, cryptographer, malware analyst, application security expert, and so on. A few examples of industries are:

- Cyber security industry including international consulting companies for security,
- International industrial R&D jobs,
- Security product and service developing companies,
- Engineering and consulting companies, etc.



Admission And Requirements

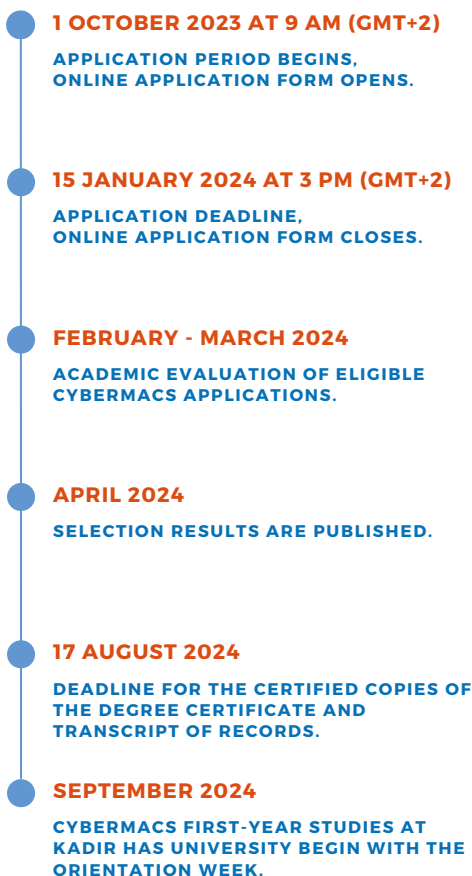
CyberMACS invites applications from top students of all nationalities. The admission process is competitive, and only the best applicants are selected. The application period will take place from 1 November 2023 to 15 January 2024 .

Application round for fall 2024 student intake and selection schedule

Application Process

For a student application for the Programme to be considered, the candidate must comply with the minimum requirements regarding administrative, academic, and language prerequisites.

- **Administrative prerequisites are:**
 - Compliance with the application calendar and deadlines.
 - Submission of a complete set of required application documents in English (certified English translation if needed).
- **Academic prerequisites are:**
 - Completed Bachelor of Science in computer science, computer engineering, electrical/electrical-electronics engineering or another degree in science (physics, math, information technologies, management information system, information system engineering etc.) recognized by the EU as a 1st or 2nd cycle degree equivalent to at least 180 ECTS. The required background consists of sufficient studies in mathematics (linear algebra, calculus, probability theory, statistics, and discrete mathematics), programming skills, algorithms and data structures, databases, theory of computation. (Applications from Students in the last year of Bachelor or equivalent study programmes will be accepted conditionally).
- **Language prerequisites are:**
 - Proficiency in written and spoken English at a B2 level of the Common European Framework of Reference for Languages (CEFR) duly confirmed by language certificates specified in the Call for Applications.



Selection Process

The 3-stage processing and selection include the following criteria and procedures:

- **Screening phase:** Applications are first checked for completeness of the required documents. The applicants with missing one or more documents are not considered further.
- **Administrative, language, and academic validity check:** Applications passing the screening phase are subjected to further detailed administrative and academic checks. At the end of this process, invalid applications are put aside with no further processing, while valid applicants are elevated to the detailed academic merit-based processing and ranking level.
- **Interviews:** Depending on the applicant's ranking, the 10% cap* on scholarship holders from a particular country, and the number of students foreseen for admission, an interview list is developed based on these rules and face-to-face (online) interviews are conducted. At the interview stage, students are evaluated based on their motivation, experience, and ability to integrate into this international program.

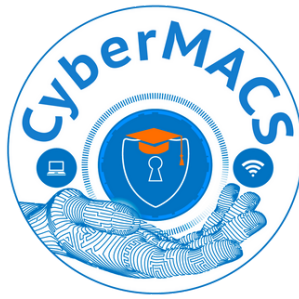
*Max 10% of (regular) total scholarships that CyberMACS plan to grant can be provided to students of the same nationality.

Three Distinctive Admission Schemes

At CyberMACS, we are committed to accessible education. We proudly extend a tuition fee waiver to every student, ensuring unobstructed access to excellence in Applied Cybersecurity. Our dedication to inclusivity is showcased through three distinctive admission schemes, each tailored to accommodate the diverse needs of our prospective students:

- **Scholarship Pathway:** Exceptional students can be awarded a prestigious monthly scholarship of 1400 euros. This distinguished recognition not only celebrates exceptional achievements but also provides essential financial support for their journey in cybersecurity education.
- **Merit-based Admission:** As meritocracy advocates, CyberMACS welcomes students who demonstrate exceptional academic promise and dedication. Although not receiving a scholarship, these students benefit from our tuition fee waiver, enabling them to embark on their CyberMACS journey without the responsibility of tuition fees.
- **Affordable Education Track:** Committed to providing accessible education, CyberMACS offers a comprehensive fee structure. For a nominal amount of 5175 Euros for the entire program, this fee encompasses various costs, including administration and insurance. This option ensures that world-class cybersecurity education is accessible to every enthusiastic learner.

Our three distinct admission pathways reflect our pledge to embrace diversity and promote inclusivity. Join us in shaping the future of cybersecurity through knowledge, innovation, and a commitment to making education attainable for all.



Master's Programme in Applied Cybersecurity Erasmus Mundus Joint Master Degree

2 Years

3 Universities

2 Degrees

Winter & Summer Schools

Internship

International Experience

Opportunity to specialise in different areas of Cybersecurity

Tuition waiver for everyone

Erasmus Mundus Joint Master Degree Scholarship*

€1400/month for selected students

**These scholarships cover the cost of participation in the program, travel and provide a living allowance.*



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