



SECURING SPACE: A MULTIDIMENSIONAL CYBERSECURITY COURSE

AGH University of Krakow

9-25.03.2026

9-20.03.2026 online

23-25.03.2026 onsite in Krakow



COURSE OBJECTIVE

The course **Securing Space: A Multidimensional Cybersecurity** provides a multidisciplinary overview of cybersecurity in the space domain, combining technical, legal, policy, and strategic perspectives. Designed for early-career professionals and for those with more experience from both public and private sectors, this course equips participants with practical skills and critical insights into securing space systems and infrastructure. Participants will gain both a theoretical foundation and hands-on experience with real-life use cases.



TARGET AUDIENCE

The course is aimed at professionals from:

- Start-ups designing their first cybersecurity strategies
- Scale ups and large space companies, including satellite operators, upstream and downstream solution providers that want to optimize and upgrade their cybersecurity activities
- Public sector institutions at local, national and EU levels designing security-related policies
- Agencies, accelerators, and R&D hubs, supporting security-related innovations
- Consulting companies advising on security aspects
- All entities that would like to update their security policies to comply with current regulations

Course Structure and Schedule



Duration: 2 weeks

Participation fee: €2,500 per person (regular)

Early registration (until the end of 2025): €2,000 per person

The price does not include accommodation in Krakow

Number of participants: minimum 12, maximum 20

Certificate of completion: AGH certificate awarded at the official course closing ceremony

Registration: Write an email to magdalena.ostaszc@agh.edu.pl, with the subject '**Securing Space**'.

Magdalena Ostasz, the course supervisor, will also answer any questions related to the course.

COURSE SCHEDULE

WEEK 1

9-13.03.2026

online

5 sessions x 2h

8:00-10:00

Space-Cyber Ecosystem - Policy, Strategy, Legal and Military Aspects

- **Introduction to the Space-Cyber Ecosystem:** Magdalena Ostasz, AGH (Monday 9.03.2026, 8:00-10:00)
- **Legal Aspects of Space Cybersecurity:** Magdalena Ostasz, AGH (Tuesday 10.03.2026, 8:00-10:00)
- **Policy, Strategy & Space Governance in the Cyber Age:** Anna Blechova, Masaryk University (Wednesday 11.03.2026, 8:00-10:00)
- **Cybersecurity in Military and NATO Space Operations:** col. Przemysław Przybylak, Polish Cyber Command (Thursday 12.03.2026, 8:00-10:00)
- **Supply Chain Security and Sustainability in Space:** dr inż. Bartosz Sawik, AGH (Friday 13.03.2026, 8:00-10:00)



COURSE SCHEDULE

WEEK 2

16-20.03.2026

online

5 sessions x 2h

8:00-10:00

Technical Architectures and Security in Satellite Systems

- **Understanding system-level architecture and how cybersecurity integrates into spacecraft, satellite constellations, and ground segments:** Jose Manuel Diez, TU Berlin (Monday 16.03.2026, 8:00-10:00)
- **Review of current threats including jamming, spoofing, and other cyberattacks:** dr inż. Marek Zmuda, Intel (Tuesday 17.03.2026, 8:00-10:00)
- **Hardware security:** dr inż. Marek Zmuda, Intel (Wednesday 18.03.2026, 8:00-10:00)
- **Satellite communication - basic issues on the example of the Gaia station in the X and S bands on the Kąkolewo campus:** dr hab. inż. Rafał Krenz, Poznan University of Technology (Thursday 19.03.2026, 8:00-10:00)
- **Optical Communication and Cybersecurity:** dr hab. Piotr Kolenderski, prof. UMK (Friday 20.03.2026, 8:00-10:00)

COURSE SCHEDULE

WEEK 3

23-25.03.2026

onsite

AGH University of Krakow

Practical Labs and Group Projects on Cybersecurity in Space

Daily: 6 hours of workshops (9:00-12:00, 14:00-17:00), including lunch and networking

Participants form thematic groups based on chosen use cases (voted on in Week 1), such as:

- **Innovation and Entrepreneurship in Space Cybersecurity:**
dr eng. Justyna Topolska, AGH
- **Technical Aspects of Cybersecurity in Space Systems:**
dr inż. Krzysztof Grabowski, AGH + dr inż. Marek Zmuda, Intel
- **Future Threats and Strategic Foresight for the Space Sector - Ethics and Legal Aspects, AI and quantum computing:** Magdalena Ostasz, AGH + prof. Paweł Przybyłowicz, AGH

Each group, led by a mentor, will prepare a project responding to cyber challenges in the above-mentioned areas, working on case studies.

MEET THE INSTRUCTORS



ANNA BLECHOVÁ

Masaryk University

Anna Blechová is a PhD student at the Institute of Law and Technology, Masaryk University. Her research focuses on the legal aspects of cybersecurity in outer space, with particular emphasis on the New Space sector. In addition to her primary research, she is involved in an EU-funded project on novel lawful interception tools and the digitalization of justice. She holds a law degree from Masaryk University and has previously interned at the Law Branch of the NATO Cooperative Cyber Defence Centre of Excellence (CCDCOE) and at the National Cyber and Information Security Agency (NÚKIB). She regularly collaborates with the NATO CCDCOE on the Locked Shields exercise and has presented at conferences such as CyCon in Tallinn, New Horizons in Air and Space Law: Treaties, Technologies, and Tomorrow's Challenges in Singapore, and this year's International Astronautical Congress in Sydney. Alongside her doctoral studies, she has worked as a cybersecurity manager at the Prosecutor General's Office in Czechia. She was also a visiting researcher at the Leiden University Institute of Air and Space Law. Currently, she is a Fulbright Scholar at George Washington University and Cornell University.



BARTOSZ SAWIK

AGH University of Krakow

Dr. **Bartosz Sawik** is a Professor at AGH University of Krakow in Krakow, Poland. He currently serves as the Associate Dean for Research (Vice-Dean for Science) at the Faculty of Space Technologies at AGH University of Krakow and is the head of the Multi-Criteria Optimization for Space Applications research group. Additionally, he is a Visiting Researcher at the University of California, Berkeley, and at the Public University of Navarre in Pamplona, Spain, where he has held a Visiting Professor position for three years. Dr. Sawik holds a Ph.D., M.Sc., and Eng. in Operations Engineering, all earned with honors from AGH University of Krakow.

His research expertise includes multi-criteria optimization, mixed-integer programming, green vehicle routing, supply chain resilience, cybersecurity optimization, and the deployment of automated parcel lockers, among other areas. His recent work focuses on optimization models for space mission logistics, balancing risk, sustainability, and supply chains, as well as cybersecurity investment strategies using mixed-integer programming. Other contributions include models for healthcare service assignments, portfolio optimization under risk constraints, and weighted-sum approaches to healthcare optimization.

Dr. Sawik has participated in numerous national and international research projects, serving both as Principal Investigator and Investigator. He advises Ph.D. students at AGH University of Krakow and serves as an expert for major Polish research agencies, including NCBiR and PARP. Furthermore, he represents NCBiR on the supervisory board of the Bridge-Alpha investment fund.



MAGDALENA OSTASZ

AGH University of Krakow

Magdalena Ostasz has twenty years of expertise as a lawyer. She is a Head of the Department of Legal Advisors at AGH University in Krakow. In addition, she teaches academically and conducts research at the Faculty of Computer Science and the Faculty of Space Technologies. Her area of expertise is cybersecurity law. She lectures on open-source intelligence, cybersecurity in the space industry, and the national cybersecurity system. She participates in cybersecurity-related projects, recently the creation of SOC's. Her research focuses on cybersecurity management in space infrastructure.



RAFAŁ KRENZ

Poznan University of Technology

Rafał Krenz has been involved in digital wireless communication for over 35 years. He participated in numerous national and European projects related to, for example, cellular 2/3/4/5G, satellite, and UAV communication systems. Currently, he is a leader of the satellite and UAV communication group in the Institute of Radiocommunication at Poznań University of Technology. He was responsible for the design and commissioning of the first Polish experimental LEO satellite ground station, located on the Kąkolewo PUT campus near Grodzisk Wielkopolski.



PRZEMYSŁAW PRZYBYLAK

Polish Cyber Command

Przemysław Przybylak is an expert in the field of security assessment of ICT systems. He has extensive experience in managing teams conducting security assessments, audits, and penetration tests of ICT systems.

He also has knowledge and experience related to the design, implementation, and management of ICT systems security and the secure delivery of ICT systems and services in accordance with generally accepted standards. After finishing his mission at the Permanent Delegation of the Republic of Poland to NATO, he began serving in the Cyberspace Defence Forces Command in Legionowo.

In the past, he held technical and command positions at all levels of the Polish Armed Forces and the Ministry of National Defence of the Republic of Poland. As the Commanding Officer at the Cyber Operations Center in 2016-2020, he commanded the first military unit in the Polish Armed Forces, which conducted full-scale activities and operations in cyberspace.

He holds numerous certificates related to ICT security and management, including: CISSP, CIEH, OSCP, BSI ISO/IEC 27001 LA, ITIL® v3 Foundation, PRINCE2™ Foundation, NSA & CNSS 4013 Administrator System. He also has extensive knowledge of Cisco network technologies at the CCNA/CCNP Security level and VMware virtualization at the VCP DCV level.



JUSTYNA TOPOLSKA

AGH University of Krakow

Justyna Topolska, PhD has been involved in the development of the innovation ecosystem at the AGH University of Krakow since 2017. Since 2019, she has also been employed as a Business Developer at the University's Special Purpose Company - Krakowskie Centrum Innowacyjnych Technologii INNOAGH Ltd., where she supports the process of establishing spin off companies based on AGH knowledge and technology. Involved in projects at the AGH supporting innovation, she is an incubation manager for teams developing ideas in the seed and pre-seed phase. As an expert and reviewer she evaluates proposals and applications of innovative projects at the university and national level, e.g. Cassini Hackathon, Innovation Incubator etc.



JOSÉ MANUEL DÍEZ LÓPEZ

Technical University of Berlin

José Manuel Díez López is a research assistant at the Technical University of Berlin, with a background in computer science and electronics.

Previously he worked on the "Nanosatellites in Formation Flight" (NanoFF) mission, building the electrical power system and star trackers.

Today he is working on bringing the lessons from the past 40 years of computer security to the space domain, and making it accessible for everybody.



PAWEŁ PRZYBYŁOWICZ

AGH University of Krakow

Prof. dr hab. **Paweł Przybyłowicz** is a mathematician whose research focuses on the computational complexity of stochastic and deterministic (delay) differential equations and Monte Carlo simulations.

His work involves developing optimal algorithms to approximate solutions of stochastic differential equations with jumps, creating efficient implementations of these algorithms, and conducting Monte Carlo simulations using GPU graphics cards. He also explores the relationship between the theory of stochastic processes (particularly stochastic differential equations) and machine learning or neural networks. His research includes practical applications of differential equations and neural networks in modeling real-world phenomena such as time series analysis, option pricing, and energy consumption or price modeling. Prof. Przybyłowicz is the recipient of two international awards for scientific achievements: the "Information-Based Complexity Young Researcher Award" (2012) and the "Joseph Traub IBC Award" (2018), both granted annually for significant contributions to the field of information-based computational complexity. He frequently participates in international conferences, often as an invited speaker or session organizer on topics related to stochastic differential equations and Monte Carlo simulations.

He has been involved in approximately 15 research projects (including NCN, NCBR, and PARP) in both academia and industry, serving as a contractor, R&D project leader, or scientific supervisor. One of these projects focused on applying machine learning and deep learning methods in cybersecurity.

Prof. Przybyłowicz is the author or co-author of over 50 internationally recognized scientific publications and serves as an associate editor of the international journal *Journal of Complexity* (Elsevier).

He has supervised around 50 master's theses, four PhD dissertations, and four MBA final theses within the MBA TECH AGH program.



PIOTR KOLENDERSKI

Nicolaus Copernicus University in Toruń

Piotr Kolenderski – professor at Nicolaus Copernicus University in Toruń and researcher at STARTOVA Sp. z o.o. He leads the Single Photon Applications Laboratory, which develops technologies for satellite optical and quantum communication, as well as verification and validation services for cybersecurity based on quantum key distribution (QKD). He carries out projects for the European Space Agency, including work on the quantum internet and the security of satellite communication links.



KRZYSZTOF GRABOWSKI

AGH University of Krakow

Krzysztof Grabowski - Doctor of Engineering, staff member at the Faculty of Space Technologies, AGH University of Krakow, and head of the Space Sensors Lab team. He specializes in research on nanomaterials, particularly MXenes, as well as the development of sensors for structural health monitoring and space applications. He is the author of studies on innovative “brick-and-mortar” composites with enhanced mechanical properties. He led the electronics and software part of the MXene in LEO mission and initiated the first second-cycle (Master’s) program in Space Technologies at AGH.



MAREK ZMUDA

Intel

Marek Zmuda PhD - a cybersecurity expert with over 20 years of experience in commercial technology projects, spanning both technical and business domains in international environments. He currently serves as a System Security Architect at Intel Corporation, a role he has held for the past 13 years, where he specializes in designing and implementing advanced security architectures for cutting-edge computing platforms. In addition to his corporate role, Marek is a lecturer, researcher, mentor, and consultant in the field of cybersecurity. His academic and professional engagements reflect a deep commitment to advancing secure computing practices and educating the next generation of cybersecurity professionals. His expertise bridges the gap between theoretical foundations and practical applications, making his courses both insightful and industry-relevant.



AGH UNIVERSITY OF KRAKOW

AGH

AGH University of Krakow is one of the leading technical universities in Poland, with a history dating back to 1919. It currently educates around **20,000 students** across **18 faculties**. The university offers a wide range of study programs, including bachelor's, master's, doctoral, and postgraduate courses.

AGH employs around **2,300 academic staff**, including renowned professors and researchers actively involved in national and international scientific projects. The university is known for its cutting-edge research and modern laboratories, supporting innovation and collaboration with industry.

International cooperation is a priority at AGH, which participates in numerous global research networks and educational programs, welcoming students and researchers from around the world. The university's graduates are highly sought after in the job market due to their solid theoretical knowledge combined with practical skills.

Committed to sustainable development and technological advancement, AGH fosters creativity, interdisciplinary learning, and entrepreneurial spirit among its students, preparing them for challenges of the future.



[HTTPS://WWW.AGH.EDU.PL](https://www.agh.edu.pl)

The **Faculty of Space Technologies** at **AGH University of Krakow** is the first faculty in Poland entirely focused on space technologies and engineering. It offers an interdisciplinary master's degree program that equips students with practical and theoretical knowledge in key areas such as satellite systems, aerospace materials, propulsion, remote sensing, space robotics, and biomedical technologies for space applications.

The faculty conducts **advanced research** aligned with the needs of the global space sector, actively collaborating with institutions such as the European Space Agency (ESA), the Polish Space Agency (POLSA), and leading space-tech companies.

Students play an active role in shaping the faculty's ecosystem through various **space-oriented student research groups**. These include teams working on satellites, lunar payload, rovers, AI for space, and more. Participation in international competitions and research projects allows students to gain hands-on experience and connect with the global space community.

With modern laboratories, industry partnerships, and a strong emphasis on innovation and collaboration, the Faculty of Space Technologies prepares students to contribute to the future of space exploration – both in Poland and internationally.



SatLab AGH Student Research Group
Photo: Natalia Deyna, KSAF

Where to find us:



www.spacetechnology.agh.edu.pl



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