The International Autumn School of the New University

SPACE IN THE 21ST CENTURY: CHALLENGES AND OPPORTUNITIES

Book of Abstracts

Ljubljana, October 2026

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NEW UNIVERSITY

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PROGRAMME

MONDAY, 14. September 2026

INTERNATIONAL SPACE LAW: FUNDAMENTALS

16:00–16:10	**Katarina Vatovec, PhD** Dean of the European Faculty of Law, New University *Opening Remarks*
16:10–17:40	**Balázs Bartóki-Gönczy, PhD** Ludovika University of Public Service, Hungary *International Space Law I.: legal sources, institutions, liability and responsibility, legal aspects of space resource activities*
18:00–19:30	**Balázs Bartóki-Gönczy, PhD** Ludovika University of Public Service, Hungary *International Space Law II.: Sustainability of space activities (space traffic management, space debris mitigation), military use of outer space*

TUESDAY, 15. September 2026

EUROPEAN AND NATIONAL SPACE LAW

16:00–17:30	**Katarina Vatovec, PhD** New University, European Faculty of Law, Slovenia *From Market Integration to Orbital Governance: The Draft EU Space Act*
17:45–19:15	**Agnieszka Fortońska, PhD** Lazarski University, Poland *The Draft Polish Act on Space Activities in the Context of European Regulations*

WEDNESDAY, 16. September 2026

ENVIRONMENTAL AND NATIONAL DIMENSIONS OF SPACE GOVERNANCE

16:00–17:30	**Ms Barbara Horváth** Ludovika University of Public Service, Hungary *Legal implications of the concept "Dark and Quiet Skies"*
17:45–19:15	**Liliana Brožič, PhD** New University, Faculty of Government and European Studies, Slovenia *Space: The Slovenian Case*

THURSDAY, 17. September 2026

SPACE AND DEFENCE

16:00–17:30	**Mr András Edl** Ludovika University of Public Service, Hungary *Space Defence and Security I.*
17:45–19:15	**Mr András Edl** Ludovika University of Public Service, Hungary *Space Defence and Security II.*

FRIDAY, 18. September 2026

SPACE, WAR AND STRATEGIC INNOVATION

16:00–17:30	**Inesa Kostenko, PhD** Trnava University, Slovakia *The Role of Satellite Technology in the Russia–Ukraine War and Its Implications for International Space Law and Global Security*
17:45–18:30	**Liliana Brožič, PhD** New University, Faculty of Government and European Studies, Slovenia *Slovenia in Space: A discussion with guests*
18:30 –19:30	**Liliana Brožič, PhD** New University, Faculty of Government and European Studies, Slovenia *Closing Remarks and Ceremony*

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Introduction

Access to outer space has become one of the defining strategic, technological, legal, and geopolitical issues of the 21st century. Space activities increasingly influence communication systems, security policy, environmental monitoring, transportation, economic development, scientific innovation, and international relations. Once dominated exclusively by major state actors, the space sector is now shaped by a growing number of private companies, regional organizations, emerging space nations, and hybrid public-private partnerships.

This transformation has generated unprecedented opportunities for innovation and international cooperation, but also significant regulatory, environmental, ethical, and security challenges. Questions concerning responsibility and liability for space activities, commercialization of outer space, military uses of satellite technologies, environmental sustainability, orbital congestion, and equitable access to space infrastructure are becoming increasingly urgent.

The intensive programme *Space in the 21st Century: Challenges and Opportunities* provides students with an introduction to the legal, political, governance, environmental, and security dimensions of contemporary space activities. Through expert lectures delivered by academics and practitioners, participants will examine the evolving architecture and current developments in space law and policy.

New University (Slovenia), Ludovika University of Public Service (Hungary), Trnava University (Slovakia), and Lazarski University (Poland) organize the Erasmus+ Blended Intensive Program titled Space in the 21st century: Challenges and Opportunities on 14–18 September 2026. The Autumn School of the New University is held in the form of a short Blended Intensive Program in cooperation with partners from abroad within the framework of the ERASMUS+ project: Mobility of students and staff in tertiary education, BIP Project number: 2025-1-SI01-KA131-HED-000309499-2.

Abstracts follow in alphabetical order.

Lecture on International Space Law

Assoc. Prof. Balázs Bartóki-Gönczy, PhD
Ludovika University of Public Service, Hungary

The lecture provided a concise overview of the legal framework governing human space activities and identified the regulatory challenges that international and national legislators need to address most urgently. Space law was presented as a field at the intersection of international and national law, increasingly supplemented by European Union law.

The first part traces the evolution of international space law through four phases. The preparatory phase (1959–1963) established the foundational principles under the auspices of the United Nations. The "golden age" (1967–1979) produced the five UN space treaties, with the Outer Space Treaty as the Magna Carta of the field. Its core principles are the freedom of exploration and use, the prohibition of national appropriation, international responsibility of states for national activities (including those of private actors), liability for damage, and cooperation and due regard. Since 1979, a lack of consensus has confined law-making to non-binding principles, recommendations and guidelines. As the Committee on the Peaceful Uses of Outer Space decides by consensus among its 104 members, new binding instruments are unlikely in the current geopolitical climate.

The lecture then showed that national legislation has become the main driver of legal development. This follows from states' duty to authorize and continuously supervise private space activities, and from the high-risk and dual-use nature of those activities. Thirteen EU Member States have adopted national space laws, resulting in a heterogeneous landscape. Although Article 189(2) TFEU excludes harmonization of national laws, the European Commission proposed an EU Space Act in 2025. It would harmonize the licensing of space activities and the safety and resilience of space objects, with extraterritorial scope, and would apply from 2030.

The second part of the lecture examined three pressing challenges:

- Congested orbits: mega-constellations and space debris make space traffic management indispensable, yet no effective international regime exists. A

reliable, publicly accessible catalogue of space objects is a prerequisite, and it is hindered by political tension, lack of standardization and military secrecy.

- Military use: the Outer Space Treaty only partially demilitarizes Earth orbits. Decades of negotiations on preventing an arms race in outer space have yielded no binding result.
- Space resources: states disagree on whether extraction is free use or prohibited appropriation. The Artemis Accords, the rival China–Russia International Lunar Research Station project and the 2025 draft principles of the UN working group illustrate the divide.

The lectured concluded that outer space is not a legal vacuum. The UN treaties, though general and dated, remain the foundation for the peaceful use of outer space, while explicit rules on space traffic, debris mitigation, resource exploitation and the prevention of armed conflict in space are increasingly needed.

Space: The Slovenian Case
Security, defence and resilience from a small-state perspective

Assoc. Prof. Liliana Brožič, PhD
Faculty of Government and European studies, New University, Slovenia

Space has become an essential dimension of contemporary security, defence and national resilience. Although space capabilities are frequently associated with major powers, smaller states are increasingly dependent on space-based services for their critical infrastructure, economic activities, crisis management and military operations. This contribution examines Slovenia as a case study, exploring how a geographically small country can develop its strategic position through space technologies, institutional cooperation and specialised capabilities.

The analysis focuses on the growing importance of satellite communications, positioning, navigation and timing services, Earth observation and geospatial intelligence. Particular attention is devoted to the dual-use nature of space technologies and their contribution to both civilian and military activities. Three Slovenian crisis situations illustrate the importance of comprehensive situational awareness: the migration crisis of 2015, the Kras wildfire of 2022 and the devastating floods of 2023. These examples demonstrate the operational value of wide-area monitoring, timely information and coordinated decision-making, while highlighting the potential of satellite-supported systems for strengthening national resilience.

The contribution further examines Slovenia's evolving strategic and institutional framework. The adoption of the Slovenian Space Strategy 2030, developments in national defence and resilience policies, and Slovenia's accession to full membership of the European Space Agency in January 2025 represent significant milestones. These developments create opportunities for technological innovation, international cooperation and the integration of space-related capabilities into national security planning.

Special emphasis is placed on Slovenia's emerging space industry and its potential contribution to security and defence. Domestic expertise in satellite technologies, advanced sensors, data processing, artificial intelligence and unmanned aerial systems illustrates how smaller countries can establish competitive advantages

through specialised technological solutions rather than comprehensive independent space infrastructure.

The contribution argues that the strategic value of space capabilities lies not primarily in possessing individual technological systems, but in ensuring reliable access to services, integrating information from multiple sources and transforming data into effective decisions. For Slovenia, this requires stronger civil–military cooperation, investment in human expertise, resilient technological infrastructure and interoperability with European and transatlantic partners.

The central conclusion is that geographical size does not determine the strategic relevance of space. Through carefully selected national priorities, technological specialisation and international partnerships, Slovenia can strengthen its security, defence capabilities and societal resilience while contributing meaningfully to the broader European space ecosystem.

Space Defense and Security I–II

András Edl
Ludovika University of Public Service, Hungary

During two lectures combined with rapid-dialogue sessions, the participants explored the main challenges, opportunities, and trends in space defense and security. In the first part, the physical characteristics of space were discussed in relation to defense and security. These included the relationship between orbital altitudes and satellite velocity, as well as temperatures, radiation, gravity, and the electromagnetic wavelengths absorbed by the atmosphere. As a conclusion students could identify the unifying concept behind the three main usage types of space: information.

The second segment focused on the psychological factors of space security, such as how the weaponization of space can contribute to a security spiral, in which each state reacts with increasing concern to the steps of perceived rivals; how this is connected to basic human psychology and the need for information; and how our tendency to find similar patterns in the past can lead to biases. These mechanisms were already present at the start of the space age, when Cold War powers launched space programs that were heavily intertwined with military, especially nuclear, capabilities. The second section concluded with an exploration of the deeper layers of the Moon landing, the pivot toward low Earth orbit and space stations, and how GPS capabilities introduced a new era in warfare.

Later, the lecture introduced the main changes related to space security, especially since 2007, such as kinetic anti-satellite weapon tests, new types of counterspace methods, the spread of satellite constellations, proposed ways to improve the resilience of new space infrastructure, and the cutting-edge military capabilities developed by the United States, China, Russia, and the EU, enabled by their budget allocations.

In the final part, the participants familiarized themselves with key questions of space technology development and Moon programs, including the importance of cislunar space, Lagrange points, possible paths to shift from exploration to profitable use, and the two frameworks centered on the Artemis Accords and the International Lunar Research Station.

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The Polish Act on Space Activities in the Context of European Regulations

Assist. Prof. Agnieszka Fortońska, PhD
Łazarski University, Poland

In Poland, the Space Activities Act entered into force in 2026. The aim of the lecture was to present the regulations introduced by the legislature. The first part of the lecture indicated which other documents at the intergovernmental and European Union levels are in force. The aim was to discuss all levels of legal regulation and to indicate the legislature's motivation for regulating national law in this area.

In the second part of the lecture, participants learned about space activities and who can perform them. The role of the President of the Agency, who, among other things, issues permits for conducting space activities, was then presented. Participants could see the current structure of the National Register of Space Permits.

The issues of civil liability for damage caused by a space object and insurance were also discussed. The next part of the meeting described how control activities are conducted. The President of the Agency is authorized in this regard. His powers also include appointing a committee to investigate unexpected events related to space activities.

Next, the procedure to be followed in the event of finding an item suspected of being space debris was discussed. During the meeting, the issue of fines and the circumstances in which such fines can be imposed was also discussed.

Finally, proposals regarding the new law were presented. The Polish Space Activities Act focuses on six aspects: authorization, supervision, registration, liability, insurance, and sustainability. After analyzing all levels of regulation, it can be seen that international law defines fundamental obligations. European Union law indicates European standards, while national law specifies detailed mechanisms for authorization and supervision. It is also important that a draft legal act exists at the European Union level, which, once in force, may, for example, require the adaptation of national law to that specified by the European Union.

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Legal implications of the concept "Dark and Quiet Skies"

Barbara Horváth
Ludovika University of Public Service, Hungary

The rapid expansion of commercial space activities in the New Space Age has fundamentally transformed the space environment. In particular, the deployment of large satellite constellations consisting of hundreds or thousands of satellites has created significant new opportunities for global connectivity, technological development and scientific research. At the same time, the growing number of satellites poses emerging challenges for astronomical observations, including optical and radio-frequency interference. These developments raise the question of how the conditions necessary for astronomical research can be protected within the existing international legal framework.

This lecture provides a multidisciplinary introduction to the protection of dark and quiet skies, combining perspectives from astronomy, space technology, environmental protection, cultural heritage and international space law. It first examines the transformation of space activities in the New Space Age and the emergence of satellite mega-constellations, highlighting both their societal benefits and their environmental and scientific challenges. It then explores the importance of astronomy not only for fundamental scientific research, but also for technological innovation, planetary defence and humanity's shared cultural heritage.

The lecture subsequently introduces the concept of dark and quiet skies and examines how satellite constellations affect optical and radio astronomy. Particular attention is given to satellite brightness and optical trails, as well as passive and active radio-frequency interference and the cumulative effects of large constellations.

The final part focuses on the existing legal framework. Firstly, it examines the fundamental rules and principles of international space law. After that, it also considers the potential contribution of international telecommunications law, environmental law, cultural heritage law and general international law. Finally, the lecture discusses the growing role of soft law, international co-operation and

responsible space governance in addressing the challenges posed by satellite mega-constellations.

Ultimately, the lecture argues that the protection of dark and quiet skies should not be understood as a choice between satellite technologies and astronomy, but as a challenge of ensuring their sustainable coexistence for the benefit of present and future generations.

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The Role of Satellite Technology in the Russia–Ukraine War and Its Implications for International Space Law and Global Security

Inesa Kostenko, PhD
Trnava University, Slovakia

The Russia–Ukraine war has brought into sharper focus a broader transformation in the exercise of space power. Military advantage increasingly depends not simply on possessing satellites, but on securing and sustaining access to the services they enable. Satellite communications, Earth observation, and positioning, navigation and timing are particularly illustrative. In each case, the spacecraft is only one part of a wider system that includes ground infrastructure, software, data processing, contractual arrangements and the means by which information ultimately reaches the user.

The experience of KA-SAT, Starlink, Maxar and ICEYE shows that control over different elements of a satellite service may be distributed among several actors. A State using the capability may neither own nor operate the satellite; the operator, provider and end user may exercise control at different stages; and access may itself depend on decisions taken by a commercial provider or another State. Commercial integration may therefore expand military capability while also creating dependence on infrastructure and decisions that remain partly outside the user State's control.

Different acts within the same service chain may therefore engage different rules of international law. The legal responsibility of States in relation to private space activities, attribution of particular conduct, questions of neutrality arising from third-State assistance, and conflict-party status remain distinct inquiries and should not be treated as interchangeable. Nor does the commercial or dual-use character of a space system, by itself, determine whether a particular object qualifies as a military objective under international humanitarian law. That question must be assessed under the applicable legal test. If an operation amounts to an attack, the analysis does not end there: proportionality and precautions remain applicable, with particular attention to foreseeable civilian consequences associated with disruption of shared space-enabled services.

The deeper security problem is therefore one of dependence and continuity. Resilience cannot be reduced to placing more satellites in orbit or contracting with additional providers. It requires alternatives that are available under the relevant legal and contractual arrangements, technically integrated, and capable of taking over an essential function when access is interrupted. The war thus points towards a less asset-centred understanding of space security: one increasingly concerned with who controls access, where dependencies arise, and how essential space-enabled services can be sustained under conditions of conflict.

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From Market Integration to Orbital Governance: The Draft EU Space Act

Asst. Prof. Katarina Vatovec, PhD
European Faculty of Law, New University, Slovenia

The draft EU Space Act, presented by the European Commission on 25 June 2025, marks a significant step towards a more integrated European framework for the regulation of space activities. It seeks to address the fragmentation of national space laws within the EU and the rapid growth of space activities, including the growth of commercial operators, large satellite constellations, increasing cybersecurity threats, and the accumulation of orbital debris. The proposal is built around three objectives: safety, resilience and sustainability.

The lecture examines five key and potentially controversial features. First, the draft Act is primarily an internal-market instrument, based on Article 114 TFEU, aiming to harmonise national rules and facilitate cross-border space activities. While this could strengthen European competitiveness, it raises questions about national sovereignty, Member State responsibility and the legal basis of EU action, particularly because space infrastructure often has dual-use and security implications. Second, the proposal introduces stronger orbital safety and space-debris requirements, including collision avoidance, traffic coordination, safe launch and re-entry, and end-of-life measures. These provisions address increasing orbital congestion and the need for long-term sustainability, but may also increase compliance costs and create barriers for smaller operators. Third, the draft Act regulates third-country operators and service providers accessing the EU market through registration, compliance requirements and an equivalence mechanism. This extends EU regulatory influence beyond its territory and may create international trade and geopolitical implications. Fourth, the proposal strengthens cybersecurity and resilience, covering risk management, cybersecurity, physical security, incident response and supply-chain protection. Its interaction with existing EU legislation raises concerns about whether it will simplify regulation or create overlapping obligations. Finally, the draft Act introduces environmental sustainability through lifecycle environmental-footprint assessments and a voluntary Union Space Label for operators meeting higher

standards. Although voluntary, the label could become commercially significant and create de facto market expectations.

Overall, the draft EU Space Act should be understood not simply as a technical safety regulation, but as an emerging framework of European orbital governance. It seeks to balance market integration, innovation, national sovereignty, security and environmental sustainability. Its legislative development highlights continuing tensions between EU harmonisation and national competences, regulatory ambition and administrative burden, and sustainability and competitiveness. The draft EU Space Act thus provides an important case study of how the EU is seeking to extend its regulatory role into an increasingly strategic, commercial and environmentally sensitive domain.