



## Legal provision of the Internet of Things in the conditions of European integration Curriculum (Syllabus)

### Course details

<b>Level of higher education</b>	Second (Master's)
<b>Field of knowledge</b>	05 Social and behavioural sciences
<b>Specialisation</b>	054 Sociology
<b>Educational programme</b>	Social Data Analytics
<b>Status of discipline</b>	Elective
<b>Form of study</b>	Full-time (day)
<b>Year of study, semester</b>	1st year, spring semester
<b>Scope of the discipline</b>	4 ECTS credits / 120 hours: 18 hours of lectures, 36 hours of practical classes, 66 hours of independent work.
<b>Semester assessment/ assessment</b>	Test / Modular control work
<b>Class schedule</b>	1 lecture once every two weeks/ 1 seminar once a week <a href="http://rozklad.kpi.ua/">http://rozklad.kpi.ua/</a>
<b>Language of instruction</b>	Ukrainian
<b>Information about the course leader/teachers</b>	<u>Lecturer</u> Doctor of Law, Professor Oleksandr Andriyovych Baranov e-mail: <a href="mailto:baa_1@ukr.net">baa_1@ukr.net</a>  <u>Practical / Seminar:</u> Candidate of Law, Senior Lecturer Maria Viktorivna Dubnyak e-mail: <a href="mailto:mvinfo@ukr.net">mvinfo@ukr.net</a> telegram: @MV798

### Curriculum

#### 1. Description of the course, its purpose, subject matter and learning outcomes

In this course, we analyse approaches and formulate legal issues related to the development of the Internet of Things information infrastructure, the use of artificial intelligence and robots, autonomous vehicles, ships and drones, the use of smart contracts, and explore the specifics of personal data protection, cybersecurity issues, the determination of legal liability, etc.

The aim of the course is to develop students' theoretical and practical skills in applying the European Union's best practices for the effective legal regulation of the Internet of Things (IoT), and to improve their legal culture and erudition.

According to the educational and scientific programme, the completion of the credit module contributes to the strengthening of the following competencies and programme learning outcomes:

- ZK 01 Ability to think abstractly, analyse and synthesise.
- LC 04 Ability to work in an international context.
- FC 07 Ability to develop and evaluate social projects and programmes.
- FK 08 Ability to cooperate with European and Euro-Atlantic institutions.
- PRN 03 Develop and implement social and interdisciplinary projects, taking into account social, economic, legal, environmental and other aspects of public life.
- PRN 05 Search for, analyse and evaluate necessary information in scientific literature, databases and other sources.
- PRN 07 Resolve ethical dilemmas in accordance with the norms of professional ethics of a sociologist and universal human values.

## **2. Prerequisites and post-requisites of the discipline (place in the structural-logical scheme of training under the relevant educational programme)**

**Prerequisites:** the discipline "Legal Support of the Internet of Things in the Context of European Integration" is an elective discipline that can be studied by students without any prerequisites.

**Post-requisites:** studying the discipline contributes to the formation of a legal culture in the field of digital technologies, deepens the understanding of the regulatory and legal regulation of the Internet of Things and the processes of European integration, and can be used in the analysis of the legal aspects of digitalisation and the preparation of a master's thesis.

## **3. Course content**

### **Topic 1. Internet of Things: development, risks and barriers to implementation**

1. Social transformations.
2. Digital transformation
3. The Internet of Things society.
4. Examples of Internet of Things technologies.
5. Legal issues surrounding the application of IoT.

### **Topic 2. General provisions of European Union on the development of Internet of Things technologies**

1. The structure of European law and its scope.
2. General political prerequisites for the implementation of information and communication technologies in the European Union.
3. Development of the Internet of Things as a component of the European Union's Digital Single Market.
4. Key provisions of European Union policies on the Internet of Things.

### **Topic 3. European Union policy on the use of robots and artificial intelligence.**

1. European Parliament resolution with recommendations to the Commission on civil law rules on robotics.
2. Artificial intelligence for Europe (Strategy).
3. Coordination plan for artificial intelligence.
4. Building trust in human-centric artificial intelligence.

### **Topic 4. General characteristics of robots and artificial intelligence.**

1. Concept, characteristics and classification of artificial intelligence.

2. Examples of the use of robots to provide services and perform work.
3. Problems legal regulation the use robots in social relations.

**Topic 5. Legal regulation of the use of robots and artificial intelligence.**

1. The relevance of legal research on artificial intelligence.
2. The use of robots to provide services and perform work.
3. Theoretical foundations for the formation of proposals for the legal regulation of the use of robots.

**Topic 6. - 7. European Union policy ensuring the to privacy.**

1. International legal principles for ensuring the to privacy.
3. Main subjects of legal relations, their rights and obligations.
2. General and special legal regimes for the protection of the right to privacy.
4. Responsibility for breach of of regarding the to privacy.

**Topic 8. European strategy for the development of cloud technologies and big data.**

1. Cloud technologies
2. European strategy for the development of cloud technologies.
3. Big data.
4. Free exchange of non-personal data in the European Union.

**Topic 9. Advantages and barriers to the application of blockchain technologies.**

1. General characteristics of modern relations in the world.
2. The problem of trust.
3. Technology, definition, conditions and legal characteristics of the application of blockchain technologies.
4. European Union policy on the use of blockchain technologies.

**4. Teaching materials and resources**

**Basic literature**

1. Baranov, O. A. Legal support for the information sphere: theory, methodology and practice: monograph / O. A. Baranov. Kyiv: Edelweiss, 2014. 497 p.
2. Internet of Things: Theoretical and Methodological Foundations of Legal Regulation. Vol. 1: Areas of Application, Risks and Barriers, Problems of Legal Regulation: Monograph / O. A. Baranov; Scientific Research Institute of Informatics and Law of the National Academy of Sciences of Ukraine. 2nd ed. Kharkiv: Pravo, 2018. 344 p.

All monographs are freely available at:  
<https://baa129.wixsite.com/baranov/books>

3. Internet of Things: theoretical, legal and practical aspects of implementation in the context of European integration: materials from the All-Ukrainian scientific and practical conference (29 April 2021, Kyiv): electronic collection / Edited by: Baranov O. A., Golovko O. M., Dubnyak M. V. Kyiv: Igor Sikorsky Kyiv Polytechnic Institute, 2021. 192 p.

<https://www.facebook.com/groups/euliot/permalink/294250699011949>

4. Kostenko O.V. Directions for the development of law in the field of the Internet of Things / Kostenko O.V. // Current problems of domestic jurisprudence. 2021. No. 3. P. 130–136. DOI <https://doi.org/10.15421/392161>

## **Additional literature**

1. Baranov O.A. The Internet of Things as a legal term / O.A. Baranov // Legal Ukraine. 2016. No. 5-6. Pp. 96–103.
2. Baranov O.A. Protection of personal data in the Internet of Things / O.A. Baranov, V.M. Bryzhko // Information and Law. 2016. No. 2. Pp. 15–31.
3. Baranov O. Virtuality and legal regulation / O.A. Baranov // Public Law. 2017. No. 1. Pp. 210-218.
4. Baranov O.A. Internet of Things and artificial intelligence: the origins of the problem of legal regulation / IT law: problems and prospects for development in Ukraine: collection of materials from the II International Scientific and Practical Conference (Lviv, 17 November 2017). Lviv: Lviv Polytechnic National University, 2017. 318 p. (P. 18-42).
5. Baranov O.A. Internet of Things (IoT): legal issues of smart contract application / O.A. Baranov // Information and Law. 2017. No. 4. P. 26-40. Baranov O.A. Internet of Things (IoT) and Blockchain / O.A. Baranov // Information and Law. 2018. No. 1. P. 59-71.
6. Baranov O.A. Internet of Things (IoT): Purpose of Application and Legal Issues / O.A. Baranov // Information and Law. 2018. No. 2. Pp. 31-44.
7. Baranov O.A. Internet of Things (IoT): robots with artificial intelligence in legal relations // Legal Ukraine. 2018. No. 5-6. Pp. 75–95.
8. Baranov O.A. Internet of Things (IoT): regulation of services provided by robots with artificial intelligence / O.A. Baranov // Information and Law. 2018. No. 4. Pp. 46-70.
9. Baranov O.A. Legal aspects of national strategies for the development of artificial intelligence // Legal Ukraine. No. 7. 2019. Pp. 21-38.  
<https://www.facebook.com/groups/euliot/permalink/294250699011949>
10. Internet of Things: Problems of Legal Regulation and Implementation: Materials of the III Scientific and Practical Conference, 21 November 2019, Kyiv. / Compiled by: V. M. Furashev, S. O. Dorogikh, S. Yu. Petryaev. Kyiv: Igor Sikorsky Kyiv Polytechnic Institute, Polytechnika Publishing House, 2019. 180 p.  
[http://ippi.org.ua/sites/default/files/maket\\_ot\\_20.11.19.\\_1.pdf](http://ippi.org.ua/sites/default/files/maket_ot_20.11.19._1.pdf)
11. Internet of Things: Problems of Legal Regulation and Implementation: Materials of the Second Scientific and Practical Conference, 29 November 2018, Kyiv / Compiled by: V. M. Furashev, S. O. Dorokhikh. Kyiv: Igor Sikorsky Kyiv Polytechnic Institute, Polytechnika Publishing House, 2018. 168 p.  
[http://ippi.org.ua/sites/default/files/zbirnik\\_tez\\_19.12.2018-maket\\_3-converted.pdf](http://ippi.org.ua/sites/default/files/zbirnik_tez_19.12.2018-maket_3-converted.pdf)

## **Educational content**

### **5. Methodology for mastering the academic discipline (educational component)**

The discipline is mastered on the basis of the problem-based learning method, i.e. by identifying problematic issues and solving them through interactive discussion. To improve the level of understanding of the discipline's content, information is also provided through visual perception channels using presentations.

In order to develop the professional abilities of future specialists, the following forms of assessment of learning outcomes are widely used, in particular: oral presentations, presentations, essay writing, presentation of comparative legal research, discussion, modelling of problematic and practical situations and search for correct solutions, analysis of documents, oral questioning, testing, modular control work.

All these forms require students to develop research skills that are inherent in any profession. Therefore, in the teaching process, attention is paid to the further development of cognitive skills in terms of searching for information, in particular regulatory and legal information, its analysis, identification of legal problems, determination of possible ways to solve them, and preparation of the necessary documents for their solution.

The search for and resolution of legal problems in the process of collective work is carried out on the basis of personality-oriented (developmental) technologies, which are based on active forms and methods of teaching (brainstorming, situation analysis, discussion, case technology, project technology, etc.).

Section and topic titles				
		Lectures	Seminars	SRC
<b>SECTION 1.</b> <b>General principles of the European Union's policy on the development of Internet of Things technologies</b>				
1	Internet of Things: development, risks and barriers to implementation	2	4	7
2	General provisions of the European Union's policy on the development of Internet of Things technologies	2	4	7
<b>CHAPTER 2.</b> <b>European Union policy on the use of robots and artificial intelligence</b>				
3	European Union policy on the development of artificial intelligence applications	2	4	7
4	General characteristics of the application of robots and artificial intelligence.	2	4	7
5	Legal regulation of the use of robots and artificial intelligence.	2	4	7
<b>SECTION 3</b> <b>European Union policy on data protection, the use of big data, cloud technologies and blockchain technologies</b>				
6 -7	European Union European Union on ensuring the to privacy.	4	4	7
8	European development for cloud technologies and big data (Big Data)	2	4	7
9	Advantages and barriers to the application of blockchain technologies.	2	4	7
	<b>Modular control work</b>	-	2	4
	<b>Credit:</b>	-	2	6
	<b>Total hours:</b>	<b>120</b>	<b>18</b>	<b>36</b>
			<b>36</b>	<b>66</b>

## 6. Independent work of students/postgraduates

Independent work by students includes preparation for classroom sessions by mastering lecture materials and studying basic and additional literature. Solving case studies and practical tasks, preparing documents.

The recommended total time for preparation for one practical class is 6 hours.

### Policy and control

The study of the discipline is based on a combination of the sequence of lecture material, the completion of assignments for seminars, and independent work by students using basic and additional material from information sources.

#### **Class attendance rules**

Attendance at lectures and practical classes is not compulsory.

If you miss a class, it is advisable to retake the theoretical material and practical assignments in the next class (seminar), as the quality of learning new topics depends on understanding the previous material.

During practical classes, you can use technical devices, mobile phones, and laptops when working on regulatory and legal acts, demonstrating research results, and demonstrating and analysing written documents.

## Forms of work

The seminar consists of two parts: answers to theoretical questions and defence of practical tasks.

The approximate length of a student's report on one theoretical question is up to 3 minutes. The approximate length of a report during the defence of practical tasks is 5 to 7 minutes.

The following forms are used during the defence of practical tasks: oral presentations, presentations, oral reports on the results of analysis or summarisation of analytical materials, writing essays, presentation of comparative legal research, discussion, modelling of problematic and practical situations and search for correct solutions, analysis of documents, preparation of draft documents, oral questioning, testing, modular control work.

## Recognition of results obtained in informal education

In the case of distance learning courses/training, it is possible to include the learning outcomes in the current ranking, provided that supporting documents are provided to the course instructor.

Conditions for crediting: the document (or the course/training website) contains a list of topics related to the course subject with an indication of the number of hours.

The date of the course completion certificate is the calendar year in which the academic discipline is taught.

The result of completing a distance learning course is 75% of the possible result of the course assessment methodology. Depending on the number of topics covered and the complexity of the tasks performed, 3 to 5 points may be credited to the student's current rating.

The student must submit the results of practical work (or make a short report on the progress of this work and interesting aspects of the course taken).

## Procedure for appealing the results of assessment measures

Students have the opportunity to raise any questions regarding the assessment procedure. To do so, they must submit a written request to the lecturer and await a response. The lecturer will provide a verbal explanation in the presence of the applicant and the group representative.

## Academic integrity.

The policy and principles of academic integrity are defined in Section 3 of the Code of Honour of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute". For more details, see: <https://kpi.ua/code>.

## Standards of ethical conduct.

The standards of ethical conduct for students and employees are defined in Section 2 of the Code of Honour of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute". For more information: <https://kpi.ua/code>.

## 8. Types of control and rating system for assessing learning outcomes (RSO)

No	Control measure	%	Weight	Number	Total
1	<b>Theoretical part</b>	25	5	5	25

	(oral presentations, presentations, reports on the results of analysis or summaries of analytical materials, essay writing, presentation of comparative legal research, discussion, oral questioning)				
2	<b>Practical part</b> (modelling of problematic and practical situations and searching for correct solutions, analysis of legal documents, court practice, preparation of draft documents (statements, complaints, contracts), testing, business games, situational exercises)	35	7	5	35
3	Modular control work	40	40	1	40
	Total				100

**The theoretical part** includes students' study of lecture material and presentations of reports, essays, discussions, brainstorming, and modelling of problem situations. Assessment criteria:

Weight	Assessment criterion
5	The applicant studied the lectures, additional literature, has a good command of the material, answers questions correctly, and contributes to the discussion.
3	The applicant has studied the lecture materials and additional literature, has a partial command of the material, answers questions partially correctly, and hardly participates in the discussion.

**Criteria for evaluating business games, practical and creative tasks.**

Weighting	Type of work
6-7	High level of detail and description of the problem situation, students accurately formulate questions and answers, a draft contract has been prepared that takes into account the essential and optional terms of the contract. The risks of improper performance of the contract and court practice have been taken into account.
4	Students simulated a practical (problem situation) using court practice. No separate contract was prepared, or it contains significant inconsistencies between sections and clauses of the contract.

### **Test assessment criteria**

Weighting	Type of work
4	The test includes tasks: with four answer options (only 1 of which is correct) — 1 point. seven answer options (3 of which are correct) — 1 point if 3 correct answers are marked. Combination of a concept and its definition — 1 point for each correct pair of combinations.

### **Modular control work**

Weight	Assessment criterion
40	Performed in the form of test tasks

*One academic hour (half a class of 45 minutes) is allocated for writing the MCT. The test includes questions with four answer options (only one of which is correct) and seven answer options (three of which are correct), combining a concept and its definition. After the Modular control work, the answers are analysed and a group discussion is held on the questions to which the majority of the group gave incorrect answers.*

### **Criteria for assessing the modular control work**

Weight	Assessment criterion
21	The test includes tasks: with four answer options (only 1 of which is correct) — 1 point. seven answer options (3 of which are correct) — 1 point if 3 correct answers are marked. Matching the concept and its definition — 1 point for each correct pair of matches.
0-20	not counted

### **Bonus points\***

Weighting	Type of work
Up to 10	Preparation and publication of abstracts of reports or articles in scientific professional publications on the subject of the course (in co-authorship with course lecturers)

\*One of the proposed types of incentive points is counted towards the rating only once and does not exempt the student from the obligation to fulfil the conditions for admission to the exam.

Creative work is voluntary, and no penalty points are awarded for failure to complete it.

The completion of creative work may be counted by the teacher as make-up work for missed seminars. The amount of make-up work and the number of points are determined by the teacher depending on the complexity of the creative tasks.

***In accordance with the Regulations on the system of assessment of learning outcomes, the sum of all incentive points cannot exceed 10% of the assessment rating scale.***

If a student wishes to have learning outcomes acquired in an informal/non-formal manner and not specified in the syllabus recognised, such outcomes shall be validated in accordance with the "Regulations on the recognition of learning outcomes acquired in informal/non-formal education at Igor Sikorsky Kyiv Polytechnic Institute".

**Calendar milestone control**

The purpose of calendar milestone control is to identify the quality of students' performance of the educational process schedule.

Criterion	First	Second
Term	8th week	14th week
Conditions for obtaining a positive result	10 points	50

**Semester assessment: credit.**

**Possibility of receiving an automatic grade: yes, for students who have fulfilled the conditions for admission to the test and have a rating of  $\geq 60$  points.**

<b>Mandatory conditions for admission to the test</b>
Completion of Modular control work
Current RD rating $\geq 50$ .

If the applicant disagrees with the current rating and wishes to obtain a higher rating, the applicant may notify the teacher one week before the last class of their intention to take the test, which will be held during the last class.

**The exam is conducted under strict RSO conditions (previous scores are cancelled).**

Type of assignment	Points
Test	100

**The test** consists of 25 tasks of varying complexity and content, each worth 4 points.  $25 \cdot 4 = 100$

Criteria for assessing coursework:

Weight	Assessment criterion
60	The test includes tasks: with four answer options (only 1 of which is correct) — 4 points. seven answer options (3 of which are correct) — 4 points if 3 correct answers are marked. Combination of a concept and its definition — 4 points for each correct pair of combinations.
0-59	unsatisfactory

Table for converting rating points to the university scale

Rating points	Grade on the university scale
95	Excellent
85	Very good
75	Good
65	Satisfactory
60	Sufficient
Less than 60	Unsatisfactory
Failure to meet admission requirements	Not admitted

## 9. Additional information on the discipline (educational component)

### *List of questions for semester assessment:*

1. Internet of Things: development, risks and barriers to implementation
2. Social transformations.
3. Digital transformation
4. The Internet of Things society.
5. Examples of Internet of Things technologies.
6. Legal issues of IoT application.
7. General provisions of European Union on the the application of Internet of Things technologies
8. The structure of European law and its scope.
9. General political prerequisites for the implementation of information and communication technologies in the European Union.
10. Development of the Internet of Things as part of the European Union's Digital Single Market.
11. Key provisions of European Union policies on the Internet of Things.
12. European Union policy on the use of robots and artificial intelligence.
13. European Parliament resolution with recommendations to the Commission on civil law rules on robotics.

14. Artificial intelligence for Europe (Strategy).
15. Coordination plan on artificial intelligence.
16. Building trust in human-centric artificial intelligence.
17. General characteristics of the application of robots and artificial intelligence.
18. Concept, characteristics and classification of artificial intelligence.
19. Examples of the use of robots to provide services and perform work.
20. Legal issues legal regulation the use robots in social relations.
21. Legal regulation of the use of robots and artificial intelligence.
22. The relevance of legal research on artificial intelligence.
23. The use of robots to provide services and perform work.
24. Theoretical foundations for the formation of proposals for the legal regulation of the use of robots.
25. European Union policy on ensuring the right to privacy.
26. International legal basis for the to privacy.
27. Main subjects of legal relations, their rights and obligations.
28. General and special legal regimes for the protection of the right to privacy.
29. Responsibility for violation of regarding the the to privacy.
30. European strategy for the development of cloud technologies and big data (Big Data).
31. Cloud technologies
32. European strategy for the development of cloud technologies.
33. Big data.
34. Free exchange of non-personal data in the European Union.
35. Advantages and barriers to the application of blockchain technologies.
36. General characteristics of modern relations in the world.
37. The problem of trust.
38. Technology, definitions, conditions and legal characteristics of the application of blockchain technologies.
39. European Union policy on the application of blockchain technologies.

### **Working programme of the academic discipline (syllabus):**

**Compiled by** Oleksandr Andriyovych Baranov, Doctor of Law, Senior Research Fellow, Professor of the Department of Information, Economic and Administrative Law,

Ph.D., Senior Lecturer at the Department of Information, Economic and Administrative Law, Maria Viktorivna Dubnyak.

**Approved** by the Department of Information, Economic and Administrative Law (Minutes No. 12 of 27 May 2024)

**Approved by** the Methodological Commission of the Faculty of Sociology and Law (Minutes No. 9 of 26 June 2024)