



International Information Technology University
Faculty of Computer Technology and Cybersecurity
Department of Cybersecurity

APPROVED BY
Vice-rector for academic affairs of
JSC «International Information
Technology University»

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2024



6B06305

«Hardware security» (DDP HOF)

**CATALOGUE OF ELECTIVE DISCIPLINES
2024 entry year**

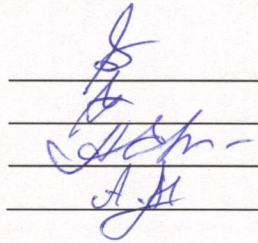
The catalogue of the elective disciplines for the educational program 6B06305 «Hardware security» (DDP HOF) is developed on the basis of the Curriculum of the educational program 6B06305 «Hardware security» (DDP HOF)

The catalogue of the elective disciplines was discussed at a meeting of the Cybersecurity department

Minutes No. _____ from «___» _____ 2024

Head of the Cybersecurity department _____

Authors _____

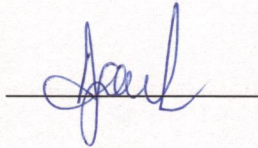


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The catalogue of the elective disciplines was approved at a meeting of the Academic Council of JSC IITU

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1 TERMS AND ABBREVIATIONS

1.1 Academic program is a single set of basic characteristics of education, including goals, results and content of training, the organization of educational process, ways and methods for their implementation and criteria for assessing learning outcomes. The content of academic program of higher education consists of three cycles of disciplines - general education disciplines (hereinafter - GED), basic disciplines (hereinafter - BD) and core disciplines (hereinafter - CD). The cycle of GED includes disciplines of the compulsory component (hereinafter - CC), the university component (hereinafter - UC) and (or) the component of choice (hereinafter - COC). BD and CD include disciplines of UC and COC.

1.2 Catalogue of elective disciplines (CED) is a systematic annotated list of all COC disciplines, for the entire training period, containing a brief description indicating the purpose of study, a summary of main sections and expected learning outcomes. CED reflects the prerequisites and postrequisites of each academic discipline. It should provide the students with the possibility of an alternative choice of elective disciplines for the formation of an individual educational trajectory.

On the basis of academic program and CED, the students develop individual curricula with the help of advisers.

1.3 Individual curriculum (IC) is a curriculum formed by the students independently with the help of an adviser for each academic year on the basis of the academic program, the catalogue of elective disciplines or modules.

IC defines an individual educational trajectory of each student separately. It includes disciplines and types of educational activities (internship, experimental research, forms of final certification) of the compulsory component (CC), the university component (UC) and the component of choice (COC).

1.4 Advisor is a teacher who performs the functions of an academic mentor of a student (according to the appropriate academic program), and assists in choosing a learning path (creating an individual curriculum) and mastering the academic program during the training period.

1.5 The university component is a list of compulsory educational disciplines determined by the university independently for the mastering of the academic program.

1.6 The component of choice is a list of academic disciplines and the corresponding minimum amounts of academic credits offered by the university and independently chosen by students in any academic period, taking into account their prerequisites and postrequisites.

1.7 Elective disciplines are educational disciplines that are a part of the university component and the component of choice in the framework of established academic credits, introduced by organizations of education reflecting the individual preparation of students and taking into account the specifics of socio-economic development, the needs of a particular region and established scientific schools.

1.8 Postrequisites are the disciplines and (or) modules and other types of academic work, the study of which requires knowledge, skills and competencies acquired at the end of the study of this discipline and (or) modules.

2 ELECTIVE DISCIPLINES

| № | Cycle | Discipline code | Name of the discipline | Term | Credits | Prerequisites |
|-----------------|-------|-----------------|--|------|---------|---|
| 3rd year | | | | | | |
| 1 | AS | MIN601 | Minor 1 | 5 | 5 | Computer Information Protection Technologies |
| 2 | BS | SEC6226(HOF) | Subject-specific elective module 1 | 6 | 5 | Object-Oriented programming (Java) |
| 3 | AS | SEC6227(HOF) | Subject-specific elective module 2 | 6 | 5 | Subject-specific elective module 1 |
| 4 | AS | SEC6231(HOF) | Subject-specific elective module 3 | 7 | 5 | Subject-specific elective module 2 |
| 5 | AS | SEC6232(HOF) | Subject-specific elective module 4 | 7 | 5 | Subject-specific elective module 3 |
| 4th year | | | | | | |
| 6 | GER | JUR 6507 | Fundamentals safety of life activity and ecology | 8 | 5 | Information and communication technology |
| 7 | GER | FIN6720 | Basics of Financial Literacy | 8 | 5 | Mathematical analysis |
| 8 | GER | JUR 6470 | Fundamentals of law and anti-corruption culture | 8 | 5 | Legal Basics of Information Security |
| 9 | GER | MGT6706 | Startups and entrepreneurship | 8 | 5 | Information and communication technology |
| 10 | GER | ECO6004 | Economics and Industrial Engineering | 8 | 5 | Mathematical analysis |
| 11 | AS | SEC6235 | Biometric Access Control Systems | 8 | 5 | IoT security |
| 12 | AS | SEC6242 | Managing the security of reconfigurable integrated systems | 8 | 5 | IoT security |
| 13 | AS | NET6207 | DevNet | 8 | 4 | Computer Networking Basics |
| 14 | AS | SEC6241 | Hardware security encryption technologies | 8 | 4 | IoT security |
| 15 | AS | SEC6238 | Blockchain technology | 8 | 4 | Cryptographic methods of information security |

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| Expected learning outcomes | After successful completion of the course, students will: - know the principles of blockchain, - use the blockchain to store and transfer digital data |
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| Discipline description | |
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| Code of discipline | JUR6470 |
| Name of discipline | Fundamentals of law and anti-corruption culture |
| Number of credits (ECTS) | 5 |
| Course, semester | 4,8 |
| Department | Cybersecurity |
| Prerequisites | Legal Basics of Information Security |
| Postrequisites | Graduation project |
| Brief course description | <p>The aim of the course is to understand the basics of anti-corruption culture, to develop the ability to describe the essence and causes of corruption in society. The course forms the acquisition of skills in working with legislation in the field of anti-corruption, and develops a civic attitude to this phenomenon. This course is aimed at improving the anti-corruption culture and the formation of moral and legal responsibility for corruption offenses.</p> <p>The course outlines the legal, economic and social foundations of combating corruption, reveals the specifics of public policy, and presents international experience in combating corruption. the fight against corruption, the peculiarities of conflict of interest regulation are determined, professional ethics, methods of detecting corruption violations. As a result of successful completion of the course, students will have the following competencies:</p> <ol style="list-style-type: none"> 1. Understand the measures of legal responsibility for participation in corruption violations. 2. Identify conflicts of interest in the activities of organizations leading to corruption. 3. To analyze the work of organizations using various research methods |
| Expected learning outcomes | Knowing the basics of law. Applying knowledge, skills and anti-corruption skills |

| Discipline description | |
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| Code of discipline | FIN6720 |
| Name of discipline | Basics of Financial Literacy |

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| Expected learning outcomes | <p>Be able to be guided by the ethical and legal norms of relations to man, society, and the environment.</p> <p>Possessing knowledge about the factors affecting the technical and economic efficiency of production.</p> <p>Be able to identify hazards and assess risks in the field of occupational safety at work.</p> <p>Be able to apply professional knowledge to minimize negative man-made consequences, ensure safety and improve working conditions in the field of their professional activities</p> |
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| Discipline description | |
|-------------------------------|---|
| Code of discipline | MGT6706 |
| Name of discipline | Startups and entrepreneurship |
| Number of credits (ECTS) | 5 |
| Course, semester | 4,8 |
| Department | Cybersecurity |
| Prerequisites | Information and communication technology |
| Postrequisites | Graduation project |
| Brief course description | <p>This course is an introduction to what a business is, how it works and how to manage it. Students will identify the forms of ownership and processes used in manufacturing and marketing, finance, personnel and management in business operations.</p> <p>A startup is a commercial project based on an idea and requiring financing for entrepreneurship—related development.</p> <p>The course introduces the formation of a business idea that solves a real consumer problem, the launch of a minimum viable product (MVP) to test a hypothesis, the achievement of product-market fit - acceptance of the product by the market, scaling the project through investments in advertising, attracting partners and achieving maturity — a stable position in the market.</p> |
| Expected learning outcomes | <p>"Consumer identification", during which a startup builds hypotheses about how its product solves the problems of potential customers.</p> <p>"Consumer verification", the stage of testing hypotheses and preparing a sales plan, marketing strategy, and searching for early followers of the company. In case of failure at this stage, the startup returns to identifying its consumers</p> <p>"Attracting consumers" after confirming the usefulness of the company's product. The startup is moving to product sales and marketing investments.</p> |

| Discipline description | |
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| Code of discipline | MIN601 |
| Name of discipline | Minor 1 |
| Number of credits (ECTS) | 5 |
| Course, semester | 3,5 |
| Department | Cybersecurity |
| Prerequisites | Computer Information Protection Technologies |
| Postrequisites | Minor 2 |
| Brief course description | An additional educational program (Minor) is a set of disciplines and (or) modules and other types of educational work defined by the student for study in order to form additional competencies |
| Expected learning outcomes | Be able to have the basic skills required for Minor 1 |

| Discipline description | |
|-------------------------------|--|
| Code of discipline | SEC6226(HOF) |
| Name of discipline | Subject-specific elective module 1 |
| Number of credits (ECTS) | 5 |
| Course, semester | 3,6 |
| Department | Cybersecurity |
| Prerequisites | Object-Oriented programming (Java) |
| Postrequisites | Subject-specific elective module 2 |
| Brief course description | The elective is selected from the following subjects: - Data Analysis and Data Mining (FWPM) - Deep Learning for Natural Language Understanding (FWPM) - Digital Technology (FWPM) - Embedded Systems (FWPM) - Industry 4.0 in Planning and Production (FWPM) - Industrial Data Analysis (FWPM) - Cryptology (FWPM) - Project Management (FWPM) - RESTful Web Services (API) - Corporate Governance (FSUE) |
| Expected learning outcomes | Be able to have the basic skills necessary for the subject elective module 1 |

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| Discipline description |
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| | <ul style="list-style-type: none"> - FROM-Security (FPM) - Reverse Engineering Software (FWPM) - Web technologies and web marketing in the cloud (FWPM) |
| Expected learning outcomes | Be able to have the basic skills necessary for the subject elective module 3 |

| Discipline description | |
|-------------------------------|--|
| Code of discipline | SEC6232(HOF) |
| Name of discipline | Subject-specific elective module 4 |
| Number of credits (ECTS) | 5 |
| Course, semester | 4,7 |
| Department | Cybersecurity |
| Prerequisites | Subject-specific elective module 3 |
| Postrequisites | Graduation project |
| Brief course description | The elective is selected from the following subjects: <ul style="list-style-type: none"> - Programming .NET in C# (FWPM) - Artificial Intelligence in Robotics (FWPM) - Introduction to Microsoft Dynamics NAV (FWPM) - Evaluation and selection of a standard software package (FWPM) - Geographic Information Systems (GIS) - Principles of Electrical Engineering (FWPM) - Internet of Things (FWPM) - FROM-Security (FPM) - Reverse Engineering Software (FWPM) - Web technologies and web marketing in the cloud (FWPM) |
| Expected learning outcomes | Be able to have the basic skills necessary for the subject elective module 4 |

| Discipline description | |
|-------------------------------|----------------------------------|
| Code of discipline | SEC6235 |
| Name of discipline | Biometric Access Control Systems |
| Number of credits (ECTS) | 5 |
| Course, semester | 4,8 |
| Department | Cybersecurity |
| Prerequisites | IoT security |
| Postrequisites | Graduation project |

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|----------------------------|---|
| Postrequisites | Graduation project |
| Brief course description | This course will discuss in detail the goals, methods and ways of implementing various encryption technologies for hardware security of devices. Hardware encryption methods will be studied to ensure a high level of security |
| Expected learning outcomes | Using various encryption technologies for hardware security of devices. Knowing hardware encryption methods to ensure a high level of security |