**AL-FARABI KAZAKH NATIONAL UNIVERSITY**

**Higher School of Economics and Business**

**Department of Finance and Accounting**

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|  | **APPROVED**  **Dean of the HSEB**  **\_\_\_\_\_\_\_\_\_\_ Bimendiyeva L.A.**  (signature)  **"\_\_\_\_\_\_" \_\_\_\_\_\_\_\_ 2022** |

EDUCATIONAL AND METHODICAL COMPLEX OF THE DISCIPLINE

**CF 4305 «Digital finance»**

6В04108 “Finance (NIS)”

Educational program “Finance (NIS)”

Course - 3

Semester - 5

Number of credits - 5

Almaty 2022

The educational and methodical complex of the discipline is compiled by the associate professorDoszhan R.D.

Based on the curriculum for the educational program of the specialty 6В04108 “Finance (NIS)”.

Considered and recommended at the meeting of the department "Finance and Accounting"

Protocol № \_\_\_\_\_ from «\_\_\_\_ » \_\_\_\_\_\_\_\_\_\_ 2022

Head of the Department \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Nurmagambetova A.Z.

                  (signature)

Recommended by the Methodical Council of the faculty

Protocol № \_\_\_\_\_ from «\_\_\_\_» \_\_\_\_\_\_\_\_\_\_\_ 2022

Chairman of the Methodical Council

of the faculty \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Kozhamkulova Zh.T.

       (signature)

**AL-FARABI KAZAKH NATIONAL UNIVERSITY**

**Higher School of Economics and Business**

**SYLLABUS**

**CF 4305 «Digital finance»**

**Fall semester 2022-2022 academic year**

**according to the educational program «Finance (NIS)»**

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| **Discipline’s code** | **Discipline's title** | **SIW** | **Hours per week** | | | **Number of credits** | **SIWT** |
| **Lectures (L)** | **Practical classes (PС)** | **Lab. classes (LС)** |
| **CF 4305** | **Digital finance** | 98 | 15 | 30 | - | 5 | 7 |
| **Academic Course Information** | | | | | | | |
| **Type of training** | **Type / format of the course** | **Types of lectures** | | **Types of practical classes** | | **Number of SIW** | **Form of final control** |
| Online / offline  combined | Profiling  Interdisciplinary / Applied | classical, explanation, research, visualization, information, consultation | | case study, interactive lesson, consultation, seminar-conversation, seminar-discussion; seminar -"brainstorming"; mixed form of the seminar | | 3 | Oral exam |
| **Lecturer** | Doszhan R.D., | | | | |  | |
| **e-mail** | [rdd2011@mail.ru](mailto:kurbanova-pismo@bk.ru) | | | | |
| **Phones** | Mob. +7 701 530 00 30 | | | | |
| **Practical classes** | Doszhan R.D., | | | | |
| **e-mail** | [rdd2011@mail.ru](mailto:kurbanova-pismo@bk.ru) | | | | |
| **Phones** | Mob. +7 701 530 00 30 | | | | |

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| **Academic presentation of the course** | | |
| **The purpose of the discipline** | **Expected learning outcomes (LO)** | **Indicators of achievement of learning outcomes (IA)**  (for each LO at least 2 indicators) |
| - to form students' understanding of the impact of the emergence of new technologies on the activities of a company in the modern economy, about the challenges and opportunities for modern leaders in the aspects of managing the company's value, attracting funding and changing the company's business model. | As a result of studying the discipline, the student will be able to:  **LO 1** - to know the key drivers and metrics of digital business models; | In the process of studying the discipline, the student must:  IA 1.1 - know examples of the application of machine learning technologies, artificial intelligence and blockchain by companies in the Republic of Kazakhstan and abroad;  IA 1.2. - be able to analyze and calculate business models of digital business; |
| **LO 2** - to identify key processes and customer paths in digital channels; | IA 2.1 - know modern ways of financing a company using digital technologies;  IA 2.2. - have the skills to develop a business model for a digital business, including the calculation of key metrics; |
| **LO 3** - to have the skills to formulate a value proposition, identify persons and key client paths for business in digital channels; | IA 3.1 - be able to identify the main drivers and recommendations for managing the value of digital business;  IA 3.2. - have the skills to synthesize and present the threats and opportunities of digital technologies for the company in the context of value management and fundraising; |
| **LO 4** - to master the services of blockchain technology, cryptocurrency and fiat money; | IA 4.1 - analyze the application of the basic concepts - blockchain 1.0, 2.0 and 3.0, the technology stack, as well as the artificial intelligence of the blockchain;  IA 4.2. - have the skills to analyze the use of advanced digital technologies by Kazakhstani and foreign companies; |
| **LO 5** – to familiarize himself with digital products in the payment services market, with the peculiarities of the functioning of the Kazakhstani payment services market. | IA 5.1 - possess the skills of independent comparative analysis of the national specifics of payment innovations of credit institutions and fintech companies;  IA 5.2. - master the techniques of critical assessment of the national specifics of payment transactions of organizations in the Republic of Kazakhstan and abroad. |
| **Prerequisites** | Banking; Money, Credit, Bank; Financial services of banks | |
| **Post-requesites** | The main provisions of the discipline can be used for the student's diploma work | |
| **References and Resources** | **References**  1. Message from the Head of State Kassym-Jomart Tokayev to the people of Kazakhstan dated September 1, 2022 "The unity of the people and systemic reforms are a solid basis for the country's prosperity"  2. State program “Digital Kazakhstan” https://digitalkz.kz/wp-content/uploads/2020/03/%D0%A6%D0%9A-%D1%80%D1%83%D1%81.pdf  3. Старков, А.Н. Цифровая экономика [Электронный ресурс]: учебное пособие / А.Н. Старков, Е.В. Сторожева. — Электрон. дан. — Москва: ФЛИНТА, 2016. — 82 с. — Режим доступа: https://e.lanbook.com/book/104928.  4. Цифровая экономика: учебник / В.Д. Маркова. - М. : ИНФРА-М, 2019. - 186 с. - (Высшее образование: Бакалавриат). - Режим доступа: http://znanium.com/catalog/product/982132  5. Цифровая экономика: управление электронным бизнесом и электронной коммерцией : монография / Л.В. Лапидус. - М. : ИНФРА-М, 2019. - 381 с. - (Научная мысль). -. - Режим доступа: http://znanium.com/catalog/product/996752  6. Финансовая система государства: Учебное пособие / Исакова Н.Ю., Князева Е.Г., Юзвович Л.И., - 2-е изд., стер. - М.:Флинта, Изд-во Урал. ун-та, 2017. - 84 с. ISBN 978-5-9765-3115-4 - Режим доступа: http://znanium.com/catalog/product/947658  7. Handbook of Blockchain, Digital Finance, and Inclusion, Volume 2. Editors-in-Chief: David Lee Kuo Chuen and Robert Deng, 2017  **Internet sources:**  1. <http://www.minfin.gov.kz/>  2. <https://egov.kz>  3. <https://digitalkz.kz>  4. <https://forbes.kz/>  5. <https://dfo.kz/> - Digital platform of the Ministry of Finance of the Republic of Kazakhstan  **Available online:** Additional educational material and Internet sources used to complete the assignments of lectures, seminars, SIW, will be available on your page in the Univer system/LMS Moodle. | |
| The academic policy of the course in the context of university moral and ethical worth | **Rules of academic conduct:**  All students undergo online training. The deadlines for completing the online course modules must be strictly observed in accordance with the schedule for studying the discipline.  **ATTENTION!** Failure to meet deadlines leads to loss of points! The deadline for each assignment is indicated in the calendar (schedule) for the implementation of the content of the training course.  **Academic worth:**  - lectures/practical classes, SIW should be independent, creative.  - plagiarism, forgery, using cheat sheets, cheating at all stages of control are not allowed.  - students with disabilities can receive counseling at the following e-mail address:  [rdd2011@mail.ru](mailto:kurbanova-pismo@bk.ru). | |
| Policy of assessment and attestation | **Criteria-based assessment:** assessment of learning outcomes in relation to descriptors (checking the formation of competencies at midterm control and exams).  **Summative assessment:** assessment of the activity of work at the webinar; assessment of the completed assignment. | |

**Calendar (schedule) for the implementation of the course content:**

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| **Week** | **Title of the topic (lecture, practical class, SIW)** | **LO** | **IA** | **Hours** | **Maximum score** | **Form of classes**  **/platform** | **Form of knowledge assessment** |
| 1 | **L1.** Theoretical Foundations of Digital Finance | LO 1 | IA 1.1  IA 1.2 | 1 |  | Lecture | QS1 |
| **PC 1.** Consider the essence and functions of digital finance; electronic finance and electronic payments | LO 1 | IA 1.1  IA 1.2 | 2 | 14 | offline class | TT1 |
| 2 | **L2.** Business model of digital business | LO 1 | IA 1.1  IA 1.2 | 1 |  | Lecture | QS2 |
| **PC 2.** Basic metrics of digital business. Customer Lifetime Value (LTV - Life Time Value). Ways to increase LTV. The concept of monetization. Freemium model. On-demand model. Digital marketplace models. Digital startups within the organization. | LO 1 | IA 1.1  IA 1.2 | 2 | 14 | offline class | TT2 |
| 3 | **L3.** Digital ecosystems and traditional business transformation | LO 1 | IA 1.1  IA 1.2 | 1 |  | Lecture | QS3 |
| **PC 3.** The concept of a digital ecosystem. Digital Threats and Opportunities for Traditional Businesses. Digital ecosystems as exemplified by the financial sector. Roboadvising and ETFs. | LO 1 | IA 1.1  IA 1.2 | 2 | 14 | offline class | TT3 |
| 4 | **L4.** Electronic budget | LO 2 | IA 2.1  IA 2.2 | 1 |  | Lecture | QS4 |
| **PC 4.** New technologies for making settlements and payments in the payment system of the National Bank of the Republic of Kazakhstan. Electronic and digital budget, formation features | LO 2 | IA 2.1  IA 2.2 | 2 | 14 | offline class | TT4 |
| 5 | **L5.** Whence and Whither Money | LO 2 | IA 2.1  IA 2.2 | 1 |  | Lecture | QS5 |
| **PC 5.** Approaches to assessing the value of digital businesses. The specifics of calculating ROI and discounted cash flows. Method of multipliers. | LO 2 | IA 2.1  IA 2.2 | 2 | 14 | offline class | TT5 |
| **SIWT. Consultation on the implementation of SIW 1**  **SIW 1.** Acceptance and evaluation of work. Prepare an essay: Comparative analysis of the concept of "smart city" as a result of the development of the digital economy and the system of municipal finance | LO 1,2 | IA 1.2  IA 2.1  IA 2.2 |  | 30 | Lecture | IT1  (Individual project, analytical report and presentation of results) |
| **Landmark control 1** | | | | **100** |  |  |
| 6 | **L6.** Big data and artificial intelligence | LO 2 | IA 2.1  IA 2.2 | 1 |  | Lecture | QS6 |
| **PC 6.** The concept of big data. Machine learning concept. Data clustering. Robotization in business. Artificial Intelligence (AI) in business and in society. | LO 2 | IA 2.1  IA 2.2 | 2 | 14 | offline class | TT6 |
| 7 | **L7.** Financial mechanism "blockchain 1.0" | LO 3 | IA 3.1  IA 3.2 | 1 |  | Lecture | QS7 |
| **PC 7.** Blockchain 1.0, 2.0 and 3.0. Services of electronic wallets and crypto protection of personal data. Smart assets. Smart contracts. | LO 3 | IA 3.1  IA 3.2 | 2 | 14 | offline class | TT7 |
| 8 | **L8.** Financial mechanism "blockchain 2.0" | LO 3 | IA 3.1  IA 3.2 | 1 |  | Lecture | QS8 |
| **PC 8.** Wallet development projects. Ethereum: Turing complete virtual machine. Decentralized autonomous organizations and corporations. | LO 3 | IA 3.1  IA 3.2 | 2 | 14 | offline class | TT8 |
| 9 | **L9.** Financial mechanism "blockchain 3.0" | LO 3 | IA 3.1  IA 3.2 | 1 |  | Lecture | QS9 |
| **PC 9.** Blockchain technology. Digital property. Virtual Notary, Bitnotar and Chronobit. | LO 3 | IA 3.1  IA 3.2 | 2 | 14 | offline class | TT9 |
| 10 | **L10.** Currency, cryptocurrency and mining | LO 4 | IA 4.1  IA 4.2 | 1 |  | Lecture | QS10 |
| **PC 10.** Cryptocurrency and its main types. Bitcoin and fiat money. Modern trends in the formation of cryptocurrency. Crowdfunding. Currency, tokens, tokenization. Cryptocurrency legislation system and its development. | LO 4 | IA 4.1  IA 4.2 | 2 | 14 | offline class | TT10 |
| **SIWT. Consultation on the implementation of SIW 2**  **SIW 2.** 1.Acceptance and evaluation of work. Prepare a presentation: 1.Study of the specifics of the functioning of international card payment systems. 2. Automated banking systems in the banking market of the Republic of Kazakhstan | LO 3,4 | IA 3.1  IA 4.1  IA 4.2 |  | 30 | webinar in MS Teams / Zoom | IT2  (Individual project, analytical report and presentation of results) |
| **МТ (Midterm Exam)** | | | | **100** |  |  |
| 11 | **L11.** Decentralization, blockchain, cryptocurrencies | LO 4 | IA 4.1  IA 4.2 | 1 |  | Lecture | QS11 |
| **PC 11.** Transaction blocks. Blockchain in corporate governance. Features of the cryptocurrency market. An example of the concept of a national cryptocurrency in the Republic of Kazakhstan. Initial Coin Offering (ICO) | LO 4 | IA 4.1  IA 4.2 | 2 | 14 | offline class | TT11 |
| 12 | **L12.** Banks in the era of the digital revolution | LO 4 | IA 4.1  IA 4.2 | 1 |  | Lecture | QS12 |
| **PC 12.** Modern trends in the development of banking technologies. Banks' digital assets and their cryptocurrency transactions. | LO 4 | IA 4.1  IA 4.2 | 2 | 14 | offline class | TT12 |
| 13 | **L13.** Remote banking systems (BSC). Mobile banking | LO 5 | IA 5.1  IA 5.2 | 1 |  | Lecture | QS13 |
| **PC 13.** Telephone banking. Call centers and their role in customer payment transactions. Systems of the "Bank-Client" types: definition, functionality, varieties, scope of use. Cyber banking. | LO 5 | IA 5.1  IA 5.2 | 2 | 14 | offline class | TT13 |
| 14 | **L14.** The role of CFOs in the digital transformation of business | LO 5 | IA 5.1  IA 5.2 | 1 |  | Lecture | QS14 |
| **PC 14.** Goals and objectives of analytical transformation. Elements of analytical transformation. Smart data and technology platform. CFO competencies in the context of digital business transformation. | LO 5 | IA 5.1  IA 5.2 | 2 | 14 | offline class | TT14 |
| 15 | **L15.** Financial technologies in solving professional problems | LO 5 | IA 5.1  IA 5.2 | 1 |  | Lecture | QS15 |
| **PC 15.** Characteristics of financial technologies. Specialized financial technologies in solving key problems of the digital economy. | LO 5 | IA 5.1  IA 5.2 | 2 | 14 | offline class | TT15 |
| **SIWT. Consultation on the implementation of SIW 3**  **SIW 3.** Mini-group presentations: The use of electronic documents and electronic digital signatures in financial legal relations | LO 4,5 | IA 4.1  IA 4.2  IA 5.1 |  | 30 | Lecture | IT 3  (Individual project, analytical report and presentation of results) |
| **Landmark control 2** | | | | **100** |  |  |

[A b b r e v i a t i o n s: QS - questions for self-control; TT - typical tasks; IT - individual tasks; LC, MC - landmark (midterm) control.

C o m m e n t s:

- Form of conducting L and PC: webinar in MS Teams / Zoom (presentation of video materials for 10-15 minutes, then discussion / fixing in the form of discussion / problem solving / ...)

- All course materials (L, QS, TT, IT, etc.) can be found at the link (see Literature and resources, item 6).

- After each deadline, the next week's tasks are opened.

Chairman of the Methodical Council of the HSEB

candidate of economic sciences, associate professor Zh.T. Kozhamkulova

Head of the Department "Finance and Accounting"

candidate of Economics, PhD A.Z. Nurmagambetova

Associate professor R.D. Doszhan