
Faculty of Digital Transformations

Department of “Economy and Business”

APPROVED BY
Chairman of the EMC,
Vice-Rector of AEA
Mustafina A.K.
"14" _____ 2023



6B04104
(Code of Academic Program)

Financial Engineering
(Name of Academic Program)

CATALOGUE OF ELECTIVE DISCIPLINES

For 2023 entering year

The catalogue of elective disciplines for the AP Financial Engineering is developed on the basis of the working curriculum of the Finance specialty

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

Economics & Business

minutes No. 5 from "27" January 2023.

Head of Department

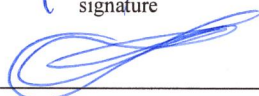


Shildebekov E.Zh.

signature

Full name, position, degree

CED compiler



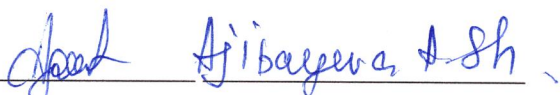
Adambekov N.T.

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Full name, position, degree

The catalogue of elective disciplines was approved at a meeting of the Academic Council of "International Information Technology University" JSC minutes No. 8 from "30" March 2023.

Head of the Department for Educational and Methodological Affairs



signature

Full name, position, degree

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;

1. 9 Prerequisites are the disciplines and (or) modules and other types of educational work containing knowledge, abilities, skills and competencies necessary for the mastering of the studied discipline and (or) modules;

1. 10 Competencies are the ability of the practical use of acquired knowledge and skills in professional activities.

2. ELECTIVE DISCIPLINES

Discipline cycle	Discipline code	Discipline name	Semester	Credit (ECTS)	Prerequisites
BD	MGT6703	Project management	5	5	Economic Theory, Management
BD	MGT6716	Change management	5		Economic Theory, Management
BD	FIN6715	1 C Accounting	6	5	Accounting and Business, Fianacial Accounting.
BD	SFT6143	Introduction to SAP ERP (ERP-1)	6	5	Accounting and business
BD	MRK6702	Digital marketing and brand management	7	5	Marketing
BD	MGT6706	Startups and entrepreneurship	7	5	Marketing, Management
PD	FIN6711	Financial modeling	6	5	FMI, finance
PD	FIN6710	Financial investment	7	5	FMI, finance
PD	FIN6712	Portfolio management	8	5	FMI, finance
PD	FIN6713	Derivatives	8	5	FMI, finance

3 DESCRIPTION OF ELECTIVE COURSE

PROJECT MANAGEMENT

1. GENERAL INFORMATION	
Faculty	Digital Transformations
Year, semester	3,5
Subject category	Basic, Elective
Number of credits (ECTS)	5
Prerequisites	Economic Theory, Mathematics, Management
Postrequisites	
2. GOALS, OBJECTIVES AND LEARNING OUTCOMES OF THE COURSE	
<p>This course will review to introduce and explore Project management concept, how to manage product and product development and build competitiveness through Project. Delivering new ideas and technologies as successful products to market in a sustainable way is at utmost importance for companies. This will require not only creative idea generation, but as well management of these creative ideas towards delivering as product portfolio and ensuring sustainable project. Managing these require a solid understanding of Project management.</p>	
<p style="text-align: center;">The objectives of the course are:</p> <ul style="list-style-type: none">- The major objective of the course is Understand the definitions and concepts of Project, invention and research and development- Use and apply tools for Project management	
<p style="text-align: center;">Learning outcomes of the course</p> <p>Students successfully completing the course will be able to:</p> <ul style="list-style-type: none">• Assess and interpret Project processes• Understand the Project process• Learn the components involving Project management• Diagnose different Project challenges and make recommendations for resolving them• Learn the components involving Project management• Understand the fundamentals of R&D management	
3. Course description	
<p>This course provides an introduction to the principles and concepts Project management. It explores the history of Project management to help gain an understanding of current drivers of enterprise risk management, as well as the development and impact of international standards. It examines issues relevant to specific sectors and geographical areas, and the needs and demands of various stakeholder groups, including regulatory authorities.</p>	

CHANGE MANAGEMENT

1. GENERAL INFORMATION	
Faculty	Digital Transformations
Year, semester	3,5
Subject category	Basic, elective
Number of credits (ECTS)	5
Language of Delivery:	English
Prerequisites:	Economic Theory, Management
Postrequisites	
2. GOALS, OBJECTIVES AND LEARNING OUTCOMES OF THE COURSE	
<ul style="list-style-type: none"> • The course goal is to create student's general understanding of the area of change by explaining different frameworks and ways of approaching change at an individual, team and organizational level. 	
<p>The objectives of the course are</p> <ol style="list-style-type: none"> 1. To introduce theories and frameworks applicable for leading and managing change 2. To consider factors that can help or hinder effective change, in relation to individuals, teams and organization 3. To explore different models and approaches of generating change in organizations 4. To practice and explain human behavior when implementing change in the organization, particularly resistance to change and its solutions. 	
<p>Learning outcomes of the course</p> <p>Students successfully completing the course will be able to:</p> <ol style="list-style-type: none"> 1. understand the need for change and its importance, impact and benefits; 2. identify the proper way of a change process, analyze a change situation, choose an action while effectively managing risks; 3. differentiate among change conceptions, tools, methods, measures and assess the suitability of their application; 4. select and apply appropriate models of change and evaluate its consequences. 	
3. COURSE DESCRIPTION	
<p>This module will familiarize with processes, methods and techniques to analyze situation in the organization and successfully generate change in order to withstand and correspond to the conditions of the volatile world. It focuses on how people and teams are affected by change.</p>	

1C ACCOUNTING

1. GENERAL INFORMATION	
Faculty	Digital transformation
Year, semester	3,6
Subject category	Basic, Elective
Number of credits (ECTS)	5
Prerequisites	Accounting and Business, Financial Accounting.
2. GOALS, OBJECTIVES AND LEARNING OUTCOMES OF THE COURSE	
The aim of study of a discipline To acquire a set of theoretical knowledge and practical skills for working with this software product means to be able to apply the accounting program in different sections of students, to study various modes of operation	
As a result of mastering the discipline, the student must be able to: - draw up and process accounting primary documents, fill out accounting registers; - reflect the business operations of the organization on the accounts; - to draw up the accounting statements of organizations on the basis of analytical and synthetic accounting data; know: - tasks, principles and requirements for accounting, objects accounting and their classification; - accounting method and its elements; - classification, details and procedure for filling out accounting documents, accounting forms, rules for organizing document flow; - structure and classification of accounts, structure and content sections of the chart of accounts of financial and economic activities of organizations; - organization and procedure for accounting business transactions in organizations; - the composition of the financial statements, the requirements for it, the procedure for drawing up.	
3. Course description 1C: Accounting is a universal accounting program focused on a wide range of applications that can be used in a wide range of activities, from small to large enterprises.	

DIGITAL MARKETING AND BRAND MANAGEMENT

1. GENERAL INFORMATION	
Faculty	Digital Transformations
Year, semester	4,7
Subject category	Basic, Elective
Number of credits (ECTS)	5
Prerequisites	Marketing
Postrequisites	Management, Marketing management, Marketing research
Lecturer	
2. GOALS, OBJECTIVES AND LEARNING OUTCOMES OF THE COURSE	
<p>The course goal is to develop thorough understanding of contemporary digital marketing concepts and technologies that are applied extensively by professionals in the field as well as by academia. This course provides an overview of digital marketing, the empathetic art of building relationships between products and services and unique consumers, businesses and markets. Theoretical concepts are supplemented by case studies, real-life examples and extensive activities aimed at gaining understanding of contemporary digital marketing concepts and ideas. In these ways, this class will serve as a training ground for evaluating digital marketing, creating and executing ideas, and grappling with the current trends, ethics and controversies of modern marketing.</p>	
The objectives of the course are	
<ul style="list-style-type: none"> - to form fundamental understanding of contemporary digital marketing concepts and frameworks - to familiarize students with technologies underpinning contemporary digital marketing - to introduce students to strategic and tactical tools necessary for execution of digital marketing plans and Key Performance Indicators (KPIs) 	
Learning outcomes of the course	
<p>Students successfully completing the course will be able to:</p> <ul style="list-style-type: none"> - outline an approach to developing digital marketing plans - understand an online implications of each elements of the marketing mix - review and select e-models which are appropriate for your business - understand online customers and their buying behavior - create strategy and plan to manage social media marketing - grasp fundamentals of website design - evaluate the range of options for traffic building - identify success factors for different online communications tools 	
3. Course description	
<p>Digital marketing and brand management is new and exciting blend of technologies, marketing, and data analysis that addresses key marketing challenges of today. Many of the challenges include new ways of interaction with customers and gaining deeper knowledge of customer by facilitating online communications channels and better satisfying the needs of customer. This subject also looks into identifying patterns of customer behavior and analyzing it to achieve new level of customer satisfaction and driving traffic to website or application.</p>	

FINANCIAL MODELING

1. General information	
Faculty	Digital transformation
Year, semester	3,6
Subject category	Profile, Elective
Number of Credits	5
Prerequisites:	Financial Institutions and Markets Principles of Finance
2. Goals, objectives and learning outcomes of the course	
<p>Course goals:</p> <p>The objective for this course is to develop the financial modeling skills used in the application of financial theory to practical problems in investment analysis, portfolio management, and valuation. In particular, the course will cover the application of Excel spreadsheet functions and visual basic programming to the statistical analysis of financial market data, the use of optimization models to determine mean-variance efficient allocations of financial assets, and the valuation of fixed income and derivative securities. Additional topics to be covered include, active portfolio management, simulation and retirement planning, and the valuation of exotic options and high yield bonds.</p>	
<p>Course objectives include:</p> <ul style="list-style-type: none"> • demonstrating proficiency in using regression analysis to estimate exposure to systematic and residual risk for individual securities and portfolios; • constructing and solving optimization models to determine the portfolio weights and total risk for mean-variance efficient portfolios; • demonstrating proficiency in creating visual basic functions and subroutines for pricing options and derivative securities; • using Monte Carlo simulation to evaluate retirement investment strategies and value exotic options; 	
<p>After completing the course the students will be able to:</p> <ul style="list-style-type: none"> ▪ Explain about specific mathematical and statistical functions in Excel and their use in cell formulas ▪ Describe how various charts can be used to represent quantitative data in in Excel ▪ Determine appropriate chart style to represent data; use date to create and revise chart in Excel ▪ Manage large volumes of data through the use of Tables in Excel ▪ Explain the fundamentals of table design and create a table in Excel ▪ Determine appropriate use pivot tables to group and ungroup data in Excel ▪ Create a pivot table in Excel ▪ Explain the appropriate use of one-variable and two-variable tables in Excel 	
3. Course description	
<p>The course covers the following main topics: construction and examination of the characteristics of distributions of returns; calculation of the variance co-variance matrix and its application to select portfolios; test of market efficiency using simple tests; developing, constructing and running event studies; estimating betas and calculating a firm's cost of capital; calculating the value of an option using the Black-Scholes model; applying Monte Carlo methods to financial problems; using and developing spreadsheet based solutions to financial problems; using Visual Basic for Applications (VBA) techniques.</p>	

PORTFOLIO MANAGEMENT

1. GENERAL INFORMATION	
Faculty	Digital transformation
Year, semester	4,8
Subject category	Profile, Elective
Number of credits (ECTS)	5
Prerequisites	Financial Institutions and Markets, Principles of Finance
2. GOALS, OBJECTIVES AND LEARNING OUTCOMES OF THE COURSE	
<p>Course goals: This course is designed specifically for finance students to enhance the understanding of financial securities, more sophisticated instruments as options, futures, forwards and swaps. It also enables them to understand the basics of portfolio management and basic asset allocation.</p>	
<p>Course objectives include knowledge of: Understanding of major topics in portfolio management, and how they are affected in international financial environments by foreign exchange markets, behavior of exchange rates, and foreign exchange exposure in a global context.</p>	
<p>After completing the course the students will be able to:</p> <ul style="list-style-type: none"> • Obtain analytical and computational skills necessary to face the challenges in the world of international finance – using mathematical and statistical formulas, financial calculator, Excel and other software packages. • Identify opportunities and professionally manage stock portfolios; understand the impacts of macroeconomic factors on portfolios; understand main financial models for risk management; identification and optimal management of international risks; use parity relationships and for forecasting exchange rates; manage international cash flows. 	
3. Course description	
<p>This course covers the main principles and applications of portfolio management, with a strong emphasis on investments in international environments. We will first cover issues such standard portfolio management and risk modeling, typical to daily professional practice. Then, we will extend those tools to encompass macroeconomic (domestic) and international issues such as exchange rates, interest rate parity and international arbitrage, exchange rate fluctuation exposure, as well as the management of international cash flows. The course provides a guideline to optimize financial decisions under domestic and foreign risks.</p>	

DERIVATIVES

1. General information	
Faculty	Digital transformation
Educational program code and title	6B04104 Financial engineering, 6B04105 Financial technologies
Year, semester	4,8
Subject category	Profile, Elective
Number of credits (ECTS)	5
Prerequisites	Financial Institutions and Markets, Principles of Finance
2. Goals, objectives and learning outcomes of the course	
<p>Course goals: This course aims to provide the students with the basics of financial reporting from the perspective of financial statement users (creditor and investor) and financial analysis tools and methods for decision-making. The course introduces the range of information that an analyst may use in analyzing the financial performance of a company, including the principal financial statements (the income statement, balance sheet, statement of cash flows and statement of changes in owner's equity). Students learn how to compare companies financially, understand cash flow, and basic profitability issues and risk analysis concepts. Students apply analytical tools and concepts in competitor analysis, credit and investment decisions, and business valuation.</p>	
<p>Course objectives include:</p> <ul style="list-style-type: none"> • understanding the financial statements; • applying financial analysis tools and methods for decision-making; • evaluating company's liquidity, profitability and long-term solvency; ▪ forecasting financial statements and company's valuation; 	
<p>After completing the course the students should be able to:</p> <ul style="list-style-type: none"> • define accounting and describe its role in making informed decisions, identify business goals and activities; • identify the users of accounting information; • identify the four basic financial statements; • explain the relationship of financial statement elements and accounts, and classify accounts into the financial statements; • interpret and analyze financial statements for tasks such as credit and security analyses, lending and investment decisions • evaluate and compare companies using ratio analysis, common-size financial statements, and charts in financial analysis; • calculate, classify, and interpret activity, liquidity, solvency, profitability, and valuations ratios; • demonstrate how ratios are related and how to evaluate a company using a combination of different ratios; • demonstrate the application of and interpret changes in the component parts of the DuPont analysis (the demonstration of return on equity); • calculate and interpret the ratios used in equity analysis, credit analysis, and segment analysis; • describe how ratio analysis and other techniques can be used to model and forecast earnings; <p>Students be qualified in</p> <ul style="list-style-type: none"> ▪ financial analysis and valuation 	
3. Course description	
<p>The course will examine the following issues: working with financial statements, analysis of balance sheet and income statement, analysis of cash flow statement, liquidity, solvency and profitability analysis.</p>	

FINANCIAL INVESTMENT

1. GENERAL INFORMATION	
Faculty	Digital transformation
Year, semester	4,7
Subject category	Profile, Elective
Number of credits (ECTS)	5
Prerequisites	Financial Institutions and Markets, Principles of Finance
The course goal	
<p>The "Financial Investment" course teaches the theory and applications of basic investment strategies in the financial world. It focuses on the following:</p> <ul style="list-style-type: none"> • Market classifications, types of assets and market participants, and how assets are traded • How indices are constructed, managed, and used in investments • The degree to which market prices reflect information • Implications of different degrees of market efficiency for security analysis and portfolio management • The characteristics, analysis, and valuation of equity securities <p>The fundamentals of technical analysis and illustrates how it is used to analyze securities and securities markets.</p>	
The objectives of the course	
<p>Overall, this course's main objective is to link financial theory to necessary practical tools with which an undergraduate student majoring finance should be ready for making financial decisions related to Investments. These decisions are relevant for institutional investors (pension, mutual, and hedge funds), individual investors, corporate treasurers, and anyone who seeks to use or understand domestic or international investing.</p>	
Learning outcomes of the course	
<p>Students successfully completing the course will be able to:</p> <ol style="list-style-type: none"> 1. Students will understand the characteristics of different financial assets such as money market instruments, bonds, and stocks, and how to buy and sell these assets in financial markets. 2. Students will understand the benefit of diversification of holding a portfolio of assets, and the importance played by the market portfolio. 3. Students will know how to apply different valuation models to evaluate fixed income securities, stocks, and how to use different derivative securities to manage their investment risks. 	
3. Course description	
<p>During the recent financial turmoil, we have experienced wide ride in the stock markets not only at home but abroad as well. Such volatile markets provide both challenges and opportunities for investors. This course is intended to provide a general overview of capital markets, financial instruments, and investment process. We will emphasize the role of modern financial theory in portfolio management. Therefore, we will cover a wide range of topics such as, financial markets, trading, security valuation, diversification and asset allocation, modern asset pricing models, performance measurement, active portfolio management, financial derivatives, and fixed income securities.</p>	

STARTUPS AND ENTREPRENEURSHIP

1. GENERAL INFORMATION	
Faculty	Digital Transformations
Year, semester	4,7
Subject category	Basic, elective
Number of credits (ECTS)	5
Prerequisites	Marketing, Management
Postrequisites	
2. GOALS, OBJECTIVES AND LEARNING OUTCOMES OF THE COURSE	
To understand new venture creation opportunities, its resources, and requirements for Enterprise Start-up	
The objectives of the course are:	
<ol style="list-style-type: none"> 1. To develop a detail understanding about the skill set expected from an aspiring entrepreneur and key areas and elements of entrepreneurial ecosystem to be considered by her/him for setting up and running a start-up entity. 2. To be equipped with knowledge to prepare operational and financial plans, convert plans into result-oriented actions, including fund raising, deployment and optimisation of costs. 3. To attain abilities for providing inputs to promoters and leadership team to identify and innovatively analyse opportunities for optimising value additions to products and the entity and lead the organisation following best ethical practices by creating competitive advantage. 4. To gain abilities to formulate strategies for scaling up a start-up's operations, perform valuation to facilitate fund raising and devising appropriate exit strategies for early-stage investors. 5. To be equipped with the knowledge to manage risks in a start-up within the given business ecosystem and convert it into a risk-enabled organisation for growth and prosperity. 6. To develop an idea of innovative entrepreneurship models and forms and utilise opportunities to make a successful venture. 	
Learning outcomes of the course	
<ol style="list-style-type: none"> 1. Students will be able to guide promoters and key role holders of start-ups for setting up, stabilising and scaling up of new enterprises with due regard to the dynamics of entrepreneurial ecosystem. 2. They will attain abilities to assist the management in implementing innovative ideas for adding values to the products and organisation, stabilise operations and scaleup with appropriate execution of business plans. 3. Students will be equipped with skill sets to assist entrepreneurs in leading start-up entities, meeting challenges and mitigating risks by risk-enabled operating strategies, building competitive advantages and adopting measures for result-oriented performance management. 4. They will acquire skill set to perform valuation to facilitate fund raising and devising appropriate exit strategies for early-stage investors. 	
3. Course description	
<p>The subject aims to provide a detailed coverage of fundamental concepts and important issues associated with entrepreneurship. It highlights on the essential skill set a successful entrepreneur should possess as well as the essential elements of an entrepreneurial ecosystem. The subject focuses on the discussion of important procedures to convert innovative ideas into result-oriented actions and emphasises use of critical and innovative thinking to add value. It also discusses important aspects of scaling up process and application of risk management strategies to avoid failure. The subject also elucidates the role of leadership in developing a successful start-up with due coverage of innovative business forms in established and emerging markets.</p>	

INTRODUCTION TO SAP ERP (ERP-1)

1. General information	
Faculty	Digital transformation
Year, semester	3,6
Subject category	Basic, Elective
Number of credits (ECTS)	5
Prerequisites:	Accounting and business
2. Goals, objectives and learning outcomes of the course	
The course goal is	
Give students an idea of the product line SAP, and most importantly, give the notion that such an ERP system, its definition, which it solves the problem, its structure, etc.	
The objectives of the course are	
<ul style="list-style-type: none"> • To process of Production Planning • To calculate net cost of product • To organize process of sailing and shipping product to customer • To create customer profile • To write technical card of building product process 	
Learning outcomes of the course	
By the end of the course the students will be able to do the following relative to a wide range of topics:	
<ol style="list-style-type: none"> 1. To identify the types of items. 2. To solve problem of calculation salary of workers. 3. To work in SAP ERP GUI 4. To explain work as SAP user in role of accountant 5. To compare and contrast the different ways of creating item profiles in SAP ERP 	
3. Course description	
<p>The course covers the theory and practice of ERP. The course contents include the evolution of ERP systems, business process reengineering, charting, in the ERP lifecycle functionality ERP and accounting and risk issues. There is also a significant component of this Class technology. IITU is a member of the University Alliance SAP, and you as a student have the opportunity to study SAP, is the market leader in ERP software. The knowledge obtained in this course will give you a competitive advantage in the market, as SAP is used by thousands of companies worldwide and practical training are highly valued recruiters. As well, it is the only ERP course in the country, for the students, where there are as many as four courses in SAP and the opportunity to obtain a certificate from TERP10 SAP.</p>	