Національний технічний університет України «КИЇВСЬКИЙ ПОЛІТЕХНІЧНИЙ ІНСТИТУТ імені ІГОРЯ СІКОРСЬКОГО»

Computer Systems Software Department

BUSINESS ANALYSIS IN IT
Syllabus

Requisites of the Course	
Cycle of Higher Education	*Second cycle of higher education (Master's degree)*
Field of Study	*12 Information Technologies*
Speciality	*121 Software engineering*
Education Program	*Software Engineering of Multimedia and Information Retrieval Systems*
Type of Course	*Normative*
Mode of Studies	*full-time*
Year of studies, semester	*6 year (1 semester)*
ECTS workload	*5 credits (ECTS)., including 54 hours of classroom work, and 66 hours of self-study.*
Testing and assessment	*Exam*
Course Schedule	*http://rozklad.kpi.ua/*
Language of Instruction	*English*
Course Instructors	Lecturer: PhD, Associate Professor, Lesya Lyushenko, *email* LyushenkoL@gmail.com Teacher of practical work: PhD, Associate Professor, Lesya Lyushenko, *email* LyushenkoL@gmail.com
Access to the course	https://classroom.google.com

Outline of the Course

1. Course description, goals, objectives, and learning outcomes

The study of the discipline "Business Analysis in IT" allows students to form the competencies necessary for solving practical problems of professional activity related to software development in terms of business analysis, namely: developing requirements for such systems, modeling, designing, quality assurance and service support

The purpose *of studying the discipline "Business Analysis in IT" is to form the ability of students to systematically approach the creation, implementation and maintenance of software systems and IT tools, using international standards and "best practices" (VAVOK, SWEBOK, PMBOK, etc.), and the acquisition by applicants of competencies to form a standardized approach to documenting processes using IT.*

The subject of the discipline "Business Analysis in IT" are methods, technologies and models that are used for the development, implementation and maintenance of information systems.

The study of the discipline "Business Analysis in IT" contributes to the formation of general competencies among students, namely:

Studying the course "Business Analysis in IT" forms general competences (GC) and professional competences (PC) in students:

GC01 *Ability to abstract thinking, analysis and synthesis.*

GC04   Ability to communicate with representatives of other professional groups of different levels (with experts from other fields of knowledge / types of economic activity).
PC01   Ability to analyze subject areas, form, classify software requirements.
PC07   Ability to critically comprehend problems in the field of information technology and at the frontiers of knowledge, to integrate relevant knowledge and solve complex problems in broad or multidisciplinary contexts.
PC08   Ability to develop and coordinate processes, stages and iterations of the software life cycle based on the application of modern models, methods and technologies of software development.

Studying the cours "Business Analysis in IT" contributes to students' formation of the following program learning outcomes (PLO) according to the educational program:
PLO03 Build and research models of information processes in the application field.
PLO04 Identify information needs and classify data for software design.
PLO05 Develop, analyze, justify and systematize software requirements.
PLO06 Develop and evaluate software design strategies; substantiate, analyze and evaluate options for design solutions in terms of the final software product quality, resource constraints and other factors.
PLO12 Make effective organizational and managerial decisions in conditions of uncertainty and changing requirements, compare alternatives, assess risks.
PLO31 Be able to implement innovative projects in the field of software engineering of multimedia and information retrieval systems from idea to implementation in the software market.

2. Prerequisites and post-requisites of the course (the place of the course in the scheme of studies in accordance with curriculum)

Successful study of the discipline "Business Analysis in IT" is preceded by the study of the disciplines "Components of software engineering", "Standardization and technologies for the development of multimedia and information-search software products", "Programming" and "Software of information retrieval systems" of the curriculum for the preparation of bachelors.

Theoretical knowledge and practical skills obtained during the assimilation of the discipline "Business Analysis in IT" ensure the successful implementation of master's theses in the specialty 121 Software Engineering.

3. Content of the course

Discipline "Business Analysis in IT" involves the study of the following topics:

Topic 1. Basics of business analysis. Trends in the development of the information space

Topic 2. Business analysis of the operational level. Standardization of information support processes

Topic 3. Business analysis of IT projects

Modular test work

Exam

4. Coursebooks and teaching resources

Basic reading

1. David Bourgeois, JAMES L. SMITH, SHOUHONG WANG Information Systems for Business and Beyond 2019 -327 p. https://opentextbook.site/exports/ISBB-2019.pdf

2. Business Analysis for Practitioners. A Practice Guide. Project Management Institute. 2015 -206 p

ISBN 978-1628250695

3. Steven P. Blais Business Analysis.Best Practices for Success. Wiley Year. 2011 ISBN 9781118161555

4. Debra Paul, James Cadle, Malcolm Eva, Craig Rollason, Jonathan Hunsley Business Analysis BCS, The Chartered Institute for IT 2020 p.327 ISBN 9781780175126

5. Bernd Ruecker Practical Process Automation. O'Reilly Media 2021: -200 p. ISBN 9781492061458

6. Thomas H. DavenportThe AI Advantage: How to Put the Artificial Intelligence Revolution to Work (Management on the Cutting Edge) The MIT Press 2018 248 p ISBN-10 0262039176

7. Kevin BrennanA Guide to the Business Analysis Body of Knowledge(r) (Babok(r) Guide): International Institute of Business Analysis. 2009 -272 . ISBN-10 : 0981129218

Further reading

8. Alexander Osterwalder, Yves Pigneur, Alan Smith Model Generation: A Handbook for Visionaries, Game Changers, and Challengers (The Strategyzer series) John Wiley and Sons , 2010 -288p. ISBN-10 : 9780470876411

9. Successful Project Management: Evaluate All Your Options for Change, Put Together an Effective Project Team, Plan a Logical Course of Work, Keep Projects on Time and to Budget (Business Partners: IMM Lifestyle Books 2009 240 p **ISBN-10:** 1847733964

10.   Robb Wilson Age of Invisible Machines: A Practical Guide to Creating a Hyperautomated Ecosystem of Intelligent Digital Workers :Wiley 2022 -255 pages

11.   Stefan F. Dieffenbacher, Caroline Hüttinger How to Create Innovation: The Ultimate Guide to Proven Strategies and Business Models to Drive Innovation and Digital Transformation: Digital Leadership AG. 2022 -576 p

12.   Karen O. James E. Henderson Rene AbateCooRestructuring Strategy: New Networks and Industry Challenges Wiley-Blackwell 2005 -312 p ISBN-10 : 9781405126014

Use to master the practical skills of the discipline. The materials are freely available on the Internet.

Educational content

1. Methodology

№	Type of training session	Description of the training session
	Topic 1. Basics of business analysis. Trends in the development of the information space	
1	Lecture No1 Introduction to the course. (part 1) Lecture No2 Introduction to the course. (part 2)	Course overview. Digital transformations for companies. A single digital space, the transition to online offices. Innovative thinking for the organization of digital logistics. Artificial intelligence in IT. Digital management of communications and staff efficiency.
2	Lecture No2 Effective business. Concepts and approaches to business management (part 1) Lecture No2 Effective business. Concepts and approaches to business management (part 2)	Concepts and management based on structures, management of functional activities, management based on the process model, project management. Analysis of the effectiveness of the application.

3	Lecture No3. Business model. Businessanalysis of the enterprise (part 1) Lecture No3. Business model. Businessanalysis of the activities of the enterprise (part 2)	Principles to form business models of the enterprise, mission, vision of the company. Strategy of the company's development in the information society. Business organization based on information and communication technologies.
4	Workshop number1. Formation of own cases. Choosing IT processes for business analysis	Formation of own cases. Selection of IT processes for business analysis. General description of processes. Search for information resources, legislative framework. Studying the business model, quality policy, performance standards and "best practices". Research of existing business processes
Topic 2. Business analysis of the operational level. Standardization of information support processes		
5	Lecture No4 Theory of modeling (part 1) Lecture No4 Theory of modeling (part 2)	The concept of model and modeling. The purpose of building a model. Principles and postulates of modeling. Types of modeling. Theory of similarity.
6	Lecture No5 Fundamentals of business process modeling (part 1) Lecture No5 Fundamentals of business process modeling (part 2)	The concept of business process. Criteria for the effectiveness of the organization of business processes. Notations and tools for modeling business processes. Case means.
7	Workshop No 2 Modeling of IT business processes	Selection of modeling tool, notation. Rationale. Business process modeling. Construction of graph schemes of business processes. Execution order. Subprocesses. Regulations and instructions. Organizational model of processes
8	Lecture No6 Business process engineering (part 1) Lecture No6 Business process engineering (part 2)	The concept of business process reengineering. Conditions for the success of business process reengineering. Principles of business process reorganization.
9	Lecture No 7. Standardization of information support processes (part 1) Lecture No 7. Standardization of information support processes (part 2)	Standard structure. Organigram of the process. Matrix of responsibility. Matrix of workflow. Workflow process. Quality
10	Workshop No 3 Standards of production activity. Quality standards.	Formation of the standard. Building the responsibility of the process. Quality assurance process. Workflow process.
Topic 3. Business analysis of IT projects		
11	Lecture No 8. Business analysis of IT projects (part 1) Lecture No 8. Business analysis of IT projects (part 2)	Basics of analysis of project implementation. Feasibility study. The concept of project implementation. Strategic alternatives to project implementation

12	Lecture No 9 Project concept.	The concept of project implementation. Strategic alternatives to project implementation
	Modular test work	
	Exam	

2. Self-study

The discipline is based on independent preparation for classroom classes on theoretical and practical topics.

№	The name of the topic submitted for independent study	Number of hours	Literary sources
Topic 1. Basics of business analysis. Trends in the development of the information space			
1	Lecture No1 Introduction to the course. (part 1) Lecture No2 Introduction to the course. (part 2)	3	1,6,9
2	Lecture No2 Effective business. Concepts and approaches to business management (part 1) Lecture No2 Effective business. Concepts and approaches to business management (part 2)	3	4,6
3	Lecture No3. Business model. Business analysis of the enterprise (part 1) Lecture No3. Business model. Business analysis of the enterprise (part 2)	3	2,6,8
4	Workshop No1. Formation of own cases. Choosing IT processes for business analysis	4	3,4,6,7
Topic 2. Operational level business analysis			
5	Lecture No4 Theory of modeling (part 1) Лексіа No4 Theory of modeling (part 2)	3	3,4,7
6	Lecture No5 Fundamentals of business process modeling (part 1) Lecture No5 Fundamentals of business process modeling (part 2)	3	3,5,10
7	Workshop No 2 Modeling of IT business processes	4	5,7,10,12
8	Lecture No6 Business process reengineering (part 1) Lecture No6 Business process reengineering (part 2)	3	2,7,10
9	Lecture No 7. Standardization of information support processes (part 1) Lecture No 7. Standardization of information support processes (part 2)	3	2,7,10
10	Workshop No 3 Standards of production activity. Quality standards.	4	2,5,7,10,11
Topic 3. Business analysis of IT projects			
11	Lecture No 8. Business analysis of IT projects (part 1)	3	2,4,6

	Lecture No 8. Business analysis of IT projects (part 2)		
12	Lecture No9 Project Concensus	1	2,4,12
Modular test work		5	
Exam		24	

Policy and Assessment

1.Course policy

Attendance of lectures is mandatory.

Attendance at computer workshop classes can be episodic and, if necessary, consultation/defense of computer workshops.

Rules of conduct in the classroom: activity, respect for those present, disconnection of phones.

Adherence to the policy of academic integrity.

Rules for the protection of computer workshops: works must be done in accordance with the tasks and according to the option.

2. Monitoring and grading policy

During the semester, students perform 3 computer workshops. The maximum number of points for each computer workshop: 10 points.

Points are awarded for:
- quality of computer workshop: 0-6 points;
- answer during the protection of a computer workshop: 0-2 points;
- timely submission of work to the defense: 0-2 points.

Criteria for assessing the quality of performance:
6 points – the work was performed efficiently, in full;
3-5 points – the work is performed efficiently, in full, but has drawbacks;
1-2 points – the work has been completed in full, but contains significant errors;
0 points – the work is not completed in full.

Criteria for evaluating the answer:
2 points – the answer is complete, well-reasoned;
1 point – there are significant errors in the answer;
0 points – no answer or the answer is incorrect.

Criteria for assessing the timeliness of the submission of work to the defense:
2 points – the work is submitted to the defense no later than the specified period;
0 points – the work is submitted to the defense later than the specified period.

The maximum number of points for the implementation and protection of computer workshops:
10 points × 3 comp. pract. = 30 points.

The task for the modular test consists of 3 theoretical and 2 practical questions. The answer to each question is estimated at 4 points.

Criteria for evaluating each test question:
4 points – the answer is correct, complete, well-reasoned;
2-3 points – in general, the answer is correct, but has drawbacks;
1 point – there are significant errors in the answer;
0 points – no answer or the answer is incorrect.

The maximum number of points for a modular test:

4 points × 5 questions = 20 points.

The rating scale for the discipline is equal to:
R = RC = R pr+ Rmt+ Rex = 30 points. + 20 points. + 50 points. = 100 points..

Calendar control: is carried out twice a semester as a monitoring of the current state of compliance with the requirements of the syllabus.
At the first certification (8th week), the student receives "enrolled" if his current rating is at least 10 points (50% of the maximum number of points that a student can receive before the first certification).
At the second certification (14th week), the student receives "enrolled" if his current rating is at least 20 points (50% of the maximum number of points that a student can receive before the second certification).

Semester control: exam
Conditions of admission to semester control:
With a semester rating (RC) of at least 30 points and enrollment of all works of the computer workshop, the student has admission to the exam. After passing the exam, a score is set in accordance with the table (Table of correspondence of rating points to grades on a university scale).

A necessary condition for admission to the exam is the implementation and defense of a laboratory workshop.

Table of correspondence of rating points to grades on a university scale

Score	Grade
100-95	Excellent
94-85	Very good
84-75	Good
74-65	Satisfactory
64-60	Sufficient
Below 60	Fail
Course requirements are not met	Not Graded

The list of questions to be submitted for semester control is given in Appendix 1.

Syllabus of the course

Is designed by teacher PhD, Associate Professor, Lesya Lyushenko

Adopted by Computer Systems Software Department (protocol № 12 from 26.04.23)

Approved by the Faculty Board of Methodology (protocol № 10 from 26.05.23)

Appendix 1. The list of questions that are submitted for semester control

1. What are the directions of the strategy of process management of a modern IT company?
2. What is the difference between the goals, functions and business processes of the company?
3. What is an organization's business model?
4. Describe the directions of business modeling in the company.
5. Explain the relationship between process and project management.
6. What is the essence of the structural and process approach to building a business?
7. Name the information business processes of the organization.
8. Name the project management processes in the company.
9. What are the modern methods of process management?
10. What is the organizational structure of the company?
11. Tipi organizational structures
12. What is a business process?
13. Describe the business modeling algorithm.
14. The concept of innovation, innovative development.
15. Classification of projects in the company.
16. The concept of a system, a systematic approach to management.
17. Knowledge management in the company.
18. Modern methodologies of quality management.
19. Definition of the process in ISO standards.
20. Classification of business processes.
21. Project management standards.
22. The concept of business reengineering.
23. What is business process optimization?
24. Business process owner function
25. Classification of inputs and outputs of the business process.
26. Characteristics of reengineering.
27. Business process indicators.