Business analysis methods for requirements management

Specialty	**Institute**
122 – Computer Science	Institute of Computer Science and Information Technology
Educational program	**Department**
Computer Science and Intelligent Systems	Software Engineering and Management Intelligent Technologies (321)
Level of education	**Course type**
Bachelor's level	Special (professional), Mandatory
Semester	**Language of instruction**
4	English, Ukrainian

Lecturers and course developers

Valentyna Moskalenko

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Doctor of Technical Sciences, Professor, Professor of SEMIT Department.
Number of scientific and educational publications is more than 100, 13 articles in publications indexed in Scopus.
(https://publons.com/researcher/1588564/valentyna-moskalenko/;
Web of Science ResearcherID R-9960-2018;
https://scholar.google.com.ua/citations?user=eUidJHIAAAAJ&hl;
https://www.scopus.com/authid/detail.uri?authorId=36021571200;
https://orcid.org/0000-0002-9994-5404)

Leading lecturer in disciplines: "Fundamentals of computer science and artificial intelligence methods", "Probability theory and mathematical statistics", "Business analysis methods for requirements management", "Methods of computational intelligence", "Software requirements engineering", "Fundamentals of Machine Learning", "Introduction to neural networks".

Scientific directions: development of information systems for strategic company management; application of computer intelligence methods and models for solving problems of managing complex organizational systems; business analytics.

More about the lecturer on the department's website

General information

Summary

The subject of study is the main aspects of the work of a business analyst in IT, including: planning and monitoring of business analysis, survey and cooperation with project stakeholders, analysis of strategies, analysis of requirements and definition of design, assessment of the business value of the project and analysis of the effectiveness of business solutions , business analysis methods and business analysis practices in related areas: Agile, Business Intelligence, in information technologies, in business architecture and in business process management

Course objectives and goals

The goal is the formation of theoretical knowledge and practical skills in the basics of business analysis in the IT industry among specialists in computer science and intellectual systems
The goals are to provide practical skills in the use of modern methods and techniques for gathering, analyzing and managing software requirements, including artificial intelligence systems; as well as practical skills in the use of business analysis practices in related areas: Agile, Business Intelligence, in business architecture and in business process management.

Format of classes

Lectures, laboratory classes, consultations. Final control is a test.

Competencies

GC1. Ability to think abstractly, analyze and synthesize.
GC2. Ability to apply knowledge in practical situations.
GC3. Knowledge and understanding of the subject area and understanding of professional activities.
GC6. Ability to learn and master modern knowledge.
GC7. Ability to search, process and analyze information from various sources.
GC8. Ability to generate new ideas (creativity).
GC10. Ability to be critical and self-critical.
GC11. Ability to make informed decisions.
PC6. Ability to think systematically, apply the methodology of system analysis to study complex problems of different nature, methods of formalizing and solving systemic problems with conflicting goals, uncertainties and risks.
PC15. Ability to analyze and functional modeling of business processes, construction and practical application of functional models of organizational, economic, production and technical systems, methods of risk assessment of their design.
PC19. Ability to comprehensively use methods of mathematical modeling and analysis of complex systems, methods of modeling and analysis of business processes, information technology for managing business systems to create intelligent control systems.

Learning outcomes

PLO8. To use the methodology of system analysis of objects, processes and systems for the tasks of analysis, forecasting, management and design of dynamic processes in macroeconomic, technical, technological and financial objects.
PLO11. Have the skills to manage the life cycle of software, products and services of information technology in accordance with the requirements and restrictions of the customer, be able to develop project documentation (feasibility study, terms of reference, business plan, agreement, contract).
PLO14. To apply knowledge of methodology and CASE tools for designing complex systems, methods of structural analysis of systems, object-oriented design methodology in the development and study of functional models of organizational, economic, production and technical systems.
PLO19. To create intelligent management systems using methods of mathematical modeling and analysis of complex systems, methods of modeling and analysis of business processes, information technology management of business systems.

Student workload

The total volume of the course is 120 hours (4 ECTS credits): lectures - 16 hours, laboratory classes - 32 hours, self-study - 72 hours.

Course prerequisites

The basis of studying the discipline is general knowledge of modeling and software development.

Features of the course, teaching and learning methods, and technologies

Teaching and learning methods:

interactive lectures with presentations, discussions, laboratory classes, teamwork, case method, student feedback, problem-based learning.

Forms of assessment:

written individual assignments for laboratory work (CAS), assessment of knowledge in laboratory classes (CAS), express surveys (CAS), online tests (CAS), final/semester control in the form of a semester test, according to the schedule of the educational process (FAS).

Program of the course

Topics of the lectures

Topic 1. Key concepts of business analysis.

Key concepts of business analysis according to the Business Analysis Body of Knowledge (BABOK) Planning measures for identifying, analyzing and forming software requirements. Monitoring of business analysis. Methods for planning work on business analysis and their monitoring.

Topic 2. Techniques and methods of business analysis for identifying requirements.

Examination and cooperation. Methods of business analysis for examination and support of cooperation. Management of interactions with stakeholders.

Topic 3. Requirements life cycle management.

Requirements tracing. Maintaining the relevance of requirements. Prioritization. Assessment of changes in requirements. Approval of requirements.

Topic 4. Analysis of requirements and assessment of the value of a software solution.

Requirements analysis and design definition. Methods for identifying software requirements and defining design. Evaluation of the value, limitations of the software solution and analysis of performance indicators. Methods of assessing the business value obtained after the implementation of the software and analyzing the effectiveness of the business solution.

Topic 5. Application of business analysis practices for software development according to the Agile methodology.

Business analysis according to the Agile scheme. Use of methods and tools of business analysis in the development of projects according to a flexible methodology. Development of requirements according to the SCRAM methodology, development of User stories and construction of Story Mapping.

Topic 6. Application of modern perspectives in the practice of business analysis.

Application in the practice of business analysis of methods and practices of modern perspectives of Business Intelligence, Business Architecture, etc. ITIL concept and requirements management.

Topics of the workshops

Workshops are not provided within the discipline.

Topics of the laboratory classes

Topic 1. Business analysis methods for developing business requirements and the Software Requirements Specification.

Topic 2. Formation and analysis of requirements according to the Agile methodology. Development of User stories and Story Mapping in SCRAM

Topic 3. Software requirements management in Confluence and Jira.

Self-study

Topic 1. Key concepts of business analysis

Areas of activity of a business analyst and their features. Types of organizational structures of enterprises, effective organizational structures of IT companies. Planning as a management function

Topic 2. Identification of requirements

Brainstorming and other methods of generating ideas.

Topic 3. Requirements life cycle management

Calculation task: Prioritize requirements according to the Kano model and MoScoW

Topic 4. Analysis of requirements and assessment of the value of a software solution.

Features of developing business models for software.

Topic 6. Application of modern perspectives in the practice of business analysis

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Business process approach of enterprise management

Students are recommended with additional materials (videos, articles) for self-study and processing

Course materials and recommended reading

Key literature
1. A Guide to the Business Analysis Body of Knowledge® (BABOK® Guide). (2015) International Institute of Business Analysis, Toronto, Ontario, Canada. Version 3.0.
2. The Agile Extension to the BABOK® Guide (2017)
//https://www.agilealliance.org/resources/initiatives/agile-extension-to-the-babok-guide/
3. Wiegers K., Beatty J. (2013) Software Requirements (Developer Best Practices), 3rd Edition, Microsoft Press, 672 p.
4. Turner P., Cadle J. (2020) Business Analysis Techniques. 4th ed., Edition- Revised Edition.
5. Winter H. (2019) The Business Analysis Handbook: Techniques and Questions to Deliver Better Business Outcomes. 1st Edition. Kogan Page.
6. The PMI Guide to Business Analysis (Paperback) (2018). Project Management Institute.
7. Biazid D. (2021) Requirements Development Guidebook. CreateSpace Independent Publish.

Additional literature
1. Cadle J., Paul D., Turner P. (2014) Business Analysis Techniques: 99 essential tools for success, 2nd ed.: BCS Learning & Development Limited.
2. Girvan L. (2017) Agile and Business Analysis Practical guidance for IT professionals. BCS Learning & Development Limited.
3.Leffingwell D. (2010) Agile Software Requirements: Lean Requirements Practices for Teams, Programs, and the Enterprise (Agile Software Development Series) 1st Edition, Addison-Wesley Professional, 560 p.
4. Business Analysis Fundamentals // https://projectmanagementacademy.net/business-analysis-fundamentals.
5. Podeswa H. The Business Analyst's Handbook., 2009 Course Technology, a part of Cengage Learning. Publisher and General Manager.

Assessment and grading

Criteria for assessment of student performance, and the final score structure

100% final assessment in the form of a test (10%) and a current assessment (90%).
10% credit: semester credit, according to the schedule of the educational process 90% current assessment:
- 75% assessment of tasks in laboratory works;
- 15% assessment of calculated tasks.

Grading scale

Total points	National	ECTS
90–100	Excellent	A
82–89	Good	B
75–81	Good	C
64–74	Satisfactory	D
60–63	Satisfactory	E
35–59	Unsatisfactory (requires additional learning)	FX
1–34	Unsatisfactory (requires repetition of the course)	F

Norms of academic integrity and course policy

The student must adhere to the Code of Ethics of Academic Relations and Integrity of NTU "KhPI": to demonstrate discipline, good manners, kindness, honesty, and responsibility. Conflict situations should be openly discussed in academic groups with a lecturer, and if it is impossible to resolve the conflict, they should be brought to the attention of the Institute's management.

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Regulatory and legal documents related to the implementation of the principles of academic integrity at NTU "KhPI" are available on the website: http://blogs.kpi.kharkov.ua/v2/nv/akademichna-dobrochesnist/

Approval

Approved by	08.06.2023	Head of the department Ihor HAMAIUN
	08.06.2023	Guarantor of the educational program Andrii KOPP