

STARTUP BUSINESS MODELS

COURSE SYLLABUS

Code and name of specialty	121 Software Engineering 122 Computer Science 126 Information Systems and Technologies	Institute / faculty	Faculty of Computer Science and Software Engineering
Program name	Software Engineering Computer Science and Intelligent Systems Information Systems Software	Department	Software Engineering and Management Information Technologies
Type of program	Educational and Professional	Language of instruction	Ukrainian, English

LECTURER

Full name, e-mail

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Ph.D., Associate Professor at the Department of Software Engineering and Management Information Technologies of NTU «KhPI». Prepared and published more than 60 research papers and textbooks (Google Scholar: <https://scholar.google.com/citations?user=B8fggLEAAAJ>; ORCID: <https://orcid.org/0000-0002-3189-5623>; Scopus: <https://www2.scopus.com/authid/detail.uri?authorId=57202887287>; Publons: <https://publons.com/researcher/2967953/andrii-kopp/>).

Leading lecturer of courses: *Data Models and Structures (in Ukrainian and English), Design and Development of Databases (in Ukrainian and English).*

GENERAL DESCRIPTION OF THE COURSE

Summary	The course “Startup Business Models” is an optional course in the profiled discipline package 02 “Software Development and Startup” of the specialties 121 “Software Engineering”, 122 “Computer Science”, and 126 “Information Systems and Technologies”. It is taught in the fourth semester in the amount of 180 hours (6 ECTS credits), in particular: lectures – 32 hours, laboratory classes – 32 hours, independent work – 116 hours. There are no individual tasks. The study of the discipline ends with the test.
Course objectives	Formation of students’ theoretical and practical knowledge necessary to carry out business using governing principles and approaches of modern information technologies.
Types of classes and control	Lectures, laboratory classes. Continuous assessment – laboratory works, intermediate modular assessment. Final assessment – test.
Term	4

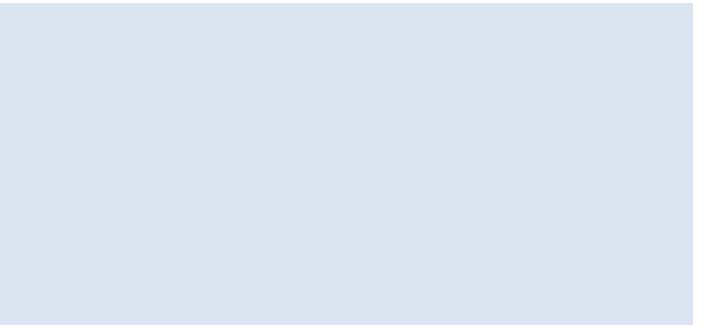
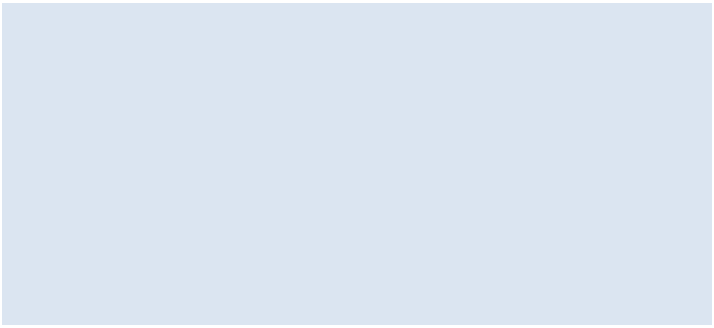
Student workload (credits) / Type of course	6 / Optional	Lectures (hours)	32	Laboratory classes (hours)	32	Self-study (hours)	116
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Program competences	121-GC 01. Ability to abstract thinking, analysis and synthesis. 121-GC 02. Ability to apply knowledge in practical situations. 121-GC 05. Ability to learn and master modern knowledge.
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121-GC 06. Ability to search, process and analyze information from various sources.
 121-GC 07. Ability to work in a team.
 121-PC14. Ability to participate in software design, including modelling (formal description) of its structure, behavior and functioning processes.
 121-PC23. Ability to implement phases and iterations of the life cycle of software systems and information technology based on appropriate models and approaches to software development.
 122-GC1. Ability to abstract thinking, analysis and synthesis.
 122-GC2. Ability to apply knowledge in practical situations.
 122-GC3. Knowledge and understanding of the subject area and understanding of professional activity.
 122-GC6. Ability to learn and master modern knowledge.
 122-GC7. Ability to search, process and analyze information from various sources.
 122-GC8. Ability to generate new ideas (creativity).
 122-GC9. Ability to work in team.
 122-PC8. Ability to design and develop software using different programming paradigms: generalized, object-oriented, functional, logical, with appropriate models, methods and algorithms of calculations, data structures and management mechanisms
 122-PC15. Ability to analyze and perform functional modelling of business processes, construction and practical application of functional models of organizational, economic, and production-technical systems, methods of risk assessment of their design.
 126-GC 1. Ability to abstract thinking, analysis and synthesis.
 126-GC 2. Ability to apply knowledge in practical situations.
 126-GC 3. Ability to understand the subject area and professional activity.
 126-GC 5. Ability to learn and master modern knowledge.
 126-GC 6. Ability to search, process and summarize information from various sources.
 126-GC 7. Ability to develop and manage projects.
 126-PC 9. Ability to develop business solutions and evaluate new technological proposals.
 126-PC 12. Ability to manage and use modern information and communication systems and technologies (including those based on the use of the Internet).
 126-PC 14. Ability to form new competitive ideas and implement them in projects (startups).

Learning outcomes	Teaching and learning methods	Forms of assessment (continuous assessment CAS, final assessment FAS)
<p>121-PLO14. Put into practice the tools of domain analysis, design, testing, visualization, measurement and documentation of software. 121-PLO23. Be able to document and present the results of software development. 122-PLO8. Use the methodology of system analysis of objects, processes, and systems for the tasks of analysis, prediction, management, and design of dynamic processes in macroeconomic, technical, technological, and financial objects. 122-PLO14. 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</p>	<p>Interactive lectures with presentations, discussions, laboratory classes, teamwork, case method, student feedback method, problem-based learning</p>	<p>Written individual assignments for laboratory works (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)</p>

models of organizational-economic and production-technical systems.
 126-PLO 9. Carry out a systematic analysis of the architecture of the enterprise and its IT infrastructure, to develop and improve its element base and structure.
 126-PLO 11. Demonstrate the ability to develop a feasibility study for the development of information systems and technologies and be able to assess the economic efficiency of their implementation.



ASSESSMENT AND GRADING

Range s of points corres pondi ng to grades	core (points) for all types of learning activities	ECTS grading scale	The national grading scale	Allocation of grade points
	90-100	A	excellent	
	82-89	B	good	
	74-81	C		
	64-73	D	satisfactory	
	60-63	E		
	35-59	FX	Unsatisfactory (with the exam retake option)	
	0-34	F	Unsatisfactory (with mandatory repetition of the course)	

100% Final assessment as a result of Final test (30%) and Continuous assessment (70%).
30% Final test
70% Continuous assessment:
 Test №1 (15%)
 Test №2 (15%)
 Laboratory works (40%)
 Laboratory work №1 (5%)
 Laboratory work №2 (5%)
 Laboratory work №3 (5%)
 Laboratory work №4 (5%)
 Laboratory work №5 (5%)
 Laboratory work №6 (5%)
 Laboratory work №7 (5%)
 Laboratory work №8 (5%)

Course policy Students must attend all classes according to the study schedule and adhere to the norms of academic ethics. To study the course, students need to have their personal computer and (or) use computers of the computer center at the department. Students must work with compulsory and recommended reading, including Internet resources. Students must complete and submit all laboratory works during the semester in which the course is taught, before the examination session. The final assessment is not carried out without the personal presence of students.

COURSE STRUCTURE AND CONTENT

Topic 1	Laboratory work 1	Self-study	
Introduction to innovative digital business organization	Canvas business modeling <i>Innovation Campus: SBM-Sprint01</i>		Digital business against traditional business
Digital innovative business advantages	Business advantages mind mapping <i>Innovation Campus: SBM-Sprint01</i>		Digital business social advantages
Digital innovative business drawbacks	Business drawbacks mind mapping <i>Innovation Campus: SBM-Sprint01</i>	Digital business non-technical disadvantages	

Topic 4	Business models	Laboratory work 4	Generic business process modeling using ARIS methodology <i>Innovation Campus: SBM-Sprint02</i>	E-business and government interaction models
Topic 5	Payment systems	Laboratory work 5	Payment business process modeling using BPMN notation <i>Innovation Campus: SBM-Sprint03</i>	Security measures
Topic 6	Business-to-Business (B2B) business model	Laboratory work 6	Business process modeling of B2B interaction using BPMN notation <i>Innovation Campus: SBM-Sprint03</i>	B2B architectural models
Topic 7	Business-to-Customer (B2C) business model	Laboratory work 7	Business process modeling of B2C interaction using BPMN notation <i>Innovation Campus: SBM-Sprint03</i>	B2C architectural models
Topic 8	Electronic data interchange	Laboratory work 8	Business collaboration modeling using ArchiMate language <i>Innovation Campus: SBM-Sprint02</i>	Types of business documents

RECOMMENDED READING

Compulsory	1. Adam Jabłoński. (2019). Sustainable Business Models, MDPI, 514 p.	Recommended	1. The Business Model Canvas: Let your business thrive with this simple model. 50 Minutes.com, 2017, 34 p.
	2. Lars Moratis, Frans Melissen, Samuel O. Idowu. (2018). Sustainable Business Models: Principles, Promise and Practice. <i>Springer</i> , 422 p.		2. Mark Lancelott, Mikel Gutierrez, Andrew Campbell, Van Haren. (2017). Operating Model Canvas (OMC).
	3. Van Haren, (2019). Business Architecture Level 1 Study Guide.		3. Robert C. Mir. (2020). Iterative Business Model Canvas Development. From Vision to Product Backlog: Agile Development of Products and Business Models. BoD. Books on Demand, 42 p.
	4. Annabeth Aagaard. (2028). Digital Business Models: Driving Transformation and Innovation, Springer, 264 p.		4. Jamil, George Leal et al. (2018). Handbook of Research on Business Models in Modern Competitive Scenarios. IGI Global, 537 p.
	5. Raphael Amit, Christoph Zott. (2020). Business Model Innovation Strategy: Transformational Concepts and Tools for Entrepreneurial Leaders. John Wiley & Sons, 400 p.		5. Tim Clark, Bruce Hazen. (2017). Business Models for Teams: See How Your Organization Really Works and How Each Person Fits In. Penguin, 272 p.
	6. Paul Harmon. (2019). Business Process Change: A Business Process Management Guide for Managers and Process Professionals. Morgan Kaufmann, 534 p.		
	7. Akhil Kumar. (2018). Business Process Management. Routledge, 292 p.		
	8. Rhazali, Yassine. (2020). Advancements in Model-Driven Architecture in Software Engineering. IGI Global, 287 p.		
	9. Rosado da Cruz et al. (2018). New Perspectives on Information Systems Modeling and Design. IGI Global, 332 p.		
	10. Erben, Selin. (2018). Modeling Methods for Business Information Systems Analysis and Design. IGI Global, 267 p.		

Academic integrity

Students must adhere to the Code of Ethics of Academic Relations and Integrity of NTU "KhPI": to show discipline, politeness, friendliness, honesty, responsibility

The content of this syllabus is consistent with the course program.