MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
LUTSK NATIONAL TECHNICAL UNIVERSITY
FACULTY OF COMPUTER AND INFORMATION TECHNOLOGIES

APPROVED
Dean of the Faculty
_____ Inna KONDIUS
29.08.2026

APPROVED
First Vice-Rector
_____ Nadiia KOVALCHUK
29.08.2026

SYLLABUS

of the educational component "IT StartUp (мова викладання англійська)"
higher education degree – Bachelor
field of knowledge – 12 Information Technologies
specialty – 121 Software Engineering
educational programme – Software Engineering

Software Engineering Department

Syllabus developed by Associate Professor, PhD Olena SURYNOVYCH

The syllabus was approved at the meeting of the Software Engineering Department, minutes No. 1/1 of 28.08.2026

Head of the Department PhD, Associate Professor Nataliia LISHCHYNA

Reviewed and approved by the support group of the educational programme "Software Engineering", minutes No. 2 of 28.08.2026

Guarantor of the educational programme "Software Engineering" PhD, Associate Professor Nataliia LISHCHYNA

Approved by the Scientific and Methodological Council of the University, minutes No. 1/a of 29.08.2026

Approved syllabus online:
https://e.lntu.edu.ua/syllabus/3751

Lutsk – 2026

SYLLABUS OF THE EDUCATIONAL COMPONENT "IT StartUp (мова викладання англійська)"

Educational programme	Software Engineering
Field of knowledge / Specialty	12 Information Technologies / 121 Software Engineering
Level of higher education	First (bachelor's)
Course status	Elective
Language of instruction	English
Workload	5 ECTS credits / 150 hours
Form of final assessment	Pass/fail test
Lecturer(s)	PhD, Associate Professor Olena SURYNOVYCH e-mail: o.sivakovskaya@lutsk-ntu.com.ua

1. Course aim and objectives

Aim: To develop students' theoretical knowledge and practical skills in creating, planning, developing, and managing IT startups. The course focuses on generating and validating innovative business ideas, developing business models and business plans, evaluating market opportunities, attracting investments, building startup teams, and presenting IT products to potential customers, investors, and other stakeholders.

Objectives: To understand the fundamental concepts, characteristics, and development stages of IT startups.
To develop skills in generating, evaluating, and validating innovative business ideas and identifying market opportunities.
To acquire knowledge of startup business models, entrepreneurship, and strategic planning.
To understand startup financing mechanisms, investment rounds, and methods for evaluating financial performance.
To develop practical skills in preparing business plans, building startup teams, and presenting business ideas to potential investors and stakeholders.

Prerequisites: Fundamentals of Software Engineering, Systems Analysis, Foreign Language for Professional Purposes.

2. Competences

— Ability to identify, classify, and formulate software requirements.

— Ability to apply fundamental and interdisciplinary knowledge to successfully solve software engineering problems.

— Ability to assess and consider economic, social, technological, and environmental factors affecting professional activities.

— Ability to implement phases and iterations of the life cycle of software systems and information technologies based on appropriate software development models and approaches.

3. Course structure, distribution of hours, links between topics and competences

No.	Topic	Lectures full-time/ part-time	Pract./ Semin. full-time/ part-time	Lab. full-time/ part-time	Self-study full-time/ part-time	Total	Teaching methods	Assessment methods	SC
Content module 1. Fundamentals of IT Startups and Business Development									

No.	Topic	Lectures full-time/ part-time	Pract./ Semin. full-time/ part-time	Lab. full-time/ part-time	Self-study full-time/ part-time	Total	Teaching methods	Assessment methods	SC
1	Topic 1. Characteristics of a Startup.	2/2	–/0	2/–	6/8	10/10	TM1, TM2, TM3, TM4, TM5, TM6	AM2, AM5, AM7	
2	Topic 2. Startup Work Environment.	2/0	–/0	2/–	6/10	10/10	TM1, TM2, TM3, TM4, TM5, TM6	AM2, AM5, AM7	
3	Topic 3. Unicorn Startups vs. Camel Startups.	2/0	–/0	2/–	6/10	10/10	TM1, TM2, TM3, TM4, TM5, TM6	AM2, AM5, AM7	
4	Topic 4. Business Models.	2/2	–/2	2/–	6/6	10/10	TM1, TM2, TM3, TM4, TM5, TM6	AM2, AM5, AM7	
5	Topic 5. Stages of IT Startup.	2/0	–/0	2/–	6/10	10/10	TM1, TM2, TM3, TM4, TM5, TM6	AM2, AM5, AM7	
6	Topic 6. Entrepreneurship and Startups.	2/0	–/0	2/–	6/10	10/10	TM1, TM2, TM3, TM4, TM5, TM6	AM2, AM5, AM7	
7	Topic 7. Angel Investment.	2/0	–/0	2/–	6/10	10/10	TM1, TM2, TM3, TM4, TM5, TM6	AM2, AM4, AM5, AM7	
Content module 2. Startup Financing, Validation and Business Planning									
8	Topic 8. Business Pitch.	2/0	–/0	2/–	6/10	10/10	TM1, TM2, TM3, TM4, TM5, TM6	AM2, AM5, AM7	

No.	Topic	Lectures full-time/ part-time	Pract./ Semin. full-time/ part-time	Lab. full-time/ part-time	Self-study full-time/ part-time	Total	Teaching methods	Assessment methods	SC
9	Topic 9. Types of Investment Rounds.	2/0	–/0	2/–	6/10	10/10	TM1, TM2, TM3, TM4, TM5, TM6	AM2, AM5, AM7	
10	Topic 10. Investment Rounds for Startups.	2/0	–/0	2/–	6/10	10/10	TM1, TM2, TM3, TM4, TM5, TM6	AM2, AM5, AM7	
11	Topic 11. Idea Validation Before the MVP.	2/0	–/2	2/–	6/8	10/10	TM1, TM2, TM3, TM4, TM5, TM6	AM2, AM5, AM7	
12	Topic 12. Markets of Operation.	2/0	–/0	2/–	6/10	10/10	TM1, TM2, TM3, TM4, TM5, TM6	AM2, AM5, AM7	
13	Topic 13. ROI – Return on Investment.	2/0	–/0	2/–	6/10	10/10	TM1, TM2, TM3, TM4, TM5, TM6	AM2, AM5, AM7	
14	Topic 14. Main Particularities of IT Startup.	2/0	–/0	2/–	6/10	10/10	TM1, TM2, TM3, TM4, TM5, TM6	AM2, AM5, AM7	
15	Topic 15. Business Plan Building.	2/2	–/2	2/0	6/6	10/10	TM1, TM2, TM3, TM4, TM5, TM6	AM2, AM5, AM7, AM9	
	Total	**30/6**	**0/6**	**30/0**	**90/138**	**150/150**			

Legend: SC — special (professional) competence (number according to section 2). The full wording of each code is given in the educational programme / standard of the specialty.

Teaching methods: TM1 — verbal method (lecture, discussion, interview, etc.); TM2 — practical method (laboratory and practical classes); TM3 — visual method (illustration and demonstration); TM4 — work with educational and methodological literature (note-taking, abstracts, annotations, reviews, essays); TM5 — video method combined with up-to-date information technologies and computer-based learning tools (distance, multimedia, web-based, etc.); TM6 — independent work (problem solving).

Assessment methods: AM2 — oral or written survey; AM4 — testing; AM5 — team projects; AM7 — presentation of the results of completed tasks and research; AM9 — pass/fail test.

4. Learning outcomes

To generate, analyze, and evaluate innovative ideas for IT startups; conduct market research, identify target audiences, and validate business ideas; develop business models and business plans for IT startups; plan the main stages of startup implementation, organize teamwork, and manage resources; identify funding sources, analyze investment opportunities, and assess the economic efficiency of projects; prepare and present business ideas to potential investors, partners, and other stakeholders.

5. Sustainable Development Goals

SDG 4 – Quality Education

SDG 8 – Decent Work and Economic Growth

SDG 9 – Industry, Innovation and Infrastructure

SDG 17 – Partnerships for the Goals

6. Non-formal education

Recommended Courses, Training Programs, Internships, and Other Activities: Learning outcomes acquired through formal, non-formal, or informal education may be recognized in accordance with LNTU procedures. Supporting evidence may include certificates from relevant training programs, webinars, or online courses, accompanied by a description of the achieved learning outcomes and, if necessary, a short verification assignment or portfolio.

7. Assessment criteria and forms of control

Assessment is based on a 100-point scale (national scale / ECTS). Final grade = continuous assessment (60 %) + module tests (40 %).

Academic integrity: independent completion of assignments; correct citation of sources; marking parts of the text generated by AI tools. Violations of academic integrity are not tolerated.

8. Content of topics

Topic 1. Characteristics of a Startup.

Definition, key characteristics, and features of startups. Differences between startups and traditional businesses. Types of startups and factors influencing their success.

Topic 2. Startup Work Environment.

Startup ecosystem and working environment. Team structure, roles, responsibilities, and collaboration. Innovation culture and organizational flexibility.

Topic 3. Unicorn Startups vs. Camel Startups.

Characteristics and differences between unicorn and camel startups. Growth strategies, financial sustainability, scalability, and business resilience.

Topic 4. Business Models.

Fundamentals of startup business models. Business Model Canvas, value propositions, customer segments, revenue streams, and cost structures.

Topic 5. Stages of IT Startup.

Main stages of IT startup development: idea generation, validation, MVP development, launch, growth, and scaling. Key activities and challenges at each stage.

Topic 6. Entrepreneurship and Startups.

Fundamentals of entrepreneurship in the IT industry. Entrepreneurial mindset, innovation, opportunity recognition, and startup development strategies.

Topic 7. Angel Investment.

Definition and role of angel investors. Sources of early-stage funding, investment criteria, advantages, risks, and cooperation with business angels.

Topic 8. Business Pitch.

Principles of preparing and delivering an effective startup pitch. Pitch deck structure, presentation techniques, storytelling, and communication with investors.

Topic 9. Types of Investment Rounds.

Overview of startup funding stages: pre-seed, seed, Series A, B, C, and later rounds. Investment sources and financing objectives.

Topic 10. Investment Rounds for Startups.

Planning and managing startup fundraising. Investment strategies, startup valuation, equity distribution, and negotiations with investors.

Topic 11. Idea Validation Before the MVP.

Methods for testing startup ideas before MVP development. Customer discovery, market research, problem validation, interviews, surveys, and hypothesis testing.

Topic 12. Markets of Operation.

Analysis of target markets and customer segments. Market segmentation, competitive analysis, market opportunities, and startup market entry strategies.

Topic 13. ROI – Return on Investment.

Fundamentals of investment profitability assessment. ROI calculation, costs, revenues, financial indicators, and evaluation of startup economic efficiency.

Topic 14. Main Particularities of IT Startup.

Specific features of technology-based startups. Software product development, scalability, innovation, technological risks, intellectual property, and digital business models.

Topic 15. Business Plan Building.

Structure and development of an IT startup business plan. Market analysis, business model, marketing strategy, operational planning, financial projections, and risk assessment.

9. Individual assignments

Not provided for by the curriculum.

10. General requirements

The educational process is governed by the academic regulations of LNTU. Students are required to read the requirements set out in the LNTU Code of Academic Integrity and the LNTU Policy on the Ethical Use of Artificial Intelligence, and to adhere to the principles of academic integrity and the ethical use of artificial intelligence in their educational activities.

Academic integrity. Participants of the educational process must comply with the Law of Ukraine “On Academic Integrity” of 18.12.2025 No. 4742-IX and the internal regulations of LNTU. Academic plagiarism, fabrication, falsification, misappropriation of authorship, non-independent completion of assignments, as well as dishonest use of results generated by artificial intelligence are not allowed.

Use of artificial intelligence. Artificial intelligence tools may be used to search for ideas, explain methods, provide preliminary structuring, language editing and auxiliary analysis of non-confidential data, unless a specific assignment requires fully independent work. Students must indicate the tool used, the purpose and the stage of its use, check facts and calculations, and justify their conclusions independently.

11. References

II. Scientific works

Works by the syllabus author:

1. Surynovych O., Lishchyna N., Lohatskyi V., Savluk M., Ryzhok S. New transliteration program “COTOGWA” development. Automation of Technological and Business Processes. 2024. Вип 16(3). P. 34-41. URL: https://repository.lntu.edu.ua/handle/123456789/4155

Works by other authors:

2. Santisteban José, Mauricio David & Cachay Orestes. Critical success factors for technology-based startups. International Journal of Entrepreneurship and Small Business. 42. 2021, 397 p. DOI: 10.1504/IJESB.2021.114266.

3. Marcon A. & Duarte J. How do startups manage external resources in innovation ecosystems? A resource perspective of startups' lifecycle. Technological Forecasting and Social Change, 171 p., 2021. https://doi.org/10.1016/j.techfore.2021.120965.

4. Bessen J., Impink S., Reichensperger L. & Seamans R. The Business of AI Startups. Boston Univ. School of Law, Law and Economics Research Paper No. 18-28, 2023. DOI: https://doi.org/10.2139/ssrn.3293275.

5. Rios-Campos C., Zambrano E. O. G., Vargas D. J. C., Merino L. A. A., Vallejos P. A. A., Alcantara I. M. B., Rubio D. E. D., Rodriguez D. S., Tomanguilla J. H., & Calderón E. V. Startups and Artificial Intelligence. South Florida Journal of Development, 5(2), 2024. P. 950–969. https://doi.org/10.46932/sfjdv5n2-042.

III. Information resources

6. AI Startups. Top 25 AI startups in China. URL: https://www.ai-startups.org/country/ (data access: 25.05.2026).

7. AppliedAI Institute for Europe gGmbH. Why a European AI Startup Landscape. URL: https://www.ai-startups-europe.eu/ (data access: 25.05.2026).