Syllabus of the educational component

Academic discipline program

Innovative Entrepreneurship and Startup Project Management

Code and name of the specialty
113 – Applied Mathematics

Institute
Institute of Economics, Management and International Business ї

Educational program
Computer and Mathematical Modeling

Department
Business Economics and International Economic Relations (202)

Educational level
Master's level (1 year 4 months)

Type of discipline
General, Mandatory

Semester
1

Language of learning
English

Teachers, developers

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Senior Lecturer at the Department of Business Economics and International Economic Relations of National Technical University "Kharkiv Polytechnic Institute".

Work experience - 18 years.
Author of more than 50 scientific and educational-methodological works. Lecturer in disciplines: "Enterprise Economics", "Economic Analysis", "Innovative Entrepreneurship and Startup Project Management" and "Information Technology in Management"; conducts practical classes in the same disciplines in English.
Learn more about the teacher on the department's website

General information

Annotation

The discipline is included in the educational and professional program of master's training, is general education for students majoring in applied mathematics and computer science. Discipline "Innovative entrepreneurship and startup projects management" is aimed at forming a system of knowledge and practical skills in the creation and management of startups and their implementation in practical activities.

Purpose and goals of discipline

The main objectives of studying the discipline are to learn how to fully navigate the basic concepts of startups and understand how to develop your startup; learn how to develop the first project with a business model, marketing plan, team; develop prospects for the further development of this project incubation or acceleration programs.

Class format

Lectures, practical classes, independent work, abstract. Final control - credit.

Competencies

GC1. Ability to generate new ideas (creativity) and non- standard approaches to their implementation.
GC2. The ability to adapt and act in a new situation, to show initiative and entrepreneurship.
GC3. Ability to master modern knowledge, formulate and solve problems.
GC6. Ability to work in a team and lead it.
GC7. Ability to think abstractly, analyse and synthesise.
PC1. Ability to solve tasks and problems that can be formalised, require updating and integrating knowledge, in particular in conditions of incomplete information.

Learning outcomes

LO2. Collect, systematize and analyse scientific and technical information on professional activities.
LO3. Logically, consistently and accurately formulate their thoughts and present information in professional communication, apply information and technical means and pedagogical methods to present the results of scientific, applied and IT projects.
LO6. Apply procedures for formal description of systems, checking their adequacy for the study of socio-economic, technical, natural and other systems.

Scope of disciplines

The total volume of the discipline is 90 hours. (3 ECTS credits): lectures – 16 hours, practical classes – 16 hours, independent work – 58 hours.

Prerequisites for studying the discipline (prerequisites)

The prerequisite for studying the discipline is the knowledge and competences acquired by students when studying the disciplines of the bachelor's program.

Features of the discipline, methods and technologies of education

The entire course is presented using a systematic approach to develop systemic knowledge, holistic ideas about the discipline, develop skills in synthesis, comparison and generalization of information.

Lectures

They involve disclosing in verbal form the essence of phenomena, scientific concepts, processes that are logically related to each other and united by a common theme, emphasizing their meaning and use in the future specialty. They are accompanied by the use of multimedia equipment to ensure the visibility of illustrative material in order to form the cognitive interests of students, as well as active learning methods, such as creating problem situations.

Practical lessons

They are intended for the organization of practical educational work on a certain technology and provide for the consolidation of theoretical lecture material. They are used for the purpose of connecting theory with practice, arming students with practical research methods, processing calculation results and conclusions.

Independent work with information

It involves independent study of individual course topics followed by their analysis in order to teach independent thinking, practical analysis and use of the studied material. Practical teaching methods are aimed at achieving the final stage of the training process. They contribute to the formation of skills and abilities, the logical completion of the cognitive link.

Program of educational discipline

Lecture topics

Topic 1. Introduction. Subject, goals and objectives of the discipline

Features of "Innovative Entrepreneurship and Startup Project Management" as a scientific and practical discipline.

Topic 2. Startup ecosystem

Features of innovative entrepreneurship, definition of a startup. The role of startups in the global economy. The connection between science and innovation. Components of a startup ecosystem. Stages of startup development.

Topic 3. Principles of startup team building, roles in the startup team

Principles of team formation. Factors of creating a highly effective team. Advantages of working in a team. Vision, mission, values. Team roles. Role theories.

Topic 4. Design thinking as a new paradigm of startup development

Design Thinking as a step-by-step process. The problem as a source of ideas for startups. Examining successful and unsuccessful startup ideas from a problem perspective. Startup stakeholders. Methodology How Might We. Overview of problem analysis tools. Benefits of Design Thinking.

Topic 5. Startup idea validation

Startup ideas validation process. Presentation of ideas by each team. Getting feedback and discussing ideas. The possibility of inviting an external expert to evaluate ideas. The main goal is to choose the most promising ideas for further work. Minimum Viable Product.

Topic 6. Business model as a strategic management tool for entrepreneurs

What is a business model, why is it needed? Types of description of business models. Overview of the components of the business model canvas. Business Model Canvas vs Lean Model Canvas.

Topic 7. Presentations of startup ideas

Presentations by teams of the project business model outline. External experts are invited to the classes to ask questions of the teams and comment on various aspects of the business model. Teams can also ask questions to each other. The goal is to ask as many uncomfortable questions as possible to the teams and find all the weak points in the startup's business model.

Topic 8. Team dynamics

Stages of team development - forming, storming, norming, performing, adjourning. Methods of working with the team at different stages, motivation. Life cycle of member roles. Group member roles.

Topic 9. Market assessment. Analysis of competitors. The basics of marketing for startups

Concept of market volume. Market assessment methods. Market growth analysis. Methods of competitor analysis. Unfair competitive advantages. Marketing strategy for a startup. Basics of digital marketing SMM and online promotion tools. Advertising, work with opinion leaders. Metrics.

Topic 10. Management of investment support for startup project

Overview of the venture market. Types of investors and investments. Stages and rounds of investment. Finance in a startup. Legal aspects of investments. Conditions, distribution of shares, contracts, options. Case analysis of various investment deals.

Topic 11. Startup presentation. Pitch deck

Basic principles of startup presentation. Basics and techniques of public speaking. Pitching training.

Topics of practical classes

Topic 1. Startup ecosystem. Writing a 1-page essay about your startup and how it interacts with different elements of the ecosystem.

Topic 2. Principles of startup team building, roles in the startup team. Students determine the composition of teams for their startup. Brainstorming in teams and defining the vision, mission and values of the startup.

Topic 3. Design thinking: empathize (empathy map); define. List of questions for empathy to your client (user). List of questions "How exactly do we ..." to solve the users problem. Empathy map for creating a client (user) portrait of startup.

Topic 4. Design thinking: search and selection of ideas. 3 best ideas team have managed to generate. Description of how each of these ideas solves the selected problem of your customers.

Topic 5. Validation of the startup idea. Presentation by each team of their ideas and what has been developed so far - description of the problem, description of the idea and solution, description of the team and potential vision of monetization (who will pay for the solution, how and how much). Analysis of existing alternatives to solve the problem. What are their advantages and disadvantages?

Topic 6. Lean model canvas (client portrait, value proposition). Creating a portrait of a startup client (B2B, B2C). Completing the value proposition canvas for a startup.

Topic 7. Team dynamics. Writing an essay about where the team is now and how to solve existing problems. Game that simulates different stages of team dynamics.

Topic 8. Startup presentation. Pitch deck. Preparation of the pitch desk about the startup and presentation of the speech.

Topics of laboratory work

Laboratory work within the discipline is not provided.

Independent work

Independent work according to the discipline includes studying lecture material, preparing for practical classes, independent study of topics and issues that are not taught in lecture classes, as well as preparing abstracts on the topics of the course "Innovative Entrepreneurship and Startup Project Management" in accordance with an individual option for each student. The results are drawn up in a written report.

Literature and educational materials

Basic literature

1. Steve Blank, Bob Dorf. The Startup Owner's Manual: The Step-By-Step Guide for Building a Great Company Paperback – March 1, 2012. 1090 p.
https://smeportal.unescwa.org/sites/default/files/2019-12/The_Startup_Owner%20s_Manual-A%20step%20by%20step%20guide%20for%20building%20a%20great%20company.pdf
2. Innovative Entrepreneurship in Action: From High-Tech to Digital Entrepreneurship / edited by Giuseppina Passiante. 2020. 207 p.
https://www.skillsoft.com/book/innovative-entrepreneurship-in-action-from-high-tech-to-digital-entrepreneurship-a625671d-002f-4aef-a94d-07b57c9abcbb
3. Technology Transfer and Entrepreneurial Innovations: Policies Across Continents / edited by Maribel Guerrero, David Urbano. 2021. 325 p.
https://books.google.com.ua/books?id=gzsxEAAAQBAJ&pg=PA1&hl=uk&source=gbs_toc_r&cad=2#v=onepage&q&f=false
4. Райз Е. Стартап без помилок. Посібник зі створення успішного бізнесу з нуля. / Ерік Райз. – Київ : Віват, 2016. – 368 с.
https://book-ye.com.ua/catalog/biznes-psykholohiya/startap-bez-pomylok-posibnyk-zi-stvorennya-uspishnoho-biznesu-z-nulya/
5. Ruben Nieuwenhuis, Bas Beekman. The Startup City. Published 2016 by Greencubator MVP-видання, Paperback, 190 p.
https://www.iamsterdam.com/en/business/startupamsterdam/who-we-are/the-startupcity-book
6. Chris Guillebeau. The $100 Startup: Reinvent the Way You Make a Living, Do What You Love, and Create a New Future Hardcover – May 8, 2012. 268 p.
https://play.google.com/books/reader?id=LLQ2AC66ZLEC&pg=GBS.PA3&hl=uk
7. Nir Eyal. Hooked. How to Build Habit-Forming Products Penguin, 2014. 256 p.
https://www.scribd.com/document/273544296/Hooked-How-to-Build-Habit-Forming-Products?utm_medium=cpc&utm_source=google_pmax&utm_campaign=Scribd_Google_Performance-Max_RoW_UGC&utm_term=&utm_device=c&gclid=Cj0KCQiAkKqsBhC3ARIsAEEjuJjiFOvgTFRbreLx7NJh13SJHwil8ADEncUsP1WGo-rtvGEkJV3Jy8oaAlacEALw_wcB
8. Jake Knapp. Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days. 2016. 279 p. https://fahadacheema.com/wp-content/uploads/2020/04/Sprint-HowtoSolveBigProblemsandTestJakeKnapp.pdf
9. Peter Thiel, Blake Masters. Zero to One: Notes on Startups, or How to Build the Future Hardcover. September 16, 2014. https://morfene.com/021.pdf

Additional literature

1. Levchenko, O. Strategic priorities of innovative development of Ukraine in the context of the global world tendencies / O. Levchenko, O. Tkachuk, I. Tsarenko // Development of the innovative environmental and economic system in Ukraine : collective monograph / ed. V. Khudolei, T. Ponomarenko. - Prague, 2019. - P. 8-21. http://195.230.140.114/jspui/handle/123456789/9168

2. Tymoshenko, M., Bondarchuk, N., Lytvyn, I., Kostynets, I., & Bieliakova, O. (2022). Prospects of state regulation of venture entrepreneurship in Ukraine: Perspectivas de la regulación estatal del espíritu empresarial de riesgo en Ucrania. Political Questions, 40(74), 63-90. http://biblio.umsf.dp.ua/jspui/handle/123456789/4996

3. John Doerr. Measure What Matters: How Google, Bono, and the Gates Foundation Rock the World with OKRs. 2018. 276 p. https://bpmtraining.net/wp-content/uploads/2021/07/Measure-What-Matters-John-Doerr.pdf

4. Маркетинг стартап-проектів [Електронний ресурс] : навч. посіб. для усіх спеціальностей другого освітнього ступеню «магістр» / За заг. ред. С. О. Солнцева / С.О. Солнцев, О.В. Зозульов, Н. В. Юдіна, Т. О. Царьова, Н. В. Язвінська ; Київ : КПІ ім. Ігоря Сікорського. – Електронні текстові данні (1 файл: 3,2 Мбайт). - Київ : КПІ ім.. Ігоря Сікорського, 2019. – 218 с. https://ela.kpi.ua/bitstream/123456789/27437/1/Marketing_startup-project.pdf

5. 106 Must-Know Startup Statistics for 2023. Blog Business Advice & Research. August 17, 2023. https://www.embroker.com/blog/startup-statistics/

Evaluation system

Criteria for assessing student performance and distribution of points

100% of the final grade consists of the results of the assessment in the form of a pass (40%) and the current assessment (60%).

Test: test tasks.

Current assessment: 2 tests and individual assignments

Grading scale

Total points	National assessment	ECTS
90–100	Excellent	A
82–89	Good	B
75–81	Good	C
64–74	Satisfactorily	D
60–63	Satisfactorily	E
35–59	Unsatisfactorily (further study is required)	FX
1–34	Unsatisfactorily (re-study is required)	F

Norms of academic ethics and policy of the course

The student must adhere to the Code of Ethics of Academic Relations and Integrity of NTU "KhPI": show discipline, education, benevolence, honesty, responsibility. Conflict situations should be openly discussed in study groups with the teacher, and if it is impossible to resolve the conflict, it should be brought to the attention of the employees of the institute's directorate. Regulatory and legal support for the implementation of the principles of academic integrity of NTU "KhPI" is posted on the website: http://blogs.kpi.kharkov.ua/v2/nv/akademichna-dobrochesnist/

Coordination

Syllabus agreed	Date August 30, 2023	Head of the department Petro PERERVA
	Date August 30, 2023	Guarantor of the educational and professional program (1 year 4 months) Oleksiy LARIN