Innovative Management and Intellectual Property 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	*Elective*
Mode of Studies	*full-time*
Year of studies, semester	*5 year (1 semester)*
ECTS workload	*5 credits (ECTS)., including 54 hours of classroom work, and 66 hours of self-study.*
Testing and assessment	*Final test*
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/u/1/c/MTQ1OTQ0MDk0Mzg0

Outline of the Course

Course description, goals, objectives, and learning outcomes

The purpose of the discipline "Innovative Management and Intellectual Property in IT" is to study the content and structure of the innovation process, study various aspects of innovation management, acquire skills in working with startup projects, build a business model of startups, and evaluate business models and protect intellectual property rights.

Studying the course "Innovative Management and Intellectual Property in IT" forms general competences (GC) and professional competences (PC) in students:
GC03 Ability to conduct research at the appropriate level.
GC04 Ability to communicate with representatives of other professional groups of different levels (with experts from other fields of knowledge / types of economic activity).
GC05 Ability to generate new ideas (creativity).
PC06 Ability to effectively manage financial, human, technical and other project resources in the field of software engineering.

Studying the course "Innovative Management and Intellectual Property in IT" contributes to students' formation of the following program learning outcomes (PLO) according to the educational program:

PLO12 *Make effective organizational and managerial decisions in conditions of uncertainty and changing requirements, compare alternatives, assess risks.*

PLO19 *Formulate, experimentally test, substantiate and apply in practice in the process of software development innovative methods and competitive technologies for solving professional, scientific and technical problems in multidisciplinary contexts.*

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.*

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

The disciplines "Innovative Management and Intellectual Property in IT" are preceded by the disciplines "IT Economics", "Software Engineering Components", "IT Project Management".

The theoretical knowledge and practical skills obtained during the stugy of the discipline "Innovative Management and Intellectual Property in IT" can be useful for conducting scientific research on the topic of the dissertation and course projects in the specialty 121 Software Engineering.

Content of the course

Theme 1. Innovative Management

Theme 2. Intellectual Property

Test

Coursebooks and teaching resources

Basic reading

1. *Russell D. Archibald Shane C. Archibald "Leading and Managing Innovation". CRC Press Taylor &Francis Group. 2011. p.207*

2. *E-course "Innovation management and Intellectual Property" https://classroom.google.com/u/1/w/MTQ1OTQ0MDk0Mzg0/t/all*

3. *Alexander Osterwalder Yves Pigneur Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers (The Strategyzer series) Paperback, 2010. p.288*

4. *John E. Ettlie Managing Technological Innovation: Competitive Advantage from Change, Wiley; 2000, p.400*

5. *WIPO INTELLECTUAL PROPERTY HANDBOOK. WIPO PUBLICATION. ISBN 978-92-805-1295- 5. 2004 p.492*

6. *THOMAS J. ALLEN T. GUNTER W. HENN 'The Organization and Architecture of Innovation Managing the Flow of Technology": Butterworth-Heinemann; 2006.p.136*

Further reading

7. *David Watson "Business Models: Investing in Companies and Sectors with Strong Competitive" Petersfield [England] : Harriman House Pub., 2005.p.279*

8. Allen TJ. *Managing the flow of technology: Technology transfer and the dissemination of technological information within the R&D organization*. Cambridge, MA: MIT Press, 1984.p.320

9. Brian C. Twiss "Managing technological innovation", Pitman Publishing.1994. p.299

10. Clayton M. Christensen "The Innovator's Dilemma : When New Technologies Cause Great Firms to Fail". Harvard Business Review Press, 2016. p.289

11. Joe Tidd, John Bessant *Managing Innovation Integrating Technological, Market and Organizational Change*. Hoboken : Wiley, 2021 p,571

Educational content

Methodology

№	LESSON TYPE	DESCRIPTION OF THE LESSON
1	Lecture #1 BUSINESS APPROACH FOR INNOVATION	Business model innovation is a powerful approach to driving growth and to capturing a more durable competitive advantage. Four success stories point the way.Innovation is the process that transforms new ideas into commercial or other value. It is a vital capability in business, entrepreneurship, design, technology of all kinds, Innovation is the process that transforms new ideas into commercial or other value. It is a vital capability in business, entrepreneurship, design, technology of all kinds, health care, engineering, construction, manufacturing, transportation, communications, economics, sociology—and project management.
2	Workshop # 1	BUSINESS APPROACH FOR INNOVATION
3	Lecture #2 SCIENTIFIC AND TECHNICAL PRODUCTS.	Successful new product development (NPD) starts with identifying good product ideas and using reliable criteria to decide which ideas to pursue.The business's existing R&D processes. Identify modifications that could make to existing products, or adaptations for new products, consistent with feedback from the market and customers.
4	Workshop # 2	SCIENTIFIC AND TECHNICAL PRODUCTS. BUSINESS IDEA. PRODUCT IN BUSINESS. BUSINESS TECHNOLOGY.
5	Lecture #3 INNOVATIONS ARE ACHIEVED THROUGH PROJECTS	Innovation begins in every case with an idea generated by an individual, or sometimes by a small group of people collaborating to solve a problem, to develop a new product or service, or create and satisfy a customer's need. Transforming that idea into the reality of something newa new or improved process, service, or product, or even a new enterprise—is rarely, if ever, the result of one person's e ort, even though one person will lead the e ort as the project manager
6	Workshop # 3-4	STAKEHOLDERS.STAKEHOLDERS MANAGEMENT
7	Lecture #4 PROCESS OF INNOVATION	A critical success factor in the innovation process requires atleast that the organization be able to access, maintain, and transfer knowledge from person to person. To understand how this knowl-edge transfer works, we must understand the different types of communication among engineers and scientists in organizations. № 9 p.53-95
8	Workshop # 5-6	STARTUP BUSINESS MODELVALUE PROPOSITION

9	Lecture #5 TECHNOLOGY STRATEGY	The past decade reveals managers' growing awareness of the need to incorporate technological issues within strategic decision making. They have increasingly discovered that technology and strategy are inseparable. For technology has an inner logic that simply must be considered in a company's strategic planning—that process of creating a concept of the business it is in, identifying its goals and objectives and the long-term policies to meet them, and formulating plans of action. Technology—more than just nuts and bolts—includes the elaborate systems of planning and production through which a company's abstract capability is translated into the goods and services on which it ultimately depends for success.
10	Workshop # 7-8	Consumer market segments
11	Lecture #6 RECEARCH AND DEVELOPMENT	Research and development – R&D – is the process by which a company works to obtain new knowledge that it might use to create new technology, products, services, or systems that it will either use or sell.
12	Workshop # 9-10	STARTUP BUSINESS MODEL. KEY PARTNERS
13	Lecture #7 DESIGNING PRODUCT, PRODUCTING PRODUCT	The definition of product design describes the process of imagining, creating, and iterating products that solve users' problems or address specific needs in a given market. The key to successful product design is understanding the end-user customer, the person for whom the product is being created.
14	Workshop # 10-11	STARTUP BUSINESS MODEL. CHANNELS
15	Lecture #8 INTELLECTUAL PROPERTY. FIELDS OF INTELLECTUAL PROPERTY PROTECTION	Intellectual property (IP) refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce.
16	Workshop # 12-13	STARTUP BUSINESS MODEL. Key Resources
17	Lecture #9 LICENSING AND THE TRANSFER OF TECHNOLOGY	The sale and purchase of the exclusive rights to a patented invention or of the permission to use the invention or of the know-how, takes place through legal relationships between the owner of the exclusive rights or the supplier of the know-how, called the transferor — and the person or the legal entity which acquires those rights or that permission or receives that know-how, called the "transferee." Those legal relationships are essentially contractual in nature, which means that thethe transferor of the technology consents to transfer and the transferee consents to acquire the rights, the permission or the know-how in question.
18	Workshop # 14-15	STARTUP BUSINESS MODEL. Key-activities
19	Workshop # 16-17	Startup business model. Revenue. Costs

Self-study

№	LESSON TYPE	Hours of self-study	Coursebooks and teaching resources
1	Lecture #1 BUSINESS APPROACH FOR INNOVATION	2	№ 6 p.1-7 № 10 p.23-34
2	Workshop # 1"BUSINESS APPROACH FOR INNOVATION"	2	№ 2 par.1, № 8
3	Lecture #1 SCIENTIFIC AND TECHNICAL PRODUCTS.	2	№ 1 p2-19 , 9 p.5-30
4	Workshop # 2"BUSINESS APPROACH FOR INNOVATION"	2	№ 2 par.2
5	Lecture #3 INNOVATIONS ARE ACHIEVED THROUGH PROJECTS	2	№ 1 p2-19
6	Workshop # 3-4	5	№ 2 par.3
7	Lecture #4 PROCESS OF INNOVATION	2	№ 1 p. 22-42, № 6
8	Workshop # 5-6 STARTUP BUSINESS MODELVALUE PROPOSITION	5	№ 2 par.4, № 7
9	Lecture #5 TECHNOLOGY STRATEGY	2	№ 9 p.159-184
10	Workshop # 7-8	2	№ 2 par.5, № 3
11	Lecture #6 RECERACH AND DEVELOPMENT	1	№ 9 p.239-252, № 4
12	Workshop # 9-10 STARTUP BUSINESS MODEL. KEY PARTNERS	5	№ 2 par.6
13	Lecture #7 DESIGNING PRODUCT, PRODUCTING PRODUCT	2	№ 9 p.248-313
14	Workshop # 10-11 STARTUP BUSINESS MODEL. CHANNELS	2	№ 2 par.6, № 3
15	Lecture #8 iNTELLECTUAL PROPERTY. FIELDS OF INTELLECTUAL PROPERTY PROTECTION	3	№ 5 p.3-40, № 11
16	Workshop # 12-13	2	№ 2 par.6, № 3
17	Lecture #9 LICENSING AND THE TRANSFER OF TECHNOLOGY	3	№ 5 p.172-195
18	Workshop # 14-15 STARTUP BUSINESS MODEL. Key-activities	2	№ 2 par.7, № 3
19	Workshop # 16-17 Startup business model. Revenue. Costs	8	№ 2 par.8, № 3
20	Test	12	

Course policy

• *Visits to laboratory work may be sporadic and, if necessary, laboratory work performed.*

• *Rules of conduct in the classroom: activity, respect for those present, turning off the phones.*

• *Adherence to the policy of academic integrity.*

• *Rules for protecting the work of the computer workshop: the work should be done according to the option of the student, which is determined by his number in the group list.*

• *The rules for awarding incentive and penalty points are as follows.*

• *Incentive points are awarded for:*

  •*accurate and complete answers in surveys based on lecture materials (maximum number*

  • *points for the blitz poll - 3 points).*

  • *creative approach in performing laboratory work (maximum number of points for each*

  • *work 2 points).*

• *Penalty points are awarded for:*

   • *plagiarism (the work performed does not correspond to the variant of the task, the identity of the results*

   • *work among different works) in laboratory works: -3 points for each attempt.*

Monitoring and grading policy

During the semester, students perform workshop 17. The maximum number of points
for each laboratory work: 3,5 points.
Points are awarded for:
- quality of work (computer workshop): 0-2 points;
- answer during the defense of work (computer workshop): 0-1 points;
- timely submission of work to the defense: 0-0,5 points.
Maximum number of points for the performance and defense of laboratory work:
3,5 points X 17 work. works (comp. prakt.) = 60 points.
During the semester, lectures include flash polls on the topics of past lectures.
Maximum number of points for all blitz polls: 3 points. Number of blitz polls for
one student is unlimited.
During the semester, lectures are conducted on the topic of the current lesson.
Maximum number of points for all surveys: 3 points. Number of surveys on the topic
the current class for one student is unlimited.
The rating scale for the discipline is equal to:
R = RC = 60 points.
According to the description: R = Rwork + Rtest. = 60 + 40 points = 100 points
Calendar control: conducted twice a semester as monitoring of the current state
compliance with the requirements of the syllabus.
At the first certification (8th week) the student receives "credited" if his current
a rating of at least 50% of the maximum number of points that a student can receive before the first
certification.
   At the second attestation (14th week) the student receives "credited" if his current

a rating of at least 50% of the maximum number of points that a student can receive before the second certification.

Conditions of admission to semester control:

With a semester rating (rC) of at least 60 points and enrollment in all laboratory work, the student receives the exam "automatically" according to the table (Table compliance of rating points with 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

12. Additional information about the course

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

1. What is a business product?

2. What is a scientific product?

3. What is a scientific and technical product?

4. Why can innovation cause losses?

5. What is the innovation process?

6. What is the life cycle of innovation?

7. What are stakeholders?

8. Stakeholder assessment?

9. Stakeholder communication plan?

10. What is a startup?

11. What makes a startup different from a sustainable business

12. Who is a consumer of startups

13. What sections make up the classic business = model

14. What is a valuable product

15. What unites the consumer segment

16. What are the three main tasks in customer relationships

17. What are the sales channels, what is their difference

18. What types of monetization do you know

19. What is the cost structure

20. What do you need key partners for?

21. What are the key resources

22. How to model a business model to get the best result

23. What are the most common mistakes made by startups and how to avoid them

24. What are the areas of responsibility in a startup and how to share them between participants

25. At what stage of development of a startup it is necessary to establish the enterprise and for what

26. Why conduct market research

27. Why conduct research on the consumer segment

28. How to get confirmation of the problem of consumers

29. What consumer properties may be in the product

30. What are the main groups of consumers as the product develops, what is their difference

31. What is MVP, how it differs from the prototype

32. For which tasks the MVP is created

33. What channels of project promotion can be, how they are related to the product itself

34. What are the sources of funding for startups at the initial level

35. Why Most Startups Don't Leave Death Valley

36. For what purposes startups attract investors

37. Why is it better to attract investors at later stages of project development

38. What are the sections of a presentation for an investor

39. How is a presentation for an investor different from a presentation for consumers?