



Software Product Management Syllabus

Requisites of the Course

Cycle of Higher Education	<i>First cycle of higher education (bachelor's degree)</i>
Field of Study	<i>12 Information Technologies</i>
Speciality	<i>121 Software engineering</i>
Education Program	<i>Software Engineering of Multimedia and Information Retrieval Systems</i>
Type of Course	<i>Elective</i>
Mode of Studies	<i>full-time</i>
Year of studies, semester	<i>3 year (6 semester)</i>
ECTS workload	<i>4credits (ECTS)., including 54 hours of classroom work, and 66 hours of self-study.</i>
Testing and assessment	<i>Credit</i>
Course Schedule	<i>http://rozklad.kpi.ua/</i>
Language of Instruction	<i>English</i>
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	<i>MS Teams. Access to registered users.MS Teams.</i>

Outline of the Course

1. Course description, goals, objectives, and learning outcomes

The study of the discipline "Software Product Management" allows students to form competencies that are necessary for solving practical problems of professional activity related to the management of the life cycle of software products and the acquisition of knowledge of the methods and technologies of software product management, namely: from the methods of formed concept of that lost product, development, operation of a software product and features of application of international standards in the process of managing the life cycle of a software product.

The purpose of studying the discipline "Software Product Management" is to form the ability of students to systematically approach: the creation, marketing, implementation and operation of a software product, as well as the formation of practical knowledge and skills in developing a strategy for creating and developing a software product, gaining skills in international standards of the IT industry.

The subject of the discipline "Software Product Management" are methods, technologies and models that are used to manage the creation, implementation and maintenance of software products.

The study of the discipline "Software Product Management" contributes to the formation of general competencies (GM) among students, namely:

GC 01 *Ability to abstract thinking, analysis and synthesis.*

GC 03 *Ability to communicate in the state language both orally and in writing.*

GC 04 *Ability to communicate in a foreign language both orally and in writing.*

GC 05 *Ability to learn and use modern knowledge.*

During the study of the discipline, applicants form professional competencies (PC) necessary for solving practical problems of professional activity related to project management for the development, implementation, improvement and operation of software information systems, namely:

PC 3 Ability to develop software systems architectures, modules and components.

PC 5 Ability to follow specifications, standards, rules and recommendations

PC 13 Ability to reasonably select and master software development and maintenance tools..

PC 21 Ability to identify, analyze and document software requirements for multimedia and information retrieval systems

PC 22 Ability to create innovative startup projects, calculate basic technical and economic indicators and develop business models of multimedia software and information retrieval systems innovative startup projects that have commercial potential for investment..

The study of the discipline "Software Product Management" contributes to the formation of students' following programmatic learning outcomes (PLN) in the educational program:

PLO 01 To analyze, purposefully search and select the necessary information and reference resources and knowledge to solve professional problems, taking into account modern advances in science and technology.

PLO 02 To know the professional ethics code, understand the social significance and cultural aspects of software engineering and adhere to them in professional activities.

PLO 03 To know the software life cycle basic processes, phases and iterations.

PLO 04 To know and apply professional standards and other regulatory documents in the field of software engineering.

PLO 05 To know and apply relevant mathematical concepts, domain methods, system and object-oriented analysis and mathematical modeling for software development.

PLO 06 Ability to select and use the appropriate task of software development methodology.

PLO12 To apply effective approaches to software design in practice.

PLO 14 To apply in practice instrumental software tools for domain analysis, design, testing, visualization, measurement and documentation of software.

PLO 31 To be able to identify, analyze and document software requirements for multimedia and information retrieval systems

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

The successful study of the discipline "Software Product Management" is preceded by the study of the disciplines "Algorithms and data structures", "Programming" and "Components of software engineering" of the curriculum for the preparation of bachelors in the specialty 121 Software Engineering.

Theoretical knowledge and practical skills obtained during the assimilation of the discipline "Standardization and technologies for the development of multimedia and information-search software products" ensure the successful study of "Software Security", the implementation of course projects and bachelor's diploma projects in the specialty 121 Software Engineering. .

2. Content of the course

The discipline "Software Product Management" involves the study of the following topics:

Topic 1 Fundamentals of software productmanagement in.

Topic 2. Communications in software productmanagement in.

Topic 3. Areas of product software management in

Modular test

Credit

3. Coursebooks and teaching resources

Basic reading:

1. Parth Detroja, Neel Mehta, Aditya Agashe *Product Management's Sacred Seven: The Skills Required to Crush Product Manager Interviews and be a World-Class PM (Fast Forward Your Product Career: The Two Books Required to Land Any PM Job)*. Paravane Ventures: 2020. 685 p ISBN-10 : 0578740583, ISBN-13 : 978-0578740584
2. Product School, Carlos Gonzalez de Villaumbrosia *The Product Book: How to Become a Great Product Manager Paperback*. Product School. 2017. 314 p. ISBN-10 : 0998973815, ISBN-13 : 978-0998973814.
3. Roman Pichler *Agile Product Management with Scrum: Creating Products that Customers Love (Addison-Wesley Signature Series (Cohn))*: Addison-Wesley Professional. 2010. 160 p. ISBN-10 : 0321605780, ISBN-13 : 978-0321605788.
4. Karen O. James E. Henderson Rene AbateCoo *Restructuring Strategy: New Networks and Industry Challenges* Wiley-Blackwell 2005 -312 p ISBN-10 : 9781405126014.
5. Thomas H. Davenport *The AI Advantage: How to Put the Artificial Intelligence Revolution to Work (Management on the Cutting Edge)* The MIT Press 2018 248 p ISBN-10 0262039176

Further reading

6. Fred Heath *Managing Software Requirements the Agile Way: Bridge the gap between software requirements and executable specifications to deliver successful projects*. Packt Publishing. 216 p. ISBN: 1800206461.
7. *Practice Standard for Scheduling*. Project Management Institut. 2019. 100 p. ISBN-10 : 1628255617, ISBN-13 : 978-1628255614.
8. Nathan Furr, Jeff Dyer, Clayton M. Christensen *The Innovator's Method: Bringing the Lean Start-up into Your Organization* Harvard Business Review Press. 2014:288 p. ISBN-10: 9781625271464, ISBN-13: 978-1625271464
9. Eric Ries *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses*. Currency; 1st Edition. 2011: 336 p. ISBN-10: 9780307887894, ISBN-13 : 978-0307887894
10. Kevin Brennan. *Mastering Product Management: A Step-by-Step Guide Paperback* , 2019. 155p. ISBN-10 : 1733839003, ISBN-13 : 978-1733839006.

Educational content

Methods of mastering the discipline (educational component)

No	Type of training session Description	Description of the training session
<i>Lecture No1. Introduction to Product Management</i>		
1	<i>Lecture No1. Introduction to Product Management</i>	<i>Entry. The difference between a product and a project. Related roles in companies, their features and the difference between them: product manager, product equal, project manager, business analyst, scrum master.</i>
2	<i>Lecture No2. Start creating a product, choosing a concept</i>	<i>Start creating a product. Ways to generate ideas, test hypotheses, form a brief description of the product.</i>
3	<i>Practicum No1 Formation of your own case</i>	<i>Formation of your own case for the workshop. Product definition. Basic concept description.</i>
<i>Topic 2. Communications in software product management.</i>		

4	<i>Lecture No3. Types of communications in software product management. Team structures and process organization variations.</i>	<i>Communications in the product: internal and external. Processes of interaction with development teams, testing, designers, etc. Communication with stakeholders, support (support) and customers. Variations of team structures and processes in the company.</i>
5	<i>Lecture No4. Overview of the market and competitors. Target audience</i>	<i>Overview of the market and competitors. Definition and analysis of the target audience. Competitive advantage of the product.</i>
6	<i>Workshop No2. Analysis of the existing market and competitors</i>	<i>Analysis of the existing market and competitors. Determination of the target audience. Building a user portrait.</i>
<i>Topic 3. Software product management areas</i>		
7	<i>Lecture No5. Building a roadmap. Definition MVP</i>	<i>Дорожня карта: визначення ключових напрямків, короткий опис концептів, естимація, пріоритизація, побудування дорожньої карти. Презентація бачення продукту. Визначення MVP.</i>
8	<i>Workshop No3 Determination of the scope of work</i>	<i>Determination of the scope of work. Application of prioritization techniques to build a roadmap and define MVP.</i>
9	<i>Lecture No6. Work with design</i>	<i>Creating a concept and design. Work on UX flow, ways to build and test it. Creating a UI.</i>
10	<i>Lecture No7. Record keeping</i>	<i>Maintaining product documentation. Types of documentation and their features, diagrams. Decomposition of tasks.</i>
11	<i>Lecture No8. Task tracking systems.</i>	<i>Work with software: Jira, Trello. Acquaintance with software products and variations of the construction of the development and testing process with the help of them.</i>
12	<i>Workshop No4. Decomposition of planned tasks</i>	<i>Decomposition of planned tasks. Creating a plan with priorities. Implementation of the plan in Trello.</i>
13	<i>Lecture No9. Project triangle. Resource management</i>	<i>Project triangle: time constraints, finances and scope of work. Project or product resource management.</i>
14	<i>Lecture No10. Risk management</i>	<i>Dealing with risks. Timely identification of risks, preparatory work, solutions to minimize them. Escalation of problems if necessary.</i>
15	<i>Lecture No11. Product Testing</i>	<i>Product testing. Registration of bugs. Types of testing and their organization and conduct. Summing up the test.</i>
16	<i>Lecture No 12. Market entry strategy</i>	<i>Market entry strategy: marketing, sales, promo videos, legal documents, product support.</i>
17	<i>Workshop No5. Market entry strategy</i>	<i>Creating a go-to-market strategy.</i>
18	<i>Lecture No13. Work with product metrics</i>	<i>Types of product metrics. Tools for collecting them. Analysis based on metrics.</i>
19	<i>Lecture No14. Product Monetization</i>	<i>Monetization of the product. Monetization methods..</i>
20	<i>Lecture No15. Product gamification</i>	<i>Gamification of the product. Gamification techniques, methods of application.</i>

<i>Modular test</i>
<i>Credit</i>

Self-study

The discipline "Software Product Management" is based on independent preparation for classroom classes on theoretical and practical topics.

<i>No</i>	<i>The name of the topic submitted for self study</i>	<i>Hours</i>	<i>Literature</i>
<i>Topic 1. Fundamentals of software productmanagement</i>			
<i>1</i>	<i>Lecture No1. Introduction to Product Management</i>	<i>1</i>	<i>1,2,3</i>
<i>2</i>	<i>Lecture No2. Start creating a product, choosing a concept</i>	<i>1</i>	<i>1,2,6,8</i>
<i>3</i>	<i>Workshop No1 Formation of own case</i>	<i>4</i>	<i>1,2,3,6,8</i>
<i>Topic 2. Communications in software product management</i>			
<i>4</i>	<i>Lecture No3. Types of communications in software product management. Team structures and variations in the organization of processes.</i>	<i>1</i>	<i>1,2,4</i>
<i>5</i>	<i>Lecture No4. Overview of the market and competitors. Target audience</i>	<i>1</i>	<i>4,6,8</i>
<i>6</i>	<i>Workshop No2. Analysis of the existing market and competitors</i>	<i>4</i>	<i>1,2,4,6,8</i>
<i>Topic 3. Areas of product software management</i>			
<i>7</i>	<i>Lecture No5. Building roadmaps. Definition MVP</i>	<i>1</i>	<i>1,4,5,6</i>
<i>8</i>	<i>Lecture No6. Work with design</i>	<i>1</i>	<i>1,5,6,8</i>
<i>9</i>	<i>Lecture No7. Record keeping</i>	<i>1</i>	<i>1,4,7</i>
<i>10</i>	<i>Lecture No8. Task tracking systems.</i>	<i>1</i>	<i>5,6,8</i>
<i>11</i>	<i>Computer workshop No4. Decomposition of planned tasks</i>	<i>4</i>	<i>1,4,5,6,7,8</i>
<i>12</i>	<i>Lecture No9. Project triangle. Resource management</i>	<i>1</i>	<i>1,2,4,8</i>
<i>13</i>	<i>Lecture No10. Risk management</i>	<i>1</i>	<i>1,2,3,4,9</i>
<i>14</i>	<i>Lecture No11. Product Testing</i>	<i>1</i>	<i>1,4,6</i>
<i>15</i>	<i>Lecture No 12. Market entry strategy</i>	<i>1</i>	<i>1,2,3,4,8,9</i>
<i>16</i>	<i>Computer workshop No5. Creating a go-to-market strategy.</i>	<i>4</i>	<i>1,2,3,4,6,8,9</i>
<i>17</i>	<i>Lecture No13. Work with product metrics</i>	<i>1</i>	<i>6,8</i>
<i>18</i>	<i>Lecture No14. Monetization of the product</i>	<i>1</i>	<i>6,8</i>

19	Lecture No15. Product Gamification	1	6,8
Modular test		15	1-10
Credit		20	1-10

Politics and control

Policy of the discipline (educational component Policy of the discipline (educational component))

Attendance of lectures is mandatory.

Attendance at the workshop can be episodic and, if necessary, consultation / defense of the work of a computer workshop.

Rules of conduct in the classroom: activity, respect for those present, disconnection of phones.

Adherence to the policy of academic integrity.

Rules for the protection of the work of the workshop: the work must be done in accordance with the tasks and in accordance with the version, executed in accordance with the requirements.

Types of control and rating system for evaluating learning outcomes

During the semester, students perform 5 workshops. The maximum number of points for each computer workshop: 16 points. The execution of all computer workshops is mandatory for the test.

Points are awarded for:

- quality of the workshop: 0-10 points;*
- answer during the protection of the computer workshop: 0-3 points;*
- timely presentation of work to the defense: 0-3 points.*

Criteria for assessing the quality of performance:

- 10 points – the work was performed efficiently, in full;*
- 7-9 points – the work is performed efficiently, in full, but has drawbacks;*
- 3-6 points – the work is completed in full, but contains minor errors;*
- 2 points – the work is completed in full, but contains significant errors;*
- 0 points – the work is not completed in full.*

Criteria for evaluating the answer:

- 3 points – the answer is complete, well-reasoned;*
- 2 points – the answer is correct, but has flaws or minor errors;*
- 1 point – there are significant errors in the answer;*
- 0 points – no answer or the answer is incorrect.*

Criteria for assessing the timeliness of the submission of work to the defense:

- 3 points – the work is submitted to the defense no later than the specified period;*
- 0 points – the work is submitted to the defense later than the specified period.*

The maximum number of points for the implementation and defense of workshops:

16 points × 5 comp. pract. = 80 points.

During the semester, lectures are conducted on the topic of the current lesson. Maximum points for all surveys: 3 points. The number of surveys on the topic of the current lesson for one student is unlimited.

The task for the modular test consists of 1 theoretical and 1 practical question. The answer to each question is estimated at 10 points.

Criteria for evaluating each test question:

- 9-10 points – the answer is correct, complete, well-reasoned;*
- 7-8 points – the answer is correct, detailed, but not very well reasoned;*

5-6 points – in general, the answer is correct, but has drawbacks;

3-4 points – there are minor errors in the answer;

1-2 points – there are significant errors in the answer;

0 points – no answer or the answer is incorrect.

The maximum number of points for a modular test:

10 points × 2 questions = 20 points.

The rating scale for the discipline is equal to:

$R = RC = 80 \text{ points} + 20 \text{ points} = 100 \text{ points}$.

Calendar control: is carried out twice a semester as a monitoring of the current state of compliance with the requirements of the syllabus.

At the first certification (8th week), the student receives "enrolled" if his current rating is at least 1-6 points (50% of the maximum number of points that a student can receive before the first certification).

At the second certification (14th week), the student receives "enrolled" if his current rating is at least 30 points (50% of the maximum number of points that a student can receive before the second certification).

Semester control: credit

Conditions of admission to semester control:

With a semester rating (RC) of at least 60 points and the enrollment of all works on the racticum, the student receives a credit "automatic" in accordance with the table (Table of compliance of rating points with grades on a university scale). Otherwise, he must perform a test paper.

A necessary condition for admission to the test work is the implementation and protection of a computer workshop.

If a student does not agree with the grade "automatic", he may try to increase his grade by writing a test paper, while his points received for the semester are preserved, and of the two marks received by the student, the best ("soft" grading system is set).

Table of correspondence of rating points to assessments on a university scale:

Score	Score
100-95	Perfectly
94-85	Very good
84-75	Well
74-65	Satisfactory
64-60	Enough
Less than 60	Disappointing
Admission conditions not met	Not allowed

Additional information on the discipline (educational component)

The list of questions submitted for semester control is provided in Appendix 1.

Work program of the discipline (syllabus):

Compiled by Candidate of Technical Sciences, Associate Professor, L.A. Lyushenko

Adopted by Computer Systems Software Department (protocol № 8 from 25.01.23)

Approved by the Faculty Board of Methodology (protocol № 6 from 27.01.23)

Appendix 1. The list of questions that are submitted for semester control

1. What is the difference between a product and a project? Define both and explain their difference.
2. Ways to generate ideas. Testing hypotheses at the beginning of work on the product.
3. Description of the product concept.
4. Types of communications in the product. Processes of interaction with development teams, testing, designers.
5. Overview of the market and competitors. Types of analysis
6. Determination of the target audience. Building a user portrait
7. Description of the planned tasks.
8. Prioritization methods.
9. Building a road map. MVP definition
10. UX testing methods, work on UX flow.
11. Types of product documentation and their features.
12. Project triangle
13. Product Resource Management
14. Dealing with risks. Risk analysis
15. Dealing with risks. Risk management, escalation.
16. Types of product testing. Summing up the test
17. Working with errors
18. Product entry strategy on the market: checklist.
19. Product metrics. Their types and features.
20. Product metrics. Tools for collecting them. Analysis and summing up.
21. Methods of monetization of the product. Advantages and disadvantages of using different methods.
22. Methods of product gamification. Advantages and disadvantages of using different methods.