Educational institution
"Belarus State Economic University"

APPROVED

Rector of the educational institution
"Belarus State Economic University"

_____ V.Y. Shutilin

"27" 10 _____ 2020

Registration No. 4639-20

PROJECT MANAGEMENT FOR SOFTWARE DEVELOPMENT

The curriculum of the institution of higher education
in the academic discipline
for the specialty 1-25 01 12 "Economic Informatics"

2020

The curriculum is based on the OSVO 1-25 01 12-2013 and the curriculum of higher education institution in the specialty 1-25 01 12 "Economic Informatics", approval date 10.03.2020, registration number 01R-20.

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RECOMMENDED FOR APPROVAL:

Department of Economic Informatics
(Protocol No. 4 of 24.09.2020);
Scientific and Methodological Council of the Belarusian State Economic University
(Protocol No. 1 of 21.10.2020)

EXPLANATORY NOTE

The curriculum for the discipline "Project Management for Software Development" was developed for students of the specialty 1-25 01 12 "Economic Informatics".

"Project Management for Software Development" course is focused on delivering knowledge to students about modern approach that organizations use in work of the project teams that are involved in software development.

The purpose of the course is the formation of systematized knowledge about the management of the software development process and study of methods of organizing work in software development teams.

The basic study tasks of the course:

- summary of the main provisions of the development processes of software, the formulation of practical recommendations on the organization of project teams and their guidance;
- formation of students' knowledge of the discipline related to the software development process, including links with the subject area, implementation, organization of production, control over deadlines and quality;
- acquaintance with technical software and technological solutions used in software development;
- development of skills in design, implementation, quality assessment and analysis of the effectiveness of software;
- development of practical skills of working in a development team, the ability to find the right technological solutions for choosing the structure of a software project, testing methods and execution control.

As a result of studying this academic discipline, the following competences are formed:

- AK-9. Ability to learn, improve their skills throughout life;
- PC-29. To search, systematize and analyze information on industry prospects, innovative technologies, projects and solutions.

As a result of studying the academic discipline, students should know:

know:

– the terminology used;
– structure of areas of knowledge of the PMI PMBOK standard;
– values and principles of flexible project management;
– SCRUM basics;
– role models in software development teams;
– the possibility of specialized software used to manage projects software development software.

be able to:

– create a project plan using the recommendations of the PMBOK standard;
– develop requirements for the content of the project;
– define competence of the project team;
– develop a project model using specialized project management software;

– assess the performance of the project team in software development using the SCRUM approach;

– conduct a retrospective of the project team's activities in software development using the SCRUM approach;

own:

– project management development methods using the SCRUM approach;

– skills in applying the recommendations of the SCRUM management.

The basis for the study of this academic course build the following courses: "Corporate information systems", "Business office of the organization (enterprise) and Internet marketing" that students studied in the previous semesters.

According to the curriculum, the total number of hours in the academic discipline is 30 hours, classroom hours are 30, including 30 hours of lectures. The course is taught in English.

CONTENT

Topic 1. Introduction to the course

Project concept. Project management concept. Differences between the software development process and technical project implementation processes. Functional roles in a software project.

Topic 2. Software development processes

Software development process concept. Software development problems. Life cycle of software. Cascade (waterfall) model. Iterative and incremental model. Spiral model. Advantages and disadvantages of software life cycle models. Procedure for prototyping software maintenance.

Topic 3. Software development methodologies

Agile methodologies. Agile principles. SCRUM methodology. SCRUM applications. SCRUM elements. Product owner. SCRUM master. SCRUM team. Stages of team building. Product backlog. Sprint backlog. Product increment. Burnout diagram. Sprint. Sprint goal. Sprint elements. SCRUM scheme. SCRUM scalability. KANBAN. Basic rules of KANBAN. Benefits of KANBAN. Limitations of KANBAN. Differences between KANBAN and SCRUM. Lean software development. Lean principles. Extreme programming.

Topic 4. Development of software requirements

General definition of "requirement". Stakeholders in Requirements. Types of requirements. Classification of product requirements. Consequences of mistakes made in functional and non-functional requirements. Types of non-functional requirements. Quantitative indicators for the non-functional requirements. Subject area requirements. Requirements properties. Stages of the requirements development process. Analysis of the feasibility of requirements. Collection of requirements. Definition of users. Specifics of collecting business requirements (custom product, open market product, embedded applications). Prerequisites (incentives) for the initiation of the project. Defining product goals and criteria for success. Complexity of requirements development. Benefits of a streamlined requirements development process. Stakeholder identification. Differences in the requirements of different types of end users. Sources of requirements. Requirements elicitation methods. Prototyping. Evolutionary and experimental prototyping. Reasons for using the requirements management tool. Criteria for selecting a requirements management system.

Topic 5. Methods of analysis and software design

Purpose of software design. Design objects. Stages of design. Documenting software. Software documentation. Errors in software documentation. The main types of software documentation. Documentation functions. Conditions to be met by a software system specification. "As-is" and "To be" models. Use case model. Types of use cases. Features of use cases. Levels of detail for use cases. Limitations of use cases. Non-functional requirements specification. User stories. Examples of user stories. Benefits of user stories. Limitations of user stories. Person (character). The usefulness of persons (characters). Use case diagrams.

Topic 6. Project communications management

Identification of project stakeholders. Determination of requirements for sources and consumers of design information. Formation of a communication plan. Communication planning . Providing communications.

Topic 7. User interface basics (based on selected software as an example)

User interface. Work zone. The structure of the information displayed on the screen. User interface. Toolbars. The structure of toolbars and their purpose. Data entry toolkit. Basic methods of working with software when forming a project model. Analytics and reporting tools. Basic methods of working with software when analyzing a project model.

EDUCATIONAL-METHODOLOGICAL CARD OF THE EDUCATIONAL DISCIPLINE "PROJECT MANAGEMENT FOR SOFTWARE DEVELOPMENT"

for specialty 1 25 01-12 "Economic Informatics"

(full-time higher education)

Section number, topics, lessons	Section title, topics	Number of classroom hours					Number of hours of CPD	Forms of control knowledge
		Lectures	Workshops	Seminars	Laboratory exercises	Other		
1	2	3	4	5	6	7	8	9
1	Topic 1. Introduction to the course	2			-			
2	Topic 2. Software development processes	4						
3	Topic 3. Software development methodologies	6						
4	Topic 4. Development of software requirements	6						
5	Topic 5. Methods of analysis and software design	4						
6	Topic 6. Project communications management	4						
7	Topic 7. User interface basics (based on selected software as an example)	4						
	TOTAL	**30**						

INFORMATION AND METHODOLOGICAL PART

Methodical recommendations for the organization of independent work of students in the discipline "Project Management for Software Development"

In mastering the knowledge of the academic discipline, an important stage is the independent work of students. It is recommended that a time budget for independent work is on average 1.5-2 hours for a 2-hour classroom lesson.

The main areas of student independent work are:

- defense of individual tasks outcomes performed in laboratory classes;
- conducting tests on specific topics;
- implementation and defense of the project;
- passing the exam.

Independent work of students in the discipline, carried out outside the classroom, includes:

- preparation for classroom studies;
- performing tests for self-checking;
- preparation of thematic reports and presentations;
- solving individual tasks on the topics of laboratory and practical classes;
- preparation for all types of current certification.

To study the academic discipline, the following software and technical support is required:

– Microsoft Office suite (Word, Excel, PowerPoint, Project) or the like, the platform Trello, browsers: Microsoft Internet Explorer / Mozilla Firefox / Google Chrome or similar. Internet access with the ability to connect to the Clickup system;

databases, reference and search systems:

- search systems: Yandex, Google, and others.
- https://www.projecttimes.com is an independent PM portal. Articles and reviews.
- atlassian.com/software – Description of project management solutions.

LITERATURE

Main:

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6. Сазерленд, Д. Scrum. Революционный метод управления проектами / Джефф Сазерленд ; пер. с англ. М. Гескиной — М.: Манн, Иванов и Фербер, 2016. – 288 с.

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Additional:

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14. Лабоцкий В. Управление IT-проектами. Оценка трудоемкости, срока и стоимости разработки программных средств. — Академия управления при Президенте Республики Беларусь. — 2013. — 288 с.

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PROTOCOL FOR THE HARMONIZATION OF THE HEALTH EDUCATION PROGRAM

Name of the discipline with which approval is required	Department name	Proposals for changes in the content of the curriculum of the institution of higher education in the academic discipline	Decision taken by the department that developed the curriculum (indicating the date and protocol number)
1	2	3	4
Geographic information systems	Information technologies	not	protocol No. 4 from 24.09.2020

SYLLABUS ADDITIONS AND CHANGES

in _____/_____ academic year

№	Additions and changes	Reasons

Syllabus is re-considered and approved on the meeting of the department of _____(minutes № ____ on _____ 20___)

Head of the department

_____ _____ A.M. Zenevich

APPROVED

Dean of the Faculty_____ D.A. Marushka