Yanka Kupala State University of Grodno (YKSUG)

Strategy and Management of IT Projects and Systems

Faculty: Mathematics and Informatics	Amount of student effort (hours): 220
Department: Advanced Programming Technologies	Class contact time (hours): 78
Level: MA, Year 1	Term period(s): Sem. 2
Language of instruction: Russian/English	Course status: Mandatory core
Course leader: Svyatoslav Statkevich	Entry requirements: At least 30 ECTS studies of the first degree in the field of programming, systems design, information architecture and usability, interface design have been completed
ECTS: 6	Contact: sstat@grsu.by

Course outline:

In modern conditions of the company, it is necessary to constantly improve not only the equipment used, but also information systems that are used. In these conditions, the most frequent systems of modern information technologies are used.

Due to the continuous development of information technology, there is a constant creation and implementation of IT projects both in large companies and in medium and small businesses. At the same time, several projects can be implemented simultaneously in a company. This is due to the introduction of new information systems producing conditions for the implementation of an IT-project. Competent management of IT-projects increases the risks associated with the creation, implementation or modification of the use of information systems.

The training course "Strategy and management of IT projects and systems" is included in the list of mandatory academic disciplines for the preparation of students of the specialty 1-40 80 01 "Computer Engineering". This course will allow students to acquire skills in the practice of launching, planning, implementing, monitoring and completing IT projects. It will also allow you to explore the general methodology and basic project management tools as applied to IT-projects.

Learning Objectives:

- obtaining knowledge that allows the student to work successfully in the chosen field of activity;
- obtaining universal and subject-specific competencies that contribute to his social mobility and stability in the labor market;

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- preparing students for organizational, managerial, analytical and other activities required during the implementation of projects, both as executors and project managers;
- formation of theoretical knowledge, skills and practical skills in solving problems arising in the management of IT projects;
- development of skills and practical skills for effective IT project management, ensuring the achievement of the results defined in the project in terms of the scope and scope of work, cost, time, quality and satisfaction of the project participants;
- from the point of view of social skill, this course allows to form teamwork skills for creating an IT project, as well as acquiring skills for creating such a team.

Learning Outcomes:

Remembering	Understanding	Applying	Analysing	Evaluating	Creating

Learning outcome	Assessment criteria
The student will be able to	*The student can*
1. **define** and **manage** requirements for an IT project	1. **formulate** goals, strategy, results and parameters of IT projects
	2. **classify** the basic concepts of IT project management
2. **determine** the life cycle of the project	1. **determine** the stages of the life cycle of an IT project
	2. **apply** the procedure for adapting the IT project life cycle model
3. **develop** a project management plan and baselines	1. **define** a list of requirements for the project result and for project management (with an indication of priorities)
	2. **develop** a project scope statement or project vision based on requirements
	3. **make decisions** about what exactly will be acquired and what will be done by the team
	4. **build** dependencies between tasks
	5. **estimate** the duration and cost of completing each task
	6. **develop** a project schedule
	7. **define** a baseline for project cost
	8. **perform** risk analysis based on early planning
	9. **develop** a change management plan
4. **decompose** project work	1. **use** the Work Breakdown Structure (WBS) design rules in practice
	2. **describe** accurately the content of the work and its scope

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	3. **identify** work that is not related to the implementation of the project	
	4. **present** the project in the form of a hierarchical structure of work	
5. **create** a realistic project schedule	1. **identify** the critical path of a project	
	2. **track** the loading schedule of performers	
	3. **display** in a timely manner all changes in the project schedule	
6. **analyze** the project budget	1. **identify** enterprise IT costs	
	2. **know** the difference between an enterprise's IT costs and its budget	
	3. **identify** the main components of the IT budget	
	4. **calculate** the effectiveness of investments in an IT project	
	5. **analyze** IT costs by using various metrics	
	6. **apply** the IT budget planning algorithm	
	7. **use** recommendations for cost optimization	
7. **have skills and competencies** to identify and manage project risks	1. **know** the basic concepts of risk management	
	2. **determine** the levels of probability of risks and their consequences	
	3. **applying** techniques of risk identification	
	4. **make** up a risk response plan	
	5. **realize** qualitative risk analysis	
	6. **realize** quantitative risk analysis	
8. **develop** a project status report	1. **development** of a reference plan for the implementation of IT project work	
	2. **development** of a report on the status of IT project work	
	3. **calculation** of performance indicators of IT project	
	4. **forecasting** the final cost of an IT project	
9. **organize** the verification and acceptance of the project results	1. **know** the basic methods of evaluating an IT project	
	2. **analyze** product design and planning	
	3. **report** to management and the customer	

Course methodology:

Lectures, laboratory classes, teamwork provide the foundation of this course.

Teaching and learning strategies:

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The variety of formats used in the class includes project work, discussion, presentations and lectures. The teaching methodology is concerned with ingraining theoretical knowledge through practical experience. Teaching methods and delivery will include a combination of lectures, demonstrations, critiques, individual and group tasks, student presentations and in-class work.
Problem-based learning, service learning, group learning, just-in-time teaching are used. Problem-based learning (PBL) is a learning method in which complex, real-life problems are used as a means of helping students learn concepts and principles, rather than directly presenting facts and concepts. Community-based learning (service learning) provides context for building academic and work-readiness skills. Working in small groups provides learners with opportunities to articulate ideas and understandings, uncover assumptions and misconceptions, and negotiate with others to create products or reach consensus. Group activities enable students to discover deeper meaning in the content and improve thinking skills. Just-in-time teaching actively involves students in the learning process through a two-step series of learning activities. In the first step, students complete a focused set of activities outside of class and submit their work to the instructor. In the second step, the lecturer collects the students' responses and identifies areas of understanding and misunderstanding to adjust the next lesson so that students can receive specific “just-in-time” feedback on those particular areas.

Assessment

Assessment Task 1: Analytical document justifying the choice of an IT project
Intent: Initiate the development of an IT project; develop a model of the life cycle of an IT project.
Objective(s): task addresses the following learning outcomes: 1, 2
Type: Analytical Document
Groupwork: Teamwork
Weight:20%
Assessment criteria: 1, 2

Assessment Task 2: Develop a project management plan and baselines
Intent: determine the list of requirements that are necessary for the development of an IT project: team composition, tasks to be solved, work performed, risks.
Objective(s): task addresses the following learning outcomes: 3
Type: document containing relevant descriptions
Groupwork: Teamwork
Weight:15%
Assessment criteria: 3.1 – 3.9

Assessment Task 3: Creation of an IT project schedule
Intent: decomposition of work performed on the project; drawing up a schedule for the implementation of the project with its further modification.
Objective(s): task addresses the following learning outcomes: 4, 5.
Type: files of project schedule

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Groupwork: Teamwork
Weight:25%
Assessment criteria: 4.2 – 4.4, 5.1 – 5.3.

Assessment Task 4: Calculation of estimates of probable risks and costs of an IT project
Intent: analyze a costs of an IT project using various metrics; apply risk identification methods, conduct qualitative and quantitative risk analysis
Objective(s): task addresses the following learning outcomes: 6, 7.
Type: file with calculations
Groupwork: Teamwork
Weight:15%
Assessment criteria: 6.1, 6.5, 6.7, 7.4 – 7.6.

Assessment Task 5: Demonstration of the IT project by the team
Intent: writing the final project documentation, preparation of project presentation, analysis of results and proposals for project development.
Objective(s): task addresses the following learning outcomes: 8, 9.
Type: Final project report, presentation
Groupwork: Teamwork
Weight:25%
Assessment criteria: 8.1, 8.2, 8.4, 9.2, 9.3

Course Assessment Criteria
To pass the course and gets credit, a student must achieve an overall mark of 75% or more. Learning outcomes are assessed according to following levels of performance: satisfactory, good, excellent.

Student workload, form of student activity

Average number of hours for the activity

- Laboratory – 46 hours
- Student's own work:
- Preparation for classes – 30 hours
- Elaboration of results – 10 hours
- Reading literature – 15 hours
- Report writing – 25 hours

Base literature

1. Gejzler, P. S. Upravlenie proektami : ucheb. posobie / P. S. Gejzler, O. V. Zav'yalova. – Minsk : BGEU, 2005. – 255 s. (Гейзлер, П. С. Управление проектами : учеб. пособие / П. С. Гейзлер, О. В. Завьялова. – Минск : БГЭУ, 2005. – 255 с.)

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2. Litke, Hans-D. Upravlenie proektami : per. s nem. / H. Litke, I. Kunov. – 2-e izd., ster. – M. : Omega-L, 2007. – 135 s. (Литке, Ханс-Д. Управление проектами : пер. с нем. / Х. Литке, И. Кунов. – 2-е изд., стер. – М. : Омега-Л, 2007. – 135 с.)
3. Lokir, Kit Upravlenie proektami : stupeni vysshego masterstva : per. s angl. / K. Lokir, D. Gordon ; nauch. red. M. V. Degtyareva. – Minsk : Grevcov Pablisher, 2008. – 352 s. Локир, Кит Управление проектами : ступени высшего мастерства : пер. с англ. / К. Локир, Д. Гордон ; науч. ред. М. В. Дегтярева. – Минск : Гревцов Паблишер, 2008. – 352 с. (Ньюэл, Майкл В. Управление проектами для профессионалов. Руководство по подготовке к сдаче сертификационного экзамена: пер. с англ/М.В. Ньюэл.- Третье изд.- М. : КУДИЦ - ПРЕСС, 2008. - 416 с.)
4. N'yuel, Majkl V. Upravlenie proektami dlya professionalov. Rukovodstvo po podgotovke k sdache sertifikacionnogo ekzamena: per. s angl/M.V. N'yuel.- Tret'e izd.- M. : KUDIC - PRESS, 2008. - 416 s. (Ньюэл, Майкл В. Управление проектами для профессионалов. Руководство по подготовке к сдаче сертификационного экзамена: пер. с англ/М.В. Ньюэл.- Третье изд.- М. : КУДИЦ - ПРЕСС, 2008. - 416 с.)
5. Semenyuta, A. N. Osnovy upravleniya proektom : ucheb.posobie/A.N. Semenyuta.- Minsk : ASAR, 2009. - 176 s. (Семенюта, А. Н. Основы управления проектом : учеб.пособие/А.Н. Семенюта.- Минск : АСАР, 2009. - 176 с.)
6. Heldman, Kim Upravlenie proektami. Bystryj start: per. s angl/K. Heldman; pod obshch. red. S.I. Neizvestnogo.- M. : Akademiya AjTi: DMK Press, 2007. - 352 s. (Хэлдман, Ким Управление проектами. Быстрый старт: пер. с англ/К. Хэлдман; под общ. ред. С.И. Неизвестного.- М. : Академия АйТи: ДМК Пресс, 2007. - 352 с.)

Additional literature

1. Brewer, J. Methods of IT-project management / Jeffrey Brewer , Kevin Dittman, 3-d edition. - Pearson Education, Inc., 2017. - 585 p.
2. Cadle, J. Project Management for Information Systems / James Cadle , Donald Yeates, 5-th edition. - Pearson Education Limited, 2008. - 465 p.
3. Chatfield C. Microsoft Project 2016. Step by Step / Carl Chatfield, Timothy Johnson. - Microsoft Press, 2016. - 563 c.
4. Heldman, Kim. PMP : project management professional exam study guide / Kim Heldman. — 5th ed. - by Wiley Publishing, Inc., Indianapolis, Indiana, 2009. – 677p.

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