1.3. Module/ course form

<table>
<tr><td rowspan="8" style="writing-mode:vertical;">To be completed by Course Team</td><td colspan="3">Module name : Block of elective subjects</td><td colspan="2">Module code:</td></tr>
<tr><td colspan="3">Course name: Team project</td><td colspan="2">Course code:</td></tr>
<tr><td colspan="5">Faculty: Institute of Applied Informatics</td></tr>
<tr><td colspan="5">Field of study:
Informatics</td></tr>
<tr><td colspan="2">Mode of study :
Full-time</td><td colspan="2">Learning profile:
Practical</td><td>Speciality:</td></tr>
<tr><td colspan="2">Year/ semester:
3/6</td><td colspan="2">Module/ course status:
mandatory</td><td>Module/ course language:
Polish/English</td></tr>
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Type of classes	lecture	lessons	lab	project	tutorial	other (please specify)
Course load				**30**		

Module/ course coordinator	**Henryk Olszewski, PhD Eng.**
Lecturer	**Marzanna Skowrońska, MSc Eng., Robert Fidytek, PhD, Jerzy Buriak, PhD Eng., Daria Rybarczyk, MSc Eng., Henryk Olszewski, PhD Eng.**
Module/ course objectives	Acquiring experience in solving analytical, design and programming problems. Developing teamwork skills, working on a large project, collective decision making and bearing the consequences of these decisions. Developing self-assessment skills, finding own's scope of work and taking individual responsibility in a group, as well as verifying the ability to deal with emerging problems, seeking different ways to solve a given problem, and increasing the speed and efficiency of solving difficulties.
Entry requirements	Knowledge of issues in the field of software development and implementation of programming projects, including subjects such as databases, object-oriented programming, internet applications, software system design methodologies, software engineering, 3D modeling, robots programming.

	LEARNING OUTCOME	
Nr	LEARNING OUTCOME DESCRIPTION	Learning outcome reference

1	Has knowledge about the implementation of team projects in the implementation of software systems	K_W07, K_W11 K_W13, K_W14
2	Knows the software development technology and software tools chosen by the team	K_W15
3	Analyzes the problem, designs an abstract platform-independent solution	K_U02, K_U12
4	Selects a production environment for the project, installs it, and then uses it to create the added value of the project	K_U01 , K_U05 K_U06, K_U12 K_U13
5	Implements the design of a software system in the selected technology, including economic, ethical and legal aspects	K_U02, K_U09, K_U16, K_U18 K_U19, KU21
6	He creates technical documentation of the project and prepares a presentation on project implementation, using norms and standards used in IT	K_U03, K_U04, K_U24
7	Estimates the workload and total costs of the project, plans the work schedule	K_U02, K_U21
8	He works in a project team performing the indicated role and communicating with team members in accordance with their role	K_U02
9	He assigns tasks to himself and other team members, and also implements useful ideas in software development	K_U02

CURRICULUM CONTENTS
Lecture
Project
Students take part in the implementation of an IT project. The role of an external stakeholder and ordering a product can be fulfilled by: - an external company in which or for which students work under civil law contracts or as part of cooperation with a student research club; - organizational unit or department of the University; - teacher conducting the subject, which will define the project topic, problem area and boundary conditions, and will additionally act as a mentor and coordinator. The project team develops all project artifacts such as: project plan, role distribution, work schedule, cost estimate, creating, in addition to the code, electronic technical documentation of the project, selecting software and hardware tools adequate to issues; such as: CASE tools, integrated development environments, project management systems, intelligent editors, servers, 3D scaners, electronic modules etc. The works are carried out in three areas: literature research, definition of technology and selection of tools, creation of a usable software or hardware system, including applications and databases. The following issues are recommended for a programming project: 1. Literature Research

Books, forums, programming portals and programming implementation projects.
Problematic portals.
2. Technology development and tool selection
2.1. Gathering and learning about tools such as:
   - IDE + servers (WWW, RDBMS),
   - framework e.g. Symphony, CakePHP etc., or CMS, e.g. WordPress, Joomla!, MODX
     other libraries, e.g. AngularJS, ReactJS
   - CASE,
   - version control system, e.g. SVN, Git.
2.2. Administrator panel.
2.3. Access security and authorization mechanism.
3. Software system development and testing - application and database (Software Development)
3.1. Functional model of the application (specification of functions)
3.2. Data model.
3.3. Data dictionaries.
3.4. Layers of presentations (form templates, basic format support, including data collection and presentation).
3.5. Data access layer (a pattern of all methods of accessing and obtaining data).
3.6. Information retrieval mechanism.
3.7. Printing and reporting mechanism.
3.8 Error handling.
The suggested time devoted to particular thematic areas is divided in succession in a ratio of 1: 3: 6.

It should be mentioned that students already have some knowledge and individual skills in the field of specific introductory subjects, and the classes primarily serve to consolidate and expand this knowledge in teamwork.

Basic literature	- similar to courses of databases, object-oriented programming, internet applications, software system design methodology, software engineering, dynamic 3D graphics, rapid prototyping - websites devoted to programming in the selected technology
Additional literature	

Teaching methods	multimedia presentation, students presentations and discussion, brainstorming, auditorium exercises: practical project method, project

Assessment method	Learning outcome number
Assessment of participation and involvement in teamwork on the project	01, 08, 09
Project evaluation based on the presentation of the project and its documentation	02, 03, 04, 05, 06, 07

Form and terms of an exam	Semester evaluation. Completion of the course based on the documentation of the completed project and given presentations (100%). Not only the final result is assessed, but also the method of project implementation and individual student input. The subject coordinator may evaluate the course on the basis of an IT project of a scientific circle provided that all the assumed learning outcomes are achieved.

STUDENT WORKLOAD		
	Number of hours	
	In all	including practical
Participation in lectures		
Independent study of lecture topics		
Participation in tutorials, labs, projects and seminars	30	30
Independent preparation for tutorials[*]	25	25
Preparation of projects/essays/etc.[*]	60	60
Preparation/ independent study for exams	10	
Participation during consultation hours	2	
Other		
TOTAL student workload in hours	127	115
Number of ECTS credit per course unit	**5 ECTS**	
Number of ECTS points assigned to the scientific discipline	Technical informatics and telecommunications **5 ECTS**	
Number of ECTS credit associated with practical classes	**4,5 ECTS**	
Number of ECTS for classes that require direct participation of professors	32 **1,3 ECTS**	