Course code	C.5.2.		**Course item**	……………

1. INFORMATION ABOUT THE COURSE

A. Basic information

Course title	Advanced Computer Programming
Field of study	Computer Aided Engineering
Cycle	*Second*
Study profile	*Academic*
Study mode	*Full-time*
Specialisation	*Not relevant*
Unit responsible for the field of study	*Faculty of Mechanical Engineering*
Lecturer	*Dr inż. Zbigniew Lutowski*
Introductory courses	*Basic Computer Programming*
Prerequisites	*Basic knowledge of computer programing technics*

B. Semester/ weekly timetable

Semester	Lectures	Classes	Laboratories	Project classes	Seminars	Field experience	ECTS credits
III	30	-	30	-	-	-	5

LEARNING OUTCOMES (acc. to National Qualifications Framework)

No.	Description of learning outcomes	Reference to learning outcomes for the field of study	Reference to learning outcomes for the area of study
KNOWLEDGE			
K1	Student has an advanced knowledge in computer programming	CAE_W01	T2A_W02
K2	Student knows how to extend the functionality of computer-aided engineering software	CAE_W08	T2A_W04, T2A_W05
	???		
SKILLS			
S1	Student is able to improve the functionality of the existing software and create new software.	CAE_U06	T2A_U16
S2	the student is able to prepare a scientific report on the studies carried out	CAE_U08	T2A_U03 T2A_U10
SOCIAL COMPETENCES			
SC1	Student is able to act and think in a creative way	CAE_K06	T2A_K06

2. TEACHING METHODS

multimedia lecture, laboratory classes

2. METHODS OF EXAMINATION

written exam, report

3. COURSE CONTENT

Specify the content separately for each type of classes in accordance with point I.B.	LECTURES This module aims to introduce the students to some concepts of advanced programming and practice on reusing components. It focuses on Graphical User Interface (GUI), multithreading, networking, and database manipulation. A selected programming languages are used. By completing this module, the students should be able to write sophisticated applications and develop software extensions for a computer-aided engineering software. LABORATORY Programming GUI interface Multithreading Networking Database manipulation Software extensions for CAD software

4. VALIDATION OF LEARNING OUTCOMES

(Each learning outcome from the list requires validation methods to ensure that it was achieved by a student.)

Learning outcome	Form of assessment (for example:)					
	Oral examination	Written examination	Colloquium	Project	Report	Test
K1		X				
K2		X				
S1		X			X	
S2		X			X	
SC1					X	

5. LITERATURE

Basic literature	J. Albahari, B. Albahari, "C# in a nutshell 5-th edition", O'Reilly 2012
	David M. Stein ,"The Visual LISP Developers Bible", 2011 Edition
Supplementary literature	Bjarne Stroustrup, "The C++ Programming Language", Addison-Wesley, 2000
	Bill Kramer, "The AutoCADET's Guide to Visual LISP", 2002 CMP Books

6. TOTAL STUDENT WORKLOAD REQUIRED TO ACHIEVE EXPECTED LEARNING OUTCOMES EXPRESSED IN TIME AND ECTS CREDITS

Student's activity	Student workload– number of hours (for example:)
Participation in classes indicated in point 2.2	30
Preparation for classes	35
Reading assignments	35

Other (preparation for exams, tests, carrying out a project etc)	25
Total student workload	125
Number of ECTS credits allocated by the lecturer	**5**
Final number of **ECTS credits (determined by the Programme Council for the Field of Study)**	5