

Object-oriented programming - opis przedmiotu

Informacje ogólne	
Nazwa przedmiotu	Object-oriented programming
Kod przedmiotu	06.9-ZiIP-ANG-D-08_20
Wydział	Wydział Mechaniczny
Kierunek	Management and Production Engineering
Profil	ogólnoakademicki
Rodzaj studiów	drugiego stopnia z tyt. magistra inżyniera
Semestr rozpoczęcia	semestr zimowy 2021/2022

Informacje o przedmiocie	
Semestr	1
Liczba punktów ECTS do zdobycia	3
Typ przedmiotu	obowiązkowy
Język nauczania	angielski
Sylabus opracował	<ul style="list-style-type: none">dr inż. Grzegorz Pająkdr inż. Iwona Pająk

Formy zajęć					
Forma zajęć	Liczba godzin w semestrze (stacjonarne)	Liczba godzin w tygodniu (stacjonarne)	Liczba godzin w semestrze (niestacjonarne)	Liczba godzin w tygodniu (niestacjonarne)	Forma zaliczenia
Ćwiczenia	15	1	-	-	Zaliczenie na ocenę
Laboratorium	15	1	-	-	Zaliczenie na ocenę
Wykład	15	1	-	-	Zaliczenie na ocenę

Cel przedmiotu

Familiarize with the object-oriented approach to system analysis and design, developing skills in using a modern programming environment to creation of simple elements of the IT system.

Wymagania wstępne

Computer skills.

Zakres tematyczny

Lectures

L01. Introduction to object-oriented programming in Visual Basic for Applications: the concept of class and object, object-event model of the application on the example of Excel, object structure - methods and properties, basic Excel objects, data types, modifying object properties, using assignment statements, introduction to defining macros.

L02. Basics of programming in Visual Basic for Applications: creating modules, defining macros of procedure and function types, passing parameters by value and reference, standard functions and procedures, defining and using variables, arithmetic operators and standard functions, exception handling.

L03-04. Form classes in VBA, implementation of decision blocks and processing of collections of objects: defining form modules, objects representing elements of user interface, properties, methods and events of forms controls, design of interface, IF...THEN statement syntax, relational and logical operators, FOR...EACH statement syntax, object collection processing.

L05. Advanced use of standard VBA objects, interaction with Word objects: creating personalized charts, modifying properties of VBA objects, generating reports in Word format based on data collected in Excel sheets.

L06: Events of Excel objects, add-ins: the concept of events in object-oriented programming, Application, Workbook, Worksheet and Range object events, defining event methods in the Visual Basic for Application, using events to automate selected activities, distribution of VBA code as add-ins, modification of the Excel interface from the program code.

L07: Final test.

Exercises

E01-02. Defining VBA procedures using properties and methods of the basic Excel objects, assignment statement, arithmetic operators, and standard and sheet functions.

E03. Defining events of the form object using a conditional statement.

E04. Defining events of the form object using an looping statement for processing collections of objects.

E05. Using standard VBA objects to create personalized charts.

E06. Defining event procedures to automate selected activities.

E07. Final test.

Laboratory

L01: Recording and editing of macros in the environment of Visual Basic for Excel, using the debugger to track the program progress and detect errors.

L02: Implementation of simple VBA macros using the properties and methods of basic Excel objects, assignment statement, arithmetic operators and standard functions.

L03: Implementation of form class, user interface design, event implementation.

L04: Implementation of form events using conditional and looping statements.

L05. Implementation of personalized charts using standard VBA objects.

L06. Generating reports based on data collected in Excel spreadsheets by interacting with Word objects.

L07. Final test.

Metody kształcenia

Lecture: a conventional lecture

Exercises: problem tasks, case analysis, individual work

Laboratory: practical classes in the computer laboratory

Efekty uczenia się i metody weryfikacji osiągnięcia efektów uczenia się

Opis efektu	Symbole efektów	Metody weryfikacji	Forma zajęć
The student is able to interact and work in a group accepting various roles	<ul style="list-style-type: none">K_K03	<ul style="list-style-type: none">bieżąca kontrola na zajęciachprzygotowanie projektu	<ul style="list-style-type: none">LaboratoriumĆwiczenia
The student has detailed knowledge of selected issues of Mechanical Engineering, as broadly understood and associated with Production Engineering and computer-aided management.	<ul style="list-style-type: none">K_W06K_W09	<ul style="list-style-type: none">bieżąca kontrola na zajęciachkolokwium	<ul style="list-style-type: none">WykładĆwiczenia
The student is able to think and act both creatively and entrepreneurially.	<ul style="list-style-type: none">K_K06	<ul style="list-style-type: none">bieżąca kontrola na zajęciach	<ul style="list-style-type: none">LaboratoriumĆwiczenia
The student can work individually as well as in a team; he/she is also able to select team members for a specific task and assign tasks to the members and manage a small team.	<ul style="list-style-type: none">K_U03	<ul style="list-style-type: none">bieżąca kontrola na zajęciach	<ul style="list-style-type: none">LaboratoriumĆwiczenia
The student is able to obtain information from literature, databases and other sources and is able to integrate, interpret and critically evaluate it, as well as draw conclusions, therefrom, both formulating it and sufficiently justify opinions on it.	<ul style="list-style-type: none">K_U01	<ul style="list-style-type: none">bieżąca kontrola na zajęciachkolokwiumprzygotowanie projektu	<ul style="list-style-type: none">WykładLaboratoriumĆwiczenia

Warunki zaliczenia

Lecture: a positive result of the assessment via a written test

Exercises: a positive result of the assessment via a written test

Laboratory: completion of laboratory tasks, assessment of the test conducted at the computer.

Final grade: the condition for passing the course is to pass all its forms, the final grade for the course is the arithmetic mean of the grades for individual forms of classes.

Literatura podstawowa

- DeMarco J., Pro Excel 2007 VBA, Springer, 2008,
- Kofler M., Definitive Guide to Excel VBA, Springer, 2003,
- Morgado F., Programming Excel with VBA, Springer, 2016,
- Walkenbach J., Excel Vba Programming For Dummies, John Wiley & Sons; 4 edition, 2015.

Literatura uzupełniająca

- Booch G., Rumbaugh J., Jacobson I., The Unified Modeling Language User Guide, Addison-Wesley Professional, 2 edition, 2005,
- Walkenbach J., Excel 2013 Bible, Wiley, 1 edition, 2018

Uwagi

