**Nazwa przedmiotu:**

Programming2 (Advanced)

**Koordynator przedmiotu:**

Doc. dr inż. Roman Podraza

**Status przedmiotu:**

Obowiązkowy

**Poziom kształcenia:**

Studia I stopnia

**Program:**

Informatyka

**Grupa przedmiotów:**

Wspólne

**Kod przedmiotu:**

brak

**Semestr nominalny:**

2 / rok ak. 2009/2010

**Liczba punktów ECTS:**

5

**Liczba godzin pracy studenta związanych z osiągnięciem efektów uczenia się:**

**Liczba punktów ECTS na zajęciach wymagających bezpośredniego udziału nauczycieli akademickich:**

**Język prowadzenia zajęć:**

polski

**Liczba punktów ECTS, którą student uzyskuje w ramach zajęć o charakterze praktycznym:**

**Formy zajęć i ich wymiar w semestrze:**

|  |  |
| --- | --- |
| Wykład: | 30h |
| Ćwiczenia: | 0h |
| Laboratorium: | 30h |
| Projekt: | 0h |
| Lekcje komputerowe: | 0h |

**Wymagania wstępne:**

Programming 1 (Fundamentals)

**Limit liczby studentów:**

**Cel przedmiotu:**

Students should learn to write object-oriented programs in C++ language. They should become familiar with object oriented design and the C++ language rules and programming style.

**Treści kształcenia:**

Lectures: Introduction (4h): the C/C++ language elements, basic data types, literals, references, casting, operator summary, statement summary. Functions and Files (4h): linkage, header files, static and automatic variables, initialization of variables, default values of function parameters, function overloading, namespaces. Classes (6h): classes and members, access control, interfaces and implementation, friends, name qualification, static members, constructors and destructors, object-oriented programming. Derived Classes (6h): inheritance, virtual functions, polymorphism, pure virtual functions, abstract classes, multiple inheritance, dynamic data structures, dynamic binding, run-time type inspection. Operator Overloading (2h): operator functions, assignment and initialization, increment and decrement, friends and members. Templates (2h): class template, function template. Exception Handling (2h): error handling, throwing and catching exceptions, try block, catch blocks, discrimination of exceptions, naming of exceptions, uncaught exceptions. Input/Output Functions (2h): streams, formatting, files. Standard Libraries (2h): STL, containers, algorithms, iterators. Laboratory: The laboratory consists of five preliminary simple tasks on 1. Pointers 2. References 3. Classes and objects: constructors and destructors 4. Operators 5. Templates and a small project requiring design of simplified simulation of an institution (e.g. bank, university, hospital). Implementation of several cooperating classes is expected as well as testing scenarios.

**Metody oceny:**

During the lab exercises it is possible to score up to 40 points: ? 15 points for first five exercises (5\*3) ? 25 points for the project o 8 points for the Preliminary Project (PP) o 9 points for the Code in C++ (CC) o 8 points for the Final Project (FP) Maximum score for the mid-term test is 20 points and for final test is 40 points. There are also up to 10 short tests (during lectures), each one for 1 point. The final result is based on the following pattern: ? A: 91-110 points ? B+: 81-90 points ? B: 71-80 points ? C+: 61-70 points ? C: 51-60 points ? D: 0 -50 points

**Egzamin:**

**Literatura:**

1. H. Schildt, "C++: The Complete Reference", Fourth Edition, McGraw-Hill, 2003. 2. B. Stroustrup, "The C++ Programming Language", Third Edition, Addison-Wesley, 1998 3. I. Pohl, "C++ for C Programmers", Addison-Wesley, 1998

**Witryna www przedmiotu:**

**Uwagi:**

## Efekty przedmiotowe