SYLLABUS

Object Oriented Programming

1. Information on academic programme

1.1. University	**„1 Decembrie 1918" din Alba Iulia**
1.2. Faculty	**Faculty of Computer Science and Engeneering**
1.3. Department	**Department of Computer Science, Matematics and Applied Electronics / Departamentul de Informatica, Matematica si Electronica**
1.4. Field of Study	**Computer Science**
1.5. Cycle of Study	**Bachelor**
1.6. Academic program / Qualification	**2511/ Systems Analyst, 2512/ Software developers** ***Analyst 251201*** ***Computer System Programmer 251204*** ***Computer System Engineer 251203***

2. Information of Course Matter

2.1. **Course**		*Object Oriented Programming*			2.2. **Code**		**CSE 204**
2.3. **Course Leader**			Rotar Corina				
2.4. **Seminar Tutor**			Cristea Daniela				
2.5. Academic Year	**II**	2.6. Semester	**I**	2.7. Type of Evaluation (E – final exam/ CE - colloquy examination / CA -continuous assessment)	**E**	2.8. Type of course (**C**– Compulsory, **Op** – optional, **F** - Facultative)	**C**

3. Course Structure (Weekly number of hours)

3.1. Weekly number of hours	**5**	3.2. course	***2***	3.3. seminar, laboratory	***3***
3.4. Total number of hours in the curriculum	**70**	3.5. course	***28***	3.6. seminar, laboratory	***42***

Allocation of time:	Hours
Individual study of readers	***10***
Documentation (library)	***20***
Home assignments, Essays, Portfolios	***20***
Tutorials	***-***
Assessment (examinations)	***5***
Other activities…….	***-***

3.7 Total number of hours for individual study	**55**
3.8 Total number of hours in the curriculum	**70**
3.9 Total number of hours per semester	**125**
3.10 Number of ECTS	**5**

4. Prerequisites (*where applicable*)

4.1. curriculum-based	*Data Structures*
4.2. competence-based	**C1 Programming in high-level languages** C1.1 The appropriate description of programming paradigms and of specific language mechanisms, as well as the identification of differences between semantic and syntactic aspects. C1.2 The explaining of existing software applications using different abstraction layers (architecture, packages, classes, methods), correctly using base knowledge. C1.3 The development of correct source codes and the testing of various components in a known programming language, given a set of design specifications. C1.4 The testing of various applications given specific testing plans C1.5 Developing program units and their documentation.

5. Requisites (*where applicable*)

5.1. course-related	*Room equipped with video projector / boar*
5.2. seminar/laboratory-based	*Laboratory – computers, Software: Visual Studio 2010, Codeblocks/DevC++, Internet access.*

6. Specific competences to be aquired (chosen by the course leader from the programme general competences grid)

Professional competences	C1 Programming in high-level languages C2 Development and maintenance of computer applications
Transversal competences	*Not applicable*

7. Course objectives (as per the programme specific competences grid)

7.1 General objectives of the course	Develop students' ability to design software that is dedicated to solving medium complexity problems by using object oriented paradigm. Deepening the concept of class and object, and gaining the skills to design classes and associated libraries. Creating a rigorous and efficient object oriented programming style
7.2 Specific objectives of the course	Developing students' ability to effectively manage information by using classes and relations between classes. Drawing a coherent documentation on the applications of average complexity.

8. Course contents

8.1 Course (learning units)	**Teaching methods**	**Remarks**
1. Introduction to Object-Oriented Programming (OOP)	***Lecture, conversation, exemplification***	*2h*
2. Basics of C++ and Syntax Overview	***Lecture, conversation, exemplification***	*2h*
3. Classes and Objects	***Lecture, conversation, exemplification***	*2h*
4. Constructors and Destructors in Depth	***Lecture, conversation, exemplification***	*2h*
5. Encapsulation and Data Hiding	***Lecture, conversation,***	*2h*

	exemplification	
6. Operator Overloading	***Lecture, conversation, exemplification***	*2h*
7. Inheritance	***Lecture, conversation, exemplification***	*2h*
8. Polymorphism: Function Overloading and Overriding	***Lecture, conversation, exemplification***	*2h*
9. Virtual Functions and Runtime Polymorphism	***Lecture, conversation, exemplification***	*2h*
10. Multiple Inheritance and Interfaces	***Lecture, conversation, exemplification***	*2h*
11. Templates and Generic Programming	***Lecture, conversation, exemplification***	*2h*
12. Exception Handling in C++	***Lecture, conversation, exemplification***	*2h*
13. Standard Template Library (STL) Overview	***Lecture, conversation, exemplification***	*2h*
14. Memory Management and Smart Pointers	***Lecture, conversation, exemplification***	*2h*
Seminars-laboratories	**Teaching methods**	
1. **Introduction to Object-Oriented Programming (OOP)**	***Project-work, computer-based activities, laboratory activities***	*3h*
2. **Basics of C++ and Syntax Overview**	***laboratory activities***	*3h*
3. **Classes and Objects**	***laboratory activities***	*3h*
4. **Constructors and Destructors in Depth**	***laboratory activities***	*3h*
5. **Encapsulation and Data Hiding**	***laboratory activities***	*3h*
6. **Operator Overloading**	***laboratory activities***	*3h*
7. **Inheritance**	***laboratory activities***	*3h*
8. **Polymorphism: Function Overloading and Overriding**	***laboratory activities***	*3h*
9. **Virtual Functions and Runtime Polymorphism**	***laboratory activities***	*3h*
10. **Multiple Inheritance and Interfaces**	***laboratory activities***	*3h*
11. **Templates and Generic Programming**	***laboratory activities***	*3h*
12. **Exception Handling in C++**	***laboratory activities***	*3h*
13. **Standard Template Library (STL) Overview**	***laboratory activities***	*3h*
14. **Memory Management and Smart Pointers**	***laboratory activities***	*3h*

References

1. Bruce Eckel, Thinking in C++, free online.
2. Bjarne Stroustrup, The C++ Programming Language, Addison Wesley, 1997.
3. H. Schildt: C++ manual complet, e-book.
4. Peter Muller: Introduction to Object-Oriented Programming Using C++ , e-book.
5. Rotar C., Object oriented Programming - *Lecture notes*

9. Corroboration of course contents with the expectations of the epistemic community's significant representatives, professional associations and employers in the field of the academic programme

Not applicable

10. Assessment

Activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percentage of final grade
10.4 Course	*Final evaluation*	*Written paper*	60%
	-	-	-
10.5 Seminar/laboratory	*Continuous assessment*	*Laboratory activities / portfolio*	40%
	-		-
10.6 Minimum performance standard:			
Implementation and documentation of the software units in an object oriented programming language and efficiently using the related concepts.			

Submission date Course leader signature Seminar tutor signature

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Date of approval by Department members Department director signature

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