Course title:	**Programming languages II (Visual programming language)**

Course code	*Course status*	*Semester*	*Number of ECTS credits*	*Lecture hours*
132004161	**Mandatory**	**IV**	**6**	**3+0+2**

Study program:
Basic applied studies, ELECTRICAL ENGINEERING, study program: Computer engineering (studies last for 6 semesters, 180 ECTS credits).

Prerequisites:
No prerequisites required.

Course aims:
To introduce students to basics of object-oriented programming, work with integrated environment, event-driven programming, C++ programming language syntax, visual components library (VCL), structures and classes, principles of object-oriented programming, database interface creating.

Teacher(s) and assistant(s):
Ph.D. Milutin Ostojić - teacher
Ph.D. Budimir Lutovac - assistant
Mr Boris Marković - assistant

Teaching method:
Lectures, exercises, studying and doing home exercises. Consultations.

Course synopsis:

Preliminary weeks	Preparation and semester enrolment.
I week	Introduction. Basics of object-oriented programming.
II week	Work with integrated environments for Visual programming.
III week	Event-driven programming.
IV week	C++ programming language syntax, variables, operators, Input/Output.
V week	Control flow statements, functions, pointers, references.
VI week	***First test***
VII week	***Free week***
VIII week	Arrays, files, dynamical memory allocation. Visual components library (VCL).
IX week	Structures and pointers to structures, queues, stacks, adding functions to structures.
X week	Principles of object-oriented programming - objects and classes.
XI week	***Second test***
XII week	Encapsulation and abstraction.
XIII week	Constructors and destructors. Classes and friends.
XIV week	Inheritance, Virtual functions as class members, polymorphism.
XV week	Database interface creating.
XVI week	***Final exam***
Final week	Administrative procedures.
XVIII-XXI week	Additional lessons, correction of the final exam and administrative procedures.

STUDENT WORKLOAD

per week	per semester
Working hours: 6 credits x **40/30** = **8** hours. **Working hours structure**: **3** hours for teaching **2** hours for exercises **3** hours for individual work, including consultations.	**Teaching and the final exam**: (**8** hours) x **16** = **128** hours. **Necessary preparation** (before semester): **2** x (**8** hours) = **16** hours. **Total work hours for the course**: **6** x **30** hours = **180** hours **Additional hours** for preparing correction of the final exam, including the exam taking: up to **36** hours. **Work hours structure**: 128 hours (lectures) + 16 hours (preparation) + 36 hours (additional work)

Lessons attendance is mandatory for students, as well as doing exercises, home exercises and both tests.

Literature: M. Ostojić, B. Marković: "Vizuelni programski jezik BB C++ " - handouts.

The forms of knowledge testing and grading:
- Home exercises carry **5**x**1** points.
- Each test carries **22.5** points (**45** points total).
- Final exam carries **50** points.

Student gets the passing grade by collecting **51** points at least (subject to correction).

Special remarks for the course: The lessons and exercises are organized in two student groups.

Teacher(s) who provided the information: Ph.D. Milutin Ostojić

Remark: Additional information at http://www.bm.users.cg.yu/