Course title:	**Computer programming II**			
Course code	***Course status***	***Semester***	***Number of ECTS credits***	***Lecture hours***
131004207	**Mandatory**	**IV**	**5.5**	**2+1+2**

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

Prerequisites:
No prerequisites required. Passed final exams in courses **Basics of computer engineering I** and **II**, as well as **Computer programming I**, desirable.

Course aims:
To familiarize students with basics of object-oriented programming, as well as visual programming tools.

Teacher(s) and assistant(s) first and last names:
Ph.D. Igor Đurović – teacher
M.Sc. Boris Marković – assistant
M.Sc. Vesna Popović – assistant
Predrag Raković – assistant

Studying method:
Lectures, exercises and laboratory exercises, individual work on practical tasks and mini-project, consultations.

Course synopsis:

Preliminary weeks	Preparation and semester enrolment.
I week	Software crisis and reasons for an introduction of object-oriented concepts in programming.
II week	Differences between nonobject- and object-oriented programming languages. Reference.
III week	Class - basic interface elements. Inspectors and mutators. Abstraction and encapsulation.
IV week	Advanced elements of a class interface.
V week	Friend functions and class. Pointers to class members.
VI week	***First test***
VII week	***Free week***
VIII week	Operator overloading (basic binary and unary operators).
IX week	Operator overloading (advanced options).
X week	Inheritance - public, private and protected.
XI week	Virtual inheritance. Virtual mechanism.
XII week	***Second test***
XIII week	Templates and template libraries.
XIV week	Input/output in object-oriented programming languages.
XV week	Work with exceptions. A need for object-oriented analysis and synthesis.
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: 5.5 credits x **40/30** = **7** hours and **20** min. **Working hours structure**: **2** hours for teaching **1** hour for exercises **2** hour for laboratory exercises **2** hours and **20** minutes for individual work, including consultations.	**Teaching and the final exam**: (**7.33** hours) x **16** = **117** hours and **20** minutes. **Necessary preparation** (before semester): **2** x (**7.33** hours) = **14** hours and **40** minutes. **Total work hours for the course**: **5.5** x **30** hours = **165** hours **Additional hours** for preparing correction of the final exam, including the exam taking: up to **33** hours. **Work hours structure**: 117 hours and 20 minutes (lectures) + 14 hours and 40 minutes (preparation) + 33 hours (additional work)

Lessons attendance is mandatory for students, as well as doing home and laboratory exercises (in a form of a mini-project) and both tests.

Literature: D. Milićev: "Objektno orjentisano programiranje na programskom jeziku C++", Mikro knjiga 1998.

The forms of knowledge testing and grading:
- Home exercises carry **5**x**1** points.
- Laboratory exercises (mini-project) carry **15** points.
- Each test carries **15** points (**30** points total).
- Final exam carries **50** points.

Student gets the passing grade by collecting **51** points at least.

Special remarks for the course: The teaching is organized for student groups with approximately 60 students, exercises are organized for groups with 30 students and laboratory exercises are organized for groups with 10 students. If needed, the course can also be taught in English.

Teacher(s) who provided the information: Ph.D. Igor Đurović

Remark: Additional information at www.etfprog.cg.ac.yu