

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

<b>Study program:</b> Basic academic studies, ELECTRICAL ENGINEERING, study program: Power systems and Control (studies last for 6 semesters, 180 ECTS credits).	
<b>Prerequisites:</b> No prerequisites required. Passed final exams in courses <b>Basics of computer engineering I</b> and <b>II</b> , as well as <b>Computer programming I</b> , desirable.	
<b>Course aims:</b> To familiarize students with basics of object-oriented programming, as well as visual programming tools.	
<b>Teacher(s) and assistant(s) first and last names:</b> Ph.D. Igor Đurović – teacher M.Sc. Boris Marković – assistant M.Sc. Vesna Popović – assistant Predrag Raković – assistant	
<b>Studying method:</b> Lectures, exercises and laboratory exercises, individual work on practical tasks and mini-project, consultations.	
<b>Course synopsis:</b>	
Preliminary weeks  I week II week III week IV week V week VI week VII week VIII week IX week X week XI week XII week XIII week XIV week XV week XVI week  Final week  XVIII-XXI week	Preparation and semester enrolment.  Software crisis and reasons for an introduction of object-oriented concepts in programming. Differences between nonobject- and object-oriented programming languages. Reference. Class - basic interface elements. Inspectors and mutators. Abstraction and encapsulation. Advanced elements of a class interface. Friend functions and class. Pointers to class members. <b>First test</b> <b>Free week</b> Operator overloading (basic binary and unary operators). Operator overloading (advanced options). Inheritance - public, private and protected. Virtual inheritance. Virtual mechanism. <b>Second test</b> Templates and template libraries. Input/output in object-oriented programming languages. Work with exceptions. A need for object-oriented analysis and synthesis. <b>Final exam</b>  Administrative procedures.  Additional lessons, correction of the final exam and administrative procedures.
<b>STUDENT WORKLOAD</b>	
<p style="text-align: center;"><u>per week</u></p> <b>Working hours:</b> 5.5 credits x 40/30 = 7 hours and 20 min. <b>Working hours structure:</b> 2 hours for teaching 1 hour for exercises 2 hour for laboratory exercises 2 hours and 20 minutes for individual work, including consultations.	<p style="text-align: center;"><u>per semester</u></p> <b>Teaching and the final exam:</b> (7.33 hours) x 16 = 117 hours and 20 minutes. <b>Necessary preparation</b> (before semester): 2 x (7.33 hours) = 14 hours and 40 minutes. <b>Total work hours for the course:</b> 5.5 x 30 hours = 165 hours <b>Additional hours</b> for preparing correction of the final exam, including the exam taking: up to 33 hours. <b>Work hours structure:</b> 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.	
<b>Literature:</b> D. Milićev: "Objektno orjentisano programiranje na programskom jeziku C++", Mikro knjiga 1998.	
<b>The forms of knowledge testing and grading:</b>	
<ul style="list-style-type: none"> <li>- Home exercises carry 5x1 points.</li> <li>- Laboratory exercises (mini-project) carry 15 points.</li> <li>- Each test carries 15 points (30 points total).</li> <li>- Final exam carries 50 points.</li> </ul> Student gets the passing grade by collecting 51 points at least.	
<b>Special remarks for the course:</b> 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.	
<b>Teacher(s) who provided the information:</b> Ph.D. Igor Đurović	
<b>Remark:</b> Additional information at <a href="http://www.etfprog.cg.ac.yu">www.etfprog.cg.ac.yu</a>	