

<b>Study program: Civil Engineering</b>			
<b>Course: HVAC Systems</b>			
<b>Professor/assistant: PhD Mladen Tomić / Milan Protić</b>			
<b>Status of course: elective</b>			
<b>ECTS credits: 5</b>			
<b>Pre-requisites: none</b>			
<b>Aims of the course:</b> The aim of the course is that a student: <ul style="list-style-type: none"> <li>- applies the methodology of designing the HVAC systems;</li> <li>- recognizes and analyzes the elements of the HVAC system and their functionality;</li> <li>- recognizes problems in the work of elements of the HVAC system.</li> </ul>			
<b>Learning outcomes:</b> After successfully finishing the course, a student is able to: <ul style="list-style-type: none"> <li>- determine the hygienic needs for heating, ventilating and air conditioning of space or facility;</li> <li>- design HVAC systems according to the needed thermal comfort;</li> <li>- identifies the basic elements of the HVAC system;</li> <li>- select the appropriate HVAC system for a particular structure;</li> <li>- solve problems in the system operation.</li> </ul>			
<b>Syllabus:</b> <u>Theoretical part</u> Meteorological basics. Basics of hygiene. Fundamentals of fluid mechanics and heat transfer. Basics of measuring technology and heating bases, heating system components, cooling systems, components and cooling systems. Calculation and dimensioning of the heating and cooling system. On ventilation and air conditioning in general. Ventilation and air conditioning systems. Components (fans, heaters, filters, air humidification systems, noise reduction, air distribution, recuperators, fire protection). Calculation of the air conditioning systems. Hot water systems. <u>Practical part</u> Practice is followed by lectures, materials are developed using examples from practice. Seminar work and visits to companies provide excellent preparation for the final exam where the student shows the knowledge acquired and the skills developed.			
<b>Literature:</b> <ol style="list-style-type: none"> <li>1. S. Zrnić, <i>Grejanje i klimatizacija</i>, 1972.</li> <li>2. Grupa autora, <i>Grejanje, klimatizacija, hlađenje</i>, 2005.</li> <li>3. M. Lambić, Eremić, <i>Tehnička termodinamika</i>, 1995.</li> <li>4. M. Bogner, <i>Termotehničar</i>, SMEITS, 2004.</li> </ol>			
<b>Number of active classes</b>			<b>Other forms of teaching:</b>
Lectures: 3	Practical classes: 2	Laboratory classes: 0	
<b>Teaching methods:</b> Teaching is conducted interactively in the form of lectures, auditory, laboratory and computer exercises. The lectures show the theoretical part of the material accompanied by characteristic examples for easier understanding of the material. Auditory exercises deal with characteristic tasks and deepen the exposed material. Computer exercises comprise the use of information communication technologies in mastering knowledge from the observed area. In addition to lectures and exercises, consultations are also held regularly.			
<b>Grading system</b> (maximum 100 points), <b>grading scale</b> from 5 to 10: below 51 points grade 5, grade 6 from 51-60 points, grade 7 from 61-70 points, grade 8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91-100 points.			
<b>Pre-commitments</b>	<b>points</b>	<b>Final exam</b>	<b>points</b>
activity during lectures	10	written exam	-
colloquium(s)	20 + 20	oral exam	30
seminar paper(s)	20		
<b>Sum</b>	<b>70</b>	<b>Sum</b>	<b>30</b>