

|  |                       |                   |                          |
|--|-----------------------|-------------------|--------------------------|
| <b>Study program: Industrial Engineering</b>   |                       |                   |                          |
| <b>Course title: Thermoenergetic</b>   |                       |                   |                          |
| <b>Professor/assistant:</b> Aleksandra Boricic / Biljana Milutinovic   |                       |                   |                          |
| <b>Type of course:</b> compulsory  |                       |                   |                          |
| <b>ECTS credits:</b> 6   |                       |                   |                          |
| <b>Pre-requisites:</b>   |                       |                   |                          |
| <b>Aims of the course:</b><br>Acquisition of theoretical, technical and practical knowledge and skills in the field of thermodynamics.   |                       |                   |                          |
| <b>Learning outcomes:</b><br>Training for the practical application of acquired knowledge in the field of thermodynamics in the production and development of engineering capabilities in forecasting, planning and design of HVAC and appliances.   |                       |                   |                          |
| <b>Syllabus</b>  |                       |                   |                          |
| <i>Theoretical part</i><br>System and the environment, property, state, process and equilibrium, system of units, thermodynamic equation of ideal gas state, a mixture of ideal gases, energy of system, internal energy, heat energy and work, specific heat and Mayer equation, the first law of thermodynamics, the second law of thermodynamics, real gases and vapors, heat distribution, heat exchangers, combustion processes in steam engines, cooling plants. |                       |                   |                          |
| <i>Practical part :</i><br>Solving arithmetic problems and basic laboratory work, a visit to one of the power plants.  |                       |                   |                          |
| <b>Literature</b><br>1 Bazarov I., Thermodynamics (in Serbian), Moscow, 1961.<br>2 Malic, D., Thermodynamics 1(in Serbian), Thermodynamics, Belgrade, 1980.  |                       |                   |                          |
| <b>Number of active classes</b>  |                       |                   | Other forms of teaching: |
| Lectures: 20   | Practical classes: 60 | Research work:    |                          |
| <b>Teaching methods</b> Combined, interactive approach with practical problem solving.   |                       |                   |                          |
| <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-exam obligations</b>  | <b>points</b>         | <b>Final exam</b> | <b>points</b>            |
| activity during theoretical lectures   | <b>10</b>             | written exam      | <b>30</b>                |
| practical training   | <b>10</b>             | oral exam         |                          |
| colloquium(s)/seminar papers   | <b>50</b>             |                   |                          |
| <b>Sum</b>   | <b>70</b>             | <b>Sum</b>        | <b>30</b>                |