## Schedule of Mathematical modelling of energy generation installations

| Laboratory | | Number of hours |
|---|---|---|
| La1 | Organizational matters. Introduction to the course. Presentation of the tools used. Thermodynamic model of a power installation. Initial analysis of the installation operation. | 4 |
| La2, La3 | Flow through an insulated pipe. CHT calculations, calculations of linear and local pressure losses, exergy losses. Influence of the numerical grid and simulation assumptions on the calculation results and cost. | 8 |
| La4 | Presentation of calculation results, data processing and report preparation. Creation and use of automatic scripts for working with data. | 4 |
| Laboratory 5 is the deadline for the report no. 1 from La1-La4 | | |
| La5, La6 | CFD calculation of the heat exchanger. Generation of the base geometry of the exchanger and discretization of its fragment. CFD calculations and presentation of results. Analysis of exergy losses. | 8 |
| La7 | Parameterization of exchanger dimensions. Optimization of the exchanger design in relation to the production of entropy. Report editing | 4 |
| Laboratory 8 is the deadline for the report no. 2 from La5-La7 | | |
| La8, La9 | Working medium pump CFD calculation. Generation of the basic pump geometry. Selection of the operating point. Geometry discretization, CFD calculations and presentation of results. CFX-turboGrid. | 8 |
| La10 | Pump geometry modifications. CFD calculations to find the optimal shape. Report editing. | 4 |
| Laboratory 11 is the deadline for the report no. 3 from La8-La10 | | |
| La11, La12 | CFD calculations for heater / cooler. Generation of geometry and its discretization. Numerical calculations taking into account radiation. Editing a report. | 8 |
| Laboratory 13 is the deadline for the report no. 4 from La11-La12 | | |
| La13, La14, La15 | CFD calculations of a turbine. Selection of the machine and its design parameters. Creation of geometry and its discretization. Numerical calculations and analysis of results. Report editing. | 12 |
| The last day of the semester is the deadline for the report no. 5 from La13-La15 | | |