Politechnika Krakowska
im. Tadeusza Kościuszki

FACULTY: ENVIRONMENTAL ENGINEERING AND ENERGY

COURSE TITLE: Power Plant Engineering

Number of contact hours: 60

Duration: 1 semester (fall / spring)

ECTS credits: 6

Programme description: This course comprises lectures, exercises, computer simulations and seminar. The main topics of the course are listed below:

- Introduction; thermodynamic cycle and heat engines
- Knowledge of different types of power plants, site selection criteria
- Coal based thermal power plants: Rankine cycle and its improvements, Layout of modern coal power plant, Super critical boilers, Steam condensers, Subsystems of thermal power plants – fuel and ash handling, draught system, feed water treatment
- Combined heat and power plants
- Gas turbine and combined cycle power plants: Components of power plants, Integrated gasifier based combined cycle systems.
- Air pollution by thermal power plants and its control; effect of different pollutants on human health
- Power from renewable energy sources: hydro power plants, geothermal and fuel cell power systems

Course type: lectures (15), computer simulations (15), seminar (15), exercises (15)

Literature:

1. Dimitrov A.V., *Introduction to Energy Technologies for Efficient Power Generation*, 1st Ed., CRC Press, Boca Raton 2017
2. Breeze P., Power Generation Technologies, 3rd Ed., Newnes 2019
3. El-Wakil. M.M., *Power Plant Technology*, McGraw – Hill Publishing Company, 2010
4. Cengel Y., Boles M., *Thermodynamics: An Engineering Approach*. 8th Ed., McGraw-Hill, New York 2015.by Yunus A., 2006

Assessment method: written assessment and report from computer simulation

Lecturer: Tomasz Sobota

Contact person: Tomasz Sobota (e-mail: tomasz.sobota@pk.edu.pl)