

Energy utilization of biomass and residues. The properties of biomass as a fuel and its energy upgrade. Biomass combustion systems (grate, fluidized bed, pulverized fuel, other technologies), Gasification (autothermal - allothermic) of solid biomass, biogas production and direct use or upgrade. Operation of decentralized thermal systems for biomass and other thermal renewable energy sources. Combined heat, power, cooling generation and multi-generation. CHP legislation. Economic evaluation of decentralized thermal systems. Small-scale energy storage systems. Utilization of waste heat from thermal processes, Industry.

- Laboratory exercises (Fluidized bed, Rankine Organic Cycle installation function),
- Semester project on thermodynamic development, selection of appropriate components (piping, pumps, expanders), design (alternator, frame and unit sizing) and financial evaluation of an integrated decentralized thermal system.