



# Gas Technology and Renewable Energy

Field of study: Mechanical Engineering



## Course summary:

### Semester 1

- Thermal Fluid Technology
- Thermodynamic Properties of Flammable Gases
- Management in Gas Industry
- Technical Thermodynamics
- Gas and Steam Turbines
- Gas Engines
- Environmental Protection Technologies
- Industrial Gas Technologies
- Materials Engineering
- Safety of Exploitation of Gas Fired Units
- Software Design and Modelling at Mechanical Engineering I

### Semester 2

- Renewable Energy: Geothermal, Sun and Wind Energy
- Biomass and Gasification process
- Gas Storage and its Transportation
- Thermal and Electric Energy Storage
- Construction of Gas Industry Facilities
- Software Design and Modelling at Mechanical Engineering II
- Control Systems of Gas and Energy Processes

### Semester 3

- Diploma Thesis
- Internship in Industry
- Energy Policy

## Programme description

The most important direction of energy development for in coming years in most of countries of the world this is the one considered to be based on a significant increase in natural gas consumption. Particularly in such countries as Poland, where 90% of electricity and 86% of heat is produced from the combustion of coal, increasing the use of natural gas is the most important economic activity for the next decades. From high-power engineering based on combined cycle gas turbine unit CCGT to the distributed cogeneration systems based on gas engines is the most important direction of development of energy, not only in Europe or Poland but other countries as well. Additionally power based on natural gas can efficiently be supported by renewable energy above all mostly: solar, wind and geothermal. Renewable energy sources are difficult to be used and expensive to operate, but in co-operation with natural gas technology are very, very promising.

Lectures, exercises and laboratories will be carry out by the staff associated with the PUT – Laboratory of Gas Technology (LTG) and also internships will be given in modern industry natural gas companies. A significant part of the lectures will be conducted by employees of a major international research institutions such as the Technical University of Munich, Institute of Geology and Geophysics in Potsdam-Germany, Spain, the Royal Institute of Technology at Stockholm. Lectures will also be conducted by outstanding employees with the best Polish academic centers.

Gas Technology Laboratory in Poznan University of Technology has well-equipped research facilities. In the LTG lab there are carried out gas technology processes for over 30 years. Faculty of the laboratory have years of experience in scientific and research centers in a very significant international-centers (the University of California, Gas Wärme Institute in Germany, the Royal Institut of Technology in Stockholm, National Laboratory in Switzerland). In the lab will be conducted laboratories, that would supplement lectures. Due to the very wide international cooperation with Polish and international natural gas companies the LTG is qualified for the good organization of studies in Gas Technologies and Renewable Energy.



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<b>University</b>	Poznan University of Technology Poznan, POLAND
<b>Degree to be obtained</b>	Master of Science
<b>Faculty</b>	Faculty of Machines and Transport
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<b>Programme web site</b>	<a href="https://www.put.poznan.pl/en">https://www.put.poznan.pl/en</a>
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<b>E-mail</b>	<a href="mailto:study@put.poznan.pl">study@put.poznan.pl</a>
<b>Language of instruction</b>	English
<b>Tuition, other fees applicable</b>	EU citizens: free of charge Non-EU citizens 1600 EUR first semester 1400 EUR each following semester
<b>ECTS points</b>	90
<b>Duration</b>	1,5 years (3 semesters)
<b>Programme begins</b>	end of February
<b>Programme ends</b>	end of June
<b>Deadline for application</b>	3 months before the course starts – end of November
<b>Education requirements</b>	English language – level B2 (Common European Framework), Bachelor's degree or its equivalent in engineering or applied sciences, with a qualification in mechanical engineering or heat engineering. Full list of the required documents is available <a href="https://www.put.poznan.pl/en">https://www.put.poznan.pl/en</a>
<b>Mode of instruction</b>	Lectures, classes, laboratory classes, projects, internships

