SUSTAINABLE ENERGY DEVELOPMENT
(3 ECTS) *Elective*

Responsible person:

dr inż. Artur Wyrwa

Learning outcomes:

The aim of the course is to give the students an enhanced understanding of the concept of Sustainable Energy Development.

After completion of the course students should be able to:

- Distinguish economic, social, and environmental aspects of development
- Determine the links between the energy use and environmental damage
- Assess external costs of different energy technologies
- Calculate the Indicators for Sustainable Development of a country in social, economic and environmental areas
- Analyse different energy scenarios it terms of their sustainability

Course main content:

The course is built of two parts:

Part 1: First part consists of 15 hours of lectures.

The lectures address the issues related to sustainable energy development presenting its definition, origin and importance for economic, social, and environmental elements of development. The existing energy patterns and global energy challenges such as depletion of fossil fuel resources, rising demand for primary and final energy, energy security, GHGs emissions and the role of renewable and alternative energy sources will be discussed. Indicators for Sustainable Development in social, economic and environmental areas will be presented.

Part 2: Project

The aim of the project is to assess whether development of selected countries is becoming more sustainable with the use Energy Indicators for Sustainable Development. Relevant indicators will address economic, social, and environmental aspects of development. The necessary calculus will be done based on data, mainly of World Bank, British Petroleum, EUROSTAT. The teaching material will be available at the following website: http://home.agh.edu.pl/~awyrwa

Admission requirements:

None

Literature:

J. Goldenberg, T.B. Johansson, A./K.N. Reddy, R.H.Williams, „Energy for a Sustainable World", Wiley Eastern Ltd, New Delhi, 1988

„Sustainable Energy Strategies, Materials for Decision-Makers", UNDP. Energy & Atmosphere Programme, N.Y. 2000

S. A. Roosa, "Sustainable Development Handbook", The Fairmont Press, 2008.

„Energy Indicators for Sustainable Development: Guidelines and Methodologies", IAEA, 2005

Assessment:

- Lecture: written final test
- Project: Evaluation of the paper versions and presentation of project
- Rules of final credit: The weighted average(30% paper version of the project, 40% presentation of the project, 30% final test)