COURSE TITLE	**ALTERNATIVE POWER SOURCES**
Institute/Division	Institute of Automobiles and Internal Combustion Engines / Faculty of Mechanical Engineering
Erasmus subject code	06.1
Number of contact hours	30
Course duration	1 semester
ETCS credits	2
Course description	Exploring of future energy sources. Directions of future clean coal technologies with coal gasification. Review of alternative energy sources in powering of vehicles. Renewable and fossil fuels in future power sources in a regard of decreasing of CO_2 and other substances. Characteristics of alternative fuels (natural gas, hydrogen, biofuels) in internal combustion engines. Non-conventional power sources: electric drive systems with control devices, present hybrid drive systems and their development in automotive industry, different kinds of fuel cells and their perspective in a future transportation and solar cells as a source of free energy. Fuelling of engines by CNG, LNG, LPG and hydrogen. The wind and sea water energy systems in different world areas. Determination of the future clean and friendly for environment power sources
Literature	Web-sites Advanced Vehicle System, Capstone, Chattanooga,2002 Alternative Fuel Data Center, http:/www.afdc.doe.gov Anderson H.K., Electric and Hybrid Vehicles: A 25-year Forecast. Automotive Engineering, No 2, 1996 Braess H., Hydrogen-The Fuel for Future Powertrain Technologies, BMW Group, Munich, 2001 Carracher P., Realistic Application of CNG Fuel in Commercial Road Vehicles, FISITA World Automotive Congress, Paris, 1998
Course type	Lectures, classes
Assessment	Final test
Prerequisites	Mechanical Engineering and Power Engineering Systems
Primary target group	3rd year Mechanical Engineering and Power Engineering students
Lecturer	DSc PhD Eng. Wladyslaw Mitianiec
Contact person	DSc PhD Eng. Wladyslaw Mitianiec, phone #: +48 12 628 3692, e-mail: wmitanie@usk.pk.edu.pl
Deadline for application	June 30 or November 30