UNIVERSITY
OF WARMIA AND MAZURY
IN OLSZTYN

Faculty of Environmental Management and Agriculture

Course title: BIOFUELS OF FIRST AND SECOND GENERATION

ECTS credit allocation (and other scores): 2.0

Semester: spring

Level of study: ISCED-7 - second-cycle programmes (EQF-7)

Branch of science: Agricultural sciences

Language: English

Number of hours per semester: 30

Course coordinator/ Department and e-mail: dr inż. Michał Krzyżaniak, Department of Plant Breeding and Seed Production, michal.krzyzaniak@uwm.edu.pl

Type of classes: classes and lectures

Substantive content

CLASSES: Biomass transformation technologies. Edible plants for I generation biofuels. Non-edible plants for 2nd generation fuels. Technologies for producing I and II generation biofuels. Alternative biofuels to petroleum fuels. Technology chains of biomass and biofuels production. Organisms used for the production of biofuels. Fuel cells and the principle of operation. I and II generation biofuels as factors for sustainable development.

LECTURES: Definitions of I and II generation biofules. Technologies for generation of I and II generation biofuels from biomass as alternative for petroleum derivatives. Estimation of the benefits that agriculture and the national economy can gain from the production of biofuels from non-edible crops. Biological conversion technologies and thermal conversion methods for biofuels. Types of fuel cells and their uses. Profits and risks with innovative technologies for the production and use of liquid biofuels.

Learning purpose: Possessing of knowledge about prospective technologies for the production and use of hydrocarbon fuels. Types of biofuels and technologies of their production. Get acquainted with issues related to the sustainable production and use of biofuels in the European Union and in the World.

On completion of the study programme the graduate will gain:

Knowledge: Student has deep knowledge on biofuel production from edible crops. Student has deep knowledge on biofuel production from non-edible crops.

Skills: The student is able to use his knowledge to use agricultural products and to propose suitable biofuel processing technology. The student is able to use his knowledge to determine the suitability of specific agricultural products for development for biofuel purposess.

Social Competencies: Student understands the effects of human activity and its impact on the environment.

Basic literature: Ciechanowicz W, Szczukowski S. 2007. Paliwa i generatory energii wspólnot wodorowych. Oficyna Wydawnicza WIT, Warszawa; Roehr M. 2001. Biotechnology of Ethanol. Wiley.

Supplementary literature: -

The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 1.24 ECTS points

Student's independent work: 0.76 ECTS points