

**DOCTORAL SCHOOL OF WROCLAW UNIVERSITY OF SCIENCE AND
TECHNOLOGY**

SUPERVISOR/TEAM/ DECLARING/CONDUCTING COURSE: prof. Janusz Trawczyński
DEPARTMENT: Chemical Department
SCIENTIFIC DISCIPLINE: Chemical Engineering

COURSE CARD

Course name in Polish: Technologie paliw i biopaliw
Course name in English: Technology of fuels and biofuels
Course language: Polish
The course is intended for all PhD students: YES / NO

- 1) BASIC COURSE**
2) ~~SPECIALIST COURSE~~
3) ~~SEMINAR~~
4) ~~HUMANISTIC COURSE~~
5) ~~LANGUAGE~~

Subject code: CIQ100098W

* delete as applicable

	Lecture	Foreign language course	Seminar	Mixed forms
Number of hours of organized classes in university (ZZU)	30			
Grading	Exam	Exam	Oral presentation	Exam, inspection, evaluation classes
Number of ECTS points	0			

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Basic knowledge of organic chemistry

COURSE OBJECTIVES

- C1 Familiarize students with conventional technologies of fuels production
 C2 Introduction to the issues of sustainable development in fuel technology
 C3 To acquaint students with technologies of renewable fuel production

PROGRAM CONTENTS

Form of classes – lecture (Lec)		Number of hours
Lec1	Sustainable development in fuels technologies	4
Lec2	Gasification of biomass and solid fuels	2
Lec3	Synthetic fuels: Fischer-Tropsch synthesis, Mobil process	2
Lec4	Oil refinery	2

DOCTORAL SCHOOL OF WROCLAW UNIVERSITY OF SCIENCE AND TECHNOLOGY

Lec5	Petroleum based fuels	8
Lec6	Biomass as an energy carrier	2
Lec7	Biofuels	6
Lec8	Natural gas and hydrogen	4
	Total hours:	30

Form of classes – foreign language course (Lng)		Number of hours
Lng1		
Lng2		
Lng3		
..		
	Total hours:	

Form of classes – seminar (Sem)		Number of hours
Sem1		
Sem2		
Sem3		
...		
	Total hours:	

Form of classes – mixed forms (mix)		Number of hours
Mix1		
Mix2		
Mix3		
...		
	Total hours	

TEACHING TOOLS USED
N1. Lecture with use of audiovisual means N2. Scientific discussion with students N3.

ACHIEVED SUBJECT LEARNING OUTCOMES		
Type of learning outcome	Code of learning outcome	Assessment of learning outcome
Knowledge	P8U_W	The student knows and understands the relationship between the requirements of sustainable development and the need for fuel production
Knowledge	P8S_WG	The student knows and understands the theoretical basis and practical solutions to the production of fuels from renewable and non-renewable raw materials

**DOCTORAL SCHOOL OF WROCLAW UNIVERSITY OF SCIENCE AND
TECHNOLOGY**

...		
Skills	P8S_UW	Student is able to competently analyze issues related to the production of fuels and problems related with it.
Skills		
...		
Social competence	P8S_KO	The student is ready to fulfill the social obligations of the researcher and creator in the field of fuel production and related risks to humanity and the environment
Social competence		
...		

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

- [1] J.G. Speight: The chemistry and technology of petroleum.
- [2] G.D. Hobson: Modern petroleum technology
- [3] M.A. Fahim, T.A. Al.-Sahhaf, A.S. Elkilanu: Fundamentals of petroleum refining.

SECONDARY LITERATURE:

- [1] E.W. Śmidowicz: Przeróbka destrukcyjna ropy naftowej i gazu.
- [2] T. Paryczak, A. Lewicki, M. Zaborski; Zielona Chemia
- [3] Bratt P. Haas: Ethanol Biofuel Production

SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

Prof. dr hab. inż. Janusz Trawczyński janusz.trawczynski@pwr.edu.pl