



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Operating fluids [N1MiBP1>ME]

Course

Field of study

Mechanical and Automotive Engineering

Year/Semester

2/4

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

polish

Form of study

part-time

Requirements

compulsory

Number of hours

Lecture

9

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

Number of credit points

1,00

Coordinators

prof. dr hab. inż. Wiesław Zwierzycki
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Lecturers

Prerequisites

KNOWLEDGE: Has basic knowledge of chemistry and general knowledge of the operation of the internal combustion engine and mechanical (industrial) devices. **SKILLS:** Can learn using various sources of information. **SOCIAL COMPETENCES:** the student is aware of the social and economic importance of environmental protection

Course objective

Getting to know the basics of construction, obtaining, ownership and use of automotive and industrial operating fluids

Course-related learning outcomes

Knowledge:

Has basic knowledge of tribological processes occurring in machines, i.e. friction, lubrication and wear. Has extended basic knowledge necessary to understand specialist subjects and specialist knowledge about the construction, construction methods, manufacturing and operation of a selected group of working, transport, thermal and flow machines covered by the diploma path. Has elementary knowledge of the life cycle of machinery, recycling of machine elements and

construction and consumables.

Skills:

Is ready to recognize the importance of knowledge in solving cognitive and practical problems and to consult experts in case of difficulties in solving the problem on his own.

Is ready to initiate actions for the public interest.

Is willing to think and act in an entrepreneurial manner.

Social competences:

Understands the impact of combustion of fuels and lubricants on the natural environment. Is aware of the importance of collecting and utilizing used lubricating oils.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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For discussion, ongoing preparation and activity in class. Written exam

Programme content

Structure and production of mineral and synthetic lubricating oils. Automotive lubricants (engine and transmission oils, plastic lubricants). Other automotive operating fluids (brake fluids, cooling system fluids, washer fluids). Motor fuels (distribution problems). Industrial operating fluids(machine, compressor, turbine, gear, hydraulic oils, etc.). Service aging of oils and working fluids (condition diagnostics). Operating fluids and the environment.

Teaching methods

1. Lecture: multimedia presentation.

Bibliography

Basic

1. Zwierzycki W.: Oleje, paliwa i smary dla motoryzacji i przemysłu, Wyd. ITeE, Radom 2001 (486 str.) - również serwer Biblioteki PP - materiały dydaktyczne on-line.

2. Zwierzycki W.: Płyny eksploatacyjne dla środków transportu drogowego. Charakterystyka funkcjonalna i ekologiczna. Wyd. Politechniki Poznańskiej, Poznań 2006 (333 str.)

Additional

1. Wiesław Zwierzycki, Płyny eksploatacyjne do środków transportu drogowego : charakterystyka funkcjonalna i ekologiczna, Wydawnictwo Politechniki Poznańskiej 2006

Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,00
Classes requiring direct contact with the teacher	9	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	16	0,50