Faculty of Transport Engineering

		S ⁻	TUDY MOI	DULE [DES	CRIPTION FORM			
Name of the module/subject Vehicle Internal Combustion Engines							Code 1010621251010620557		
Field of study Transport						Profile of study (general academic, practical) general academic		Year /Semester	
Elective path/specialty						Subject offered in:		Course (compulsory, elective	
Ecology of Transport						Polish		obligatory	
Cycle of study:					For	Form of study (full-time,part-time) full-time			
		t-cycle stu	uies			Tuli	-tiiii	T	
No. of h	•		4		ı			No. of credits	
Lectus	- 0.0	asses:	1 Laborate			Project/seminars:	- field\		
Status	of the course in the	other	(basic, major, on	ner)	(university-wide, from another	,	ity-wide	
Educati	on areas and fields		art			dilit	CIS	ECTS distribution (number	
								and %)	
techr	nical science	es						5 100%	
	culty of Machines	•	rt						
ul. F Prere	Piotrowo 3, 60-96	terms of k	nowledge,			ocial competencies		with mechanics and	
ul. F Prere	equisites in Knowledge	terms of k	nowledge, sometime that the state of solids	knowledg	e of m	-	miliai		
ul. F Prere	Piotrowo 3, 60-96	studer Studer Studer Studer Studer	nowledge, sometime that the state of solids	knowledg	e of m	nachine design and are fa	miliai		
ul. F Prere	cquisites in Knowledge Skills Social	sterms of k Studer dynam Studer Studer Studer	nowledge, so that's have basic nics of solids that's can apply the that's are aware of	knowledgeneir knowl	e of m	nachine design and are fa	miliai		
ul. F Prere	competend	studer Studer Studer Studer Studer Studer Studer	nowledge, sometis have basic nics of solids and apply the next are aware consistent of the consistency of th	knowledgeneir knowl of their car	edge eer d	to understand traction en	miliai		
ul. F Prere	Skills Social competence and engines design	Studer Studer Studer Studer Studer Studer Studer and the fund	nowledge, so the basic parts are aware control of their materials.	knowledgeneir kn	e of medge	to understand traction en	milia		
ul. F Prere 1 2 3 Assu Tractic	Skills Social competence and engines design	Studer Studer Studer Studer Studer Studer Studer and the fund	nowledge, so the basic parts are aware control of their materials.	knowledgeneir kn	e of medge	nachine design and are factor to understand traction enevelopment	milia		
ul. F Prere 1 2 3 Assu Tractic	Skills Social competence on engines designed wiedge: Study of wiedge:	Studer	nowledge, so this have basic nics of solids nots can apply the nots are aware control of their manner of their	knowledgeneir kn	edge eer d g unit	nachine design and are far to understand traction en evelopment s ucational results for	miliai gines		
ul. F Prere 1 2 3 Assu Tractic Knov 1. Stuc 2. Stuc	Skills Social competence on engines design Study of the s	student Studen	nowledge, so the basic nics of solids into an apply the new are aware of the control of their manner of their	knowledgeneir knowl of their car urse: ain workin ce to the awork and parameters	edge eer d g unit	to understand traction en evelopment s ucational results for gn (cycles and basic therr tracteristics) [K1A_W14	milian gines	rield of study	
ul. F Prere 1 2 3 Assu Tractic 1. Stuc 2. Stuc 3. Stuc	Requisites in Requisites Skills Social competent competent in Engines design in Engine Requisites in Requisites	Studer dynam Studer dynam Studer Studer dynam Studer studer studer dynam Studer studer dynam St	nowledge, so this have basic nics of solids onts can apply the sare aware control of their materials of the control of the contr	knowledgeneir knowl of their car urse: ain workin ce to the awork and arameters ngine syst	edge eer d g unit eedge l desiq	to understand traction en evelopment s ucational results for gn (cycles and basic thermal reacteristics) [K1A_W14, K14]	milian gines ra1 nodyn 1 11A_W	rield of study namic laws) [K1A_W13]	
ul. F Prere 1 2 3 Assu Tractic Knov 1. Stuc 2. Stuc 3. Stuc 4. Stuc 4. Stuc	Exercisive 3, 60-96 Exercisive in Exercisive	Studer dynam Studer dynam Studer Studer dynam Studer studer studer dynam Studer studer dynam St	nowledge, so this have basic nics of solids onts can apply the sare aware control of their materials of the control of the contr	knowledgeneir knowl of their car urse: ain workin ce to the awork and arameters ngine syst	edge eer d g unit eedge l desiq	to understand traction en evelopment s ucational results for gn (cycles and basic thermal reacteristics) [K1A_W14, K14]	milian gines ra1 nodyn 1 11A_W	rield of study	
Ul. F Prere 1 2 3 Assu Tractic Knov 1. Stuc 2. Stuc 3. Stuc 4. Stuc Skills	Skills Social competence on engines designed by ledge: dents have theored dents know how steents are familiants:	Student Studen	nowledge, so the have basic pairs of solids and apply the hats are aware control of their materials and reference and in engines engine work (punction of all enamometer and	knowledgeneir kn	e of medge eer d g unit e edi desiq	to understand traction en evelopment s ucational results for gracteristics) [K1A_W14 and units [K1A_W14, K g methods applied in eng	milian gines ra1 nodyn 1 11A_W	rield of study namic laws) [K1A_W13]	
UI. F Prere 1 2 3 Assu Tractic Knov 1. Stuc 2. Stuc 3. Stuc 4. Stuc Skills 1. Stuc	Exercisive 3, 60-96 Exercisive in Exercisive	Student Studen	nowledge, so this have basic nics of solids and apply the new are aware of the control of their manner of thei	knowledgeneir kn	e of medge eer d g unit e edi desiq	to understand traction en evelopment s ucational results for gracteristics) [K1A_W14 and units [K1A_W14, K g methods applied in eng	milian gines ra1 nodyn 1 11A_W	rield of study namic laws) [K1A_W13]	

- 4. Students are capable of carrying out engine tests including measurement and determining engine characteristics [K1A_U07]
- 5. Students can assess the engine quality and compare it with other sources of energy [K1A_U10]

Social competencies:

- 1. Students are aware of engine?s influences on the environment [K1A_K02]
- $2. \ Students \ can \ analyze \ and \ evaluate \ the \ suitability \ of \ an \ engine \ for \ particular \ power \ train \ \ [K1A_K06]$
- 3. Students are able to justify recommended specifications and conditions of use [K1A_K03]

Assessment methods of study outcomes

Written examination, assessment for laboratory tasks

Course description

Key words: pressure, work, power (theoretical, indicated, effective and friction); engine efficacy and fuel consumption

Cycles: theoretical, in real conditions, values of pressure as well as temperature at specific cycle points

Characteristics: full power, load, and general

The structure and operation of: cam- and crankshaft, cooling system, charging system, EGR, all parts of fuel system, pump-injectors, CR control system

Emission: directives for reducing emission, emission measurements, working conditions during measurement

Basic bibliography:

Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. Lectures	30
2. Laboratories	15
3. Revision, reporting	15
4. Preparation for lectures and laboratory classes	20
5. Consultations	4
6. Studying for exam, examination	15

Student's workload

Source of workload	hours	ECTS
Total workload	99	5
Contact hours	49	3
Practical activities	15	2