Załącznik nr 2 do uchwały nr 411 Senatu Politechniki Opolskiej z dnia 29.05.2024 r.

Załącznik nr 11 do Księgi Jakości Kształcenia

#### KARTA PROGRAMU STUDIÓW

#### Nazwa programu studiów Mechanical Engineering

#### Specjalności: przedmioty kierunkowe ogólne - KiOg Machine Design - MD Manufacturing Technology - MT

#### Nazwa wydziału Wydział Mechaniczny

-	
poziom studiów (I stopnia / II stopnia / jednolite studia magisterskie)	Studia pierwszego stopnia
profil studiów (ogólnoakademicki / praktyczny)	Ogólnoakademicki
forma studiów (stacjonarne / niestacjonarne)	Studia stacjonarne
program studiów obowiązuje od roku akademickiego	2024/2025
data i numer uchwały Senatu ustalającej program studiów	29.05.2024 Uchwała nr 411 Senatu Politechniki Opolskiej
data i numer uchwały Senatu ustalającej kierunkowe efekty uczenia się	29.05.2024 Uchwała nr 411 Senatu Politechniki Opolskiej
dyscyplina wiodąca (w ramach której będzie uzyskiwana ponad połowa efektów uczenia się) – podać udział procentowy	Inżynieria Mechaniczna - 100%
pozostałe dyscypliny – podać udział procentowy	
czas trwania studiów (w semestrach)	7 sem.
łączna liczba punktów ECTS (w tym praktyki)	KiOg - 178 MD - 32 MT - 32 Razem - 210
łączna liczba godzin w planie studiów (w tym praktyki)	KiOg - 2290 MD - 480    MT - 480 Razem - 2770

	1
wymiar (godzinowy) praktyk zawodowych, zasady i forma ich odbywania oraz liczba punktów ECTS, jaką student musi uzyskać w ramach tych praktyk (jeśli program studiów przewiduje praktyki)	KiOg - godziny 160 punkty ECTS 6 Zasady i formę odbywania praktyk określono w karcie opisu przedmiotu oraz w Regulaminie praktyk studenckich w Politechnice Opolskiej.
tytuł zawodowy otrzymywany przez absolwenta	Inżynier
klasyfikacja ISCED	0715
związek z misją i strategią rozwoju Politechniki Opolskiej	Kształcenie na danym kierunku łączy najlepsze tradycje myśli technicznej z zadaniami dnia dzisiejszego i wyzwaniem wobec szybkich przemian technologicznych współczesnego świata. W działalności edukacyjnej i naukowo-badawczej wydziału łączy to potrzebę kształtowania nowoczesnej myśli wobec przemian ekonomicznych i perspektyw gospodarczych kraju z tworzeniem wartości etycznych świata nauki i techniki. Wokół tego posłannictwa skupiają się nauczyciele i studenci, badacze oraz pracownicy administracji, jak również przedstawiciele otoczenia gospodarczego i społecznego szkoły. Do podstawowych składników tak postrzeganej misji należą: kształcenie, badania naukowe oraz służba społeczna. Sprzyja to integracji i rozwojowi nauki, a także stymuluje kreatywność oraz wzmacnia więzi społeczne z regionem.
wymagania wstępne – oczekiwane kompetencje kandydata (szczególnie w przypadku studiów drugiego stopnia)	Zainteresowania techniczne i matematyczne, ścisły umysł, nastawienie na poszukiwanie nowych rozwiązań technicznych i technologicznych. Kandydat powinien również posiadać umiejętność rozwiązywania problemów i być zorientowany na pracę w grupie. Poziom 4 PRK.
zasady rekrutacji (w tym: przedmioty kwalifikacyjne oraz ustalone dla nich współczynniki wagowe)	Podstawę przyjęcia na studia pierwszego stopnia stanowią wybrane wyniki egzaminu maturalnego (dojrzałości). Kryterium decydującym o przyjęciu na studia pierwszego stopnia jest wartość wskaźnika rankingowego obliczanego w oparciu o liczbę punktów uzyskanych za egzaminie maturalnym (dojrzałości), z przedmiotów kwalifikacyjnych wraz z ustalonymi dla nich współczynniki wagowe: chemia (waga:2) fizyka (waga:2) informatyka (waga:2) j. polski (waga:0,5) matematyka (waga:2) j. obcy (waga:0,5)
sposoby weryfikacji zakładanych efektów uczenia się	Wykaz egzaminów oraz zasady oceniania poszczególnych przedmiotów są zawarte w kartach opisu przedmiotów.

sumaryczne wskaźniki charakteryzujące program studiów, a w tym:	łączna liczba punktów ECTS, którą student uzyskuje w ramach zajęć z bezpośrednim udziałem nauczycieli akademickich lub innych osób prowadzących zajęcia	Specj. / ECTS kont. KiOg / 96 MD / 18 MT / 20
	łączna liczba punktów ECTS, którą student uzyskuje w ramach zajęć z zakresu nauk podstawowych, do których odnoszą się efekty uczenia się dla określonego programu studiów, poziomu i profilu studiów	KiOg - 23
	dla profilu praktycznego łączna liczba punktów ECTS przypisanych do zajęć związanych z praktycznym przygotowaniem zawodowym, dla profilu ogólnoakademickiego łączna liczba punktów ECTS przypisanych do zajęć związanych z prowadzonymi w uczelni badaniami naukowymi w dyscyplinie lub dyscyplinach, do których przyporządkowany jest kierunek studiów	KiOg - 86 MD - 24 MT - 26
	liczba punktów ECTS, którą student musi uzyskać w ramach zajęć z dziedziny nauk humanistycznych lub nauk społecznych	KiOg - 5
	w przypadku studiów stacjonarnych I stopnia lub jednolitych magisterskich liczba godzin zajęć z wychowania fizycznego	godziny 60
	liczba punktów ECTS objętych programem studiów uzyskiwana w ramach zajęć do wyboru	KiOg - 34 MD - 32 MT - 32

Program studiów zaopiniowany przez organ samorządu studenckiego.

#### Sylwetka absolwenta

#### Mechanical Engineering, Studia pierwszego stopnia, Studia stacjonarne, Machine Design Manufacturing Technology

#### Wiedza:

Absolwent ma pogłębioną wiedzę z matematyki umożliwiającą rozwiązywanie problemów w zakresie projektowania, wytwarzania i eksploatacji maszyn. Ma ugruntowaną wiedzę w zakresie mechaniki analitycznej i drgań. Ma pogłębioną, podbudowaną teoretycznie wiedzę o materiałach inżynierskich stosowanych w budowie maszyn, badaniu ich właściwości, doborze i trendach rozwojowych w tym zakresie. Ma pogłębioną wiedzę w zakresie modelowania i konstruowania maszyn z wykorzystaniem technik komputerowych. Absolwent ma pogłębioną wiedzę w zakresie technik wytwarzania. Ma ugruntowaną i pogłębioną wiedzę związaną z wybranymi zagadnieniami z zakresu funkcjonowania, budowy, obsługi, diagnozowania stanu technicznego, technologii napraw i bezpiecznego użytkowania maszyn i urządzeń. Ma pogłębioną wiedzę o cyklu życia urządzeń mechanicznych. Ma pogłębioną wiedzę niezbędną do rozumienia społecznych, ekonomicznych, prawnych, ekologicznych i innych pozatechnicznych uwarunkowań działalności inżynierskiej. Absolwent ma ugruntowaną wiedzę dotyczącą zarządzania w tym zarządzania jakością, logistyki i prowadzenia działalności gospodarczej. Ma ugruntowaną wiedzę w zakresie ochrony własności intelektualnej. Zna i rozumie w pogłębionym stopniu teorie i terminologie z zakresu języka obcego właściwą dla studiowanego kierunku, umożliwiającą posługiwanie się językiem obcym na poziomie B2 Europejskiego Systemu Opisu Kształcenia Językowego.

#### Umiejętności:

Absolwent sprawnie pozyskuje informacje z literatury, baz danych i innych źródeł, potrafi integrować uzyskane informacje, dokonywać ich interpretacji, a także wyciągać wnioski oraz formułować i uzasadniać opinie. Sprawnie porozumiewa się przy użyciu różnych technik w środowisku zawodowym oraz w innych środowiskach. Sprawnie posługuje się technikami informacyjno-komunikacyjnymi właściwymi do wykonywania zadań inżynierskich. Absolwent wykorzystuje do formułowania i rozwiązywania zadań inżynierskich, metody analityczne, symulacyjne oraz eksperymentalne. Ma dobre przygotowanie do pracy w środowisku przemysłowym oraz doskonale zna zasady bezpieczeństwa związane z tą pracą. Posiada doświadczenie w wykonywaniu analiz ekonomicznych podejmowanych działań inżynierskich. Absolwent krytycznie analizuje i ocenia sposoby funkcjonowania rozwiązań technicznych: urządzeń, obiektów, systemów, procesów i usług. Identyfikuje i opisuje problemy inżynierskie oraz potrafi je rozwiązywać i ulepszać. Ocenia przydatność i prawidłowo wybiera metody i narzędzia najlepiej nadające się do rozwiązywania zadań inżynierskich. Absolwent projektuje i usprawnia procesy, obiekty lub systemy niezbędne dla wykonywania zadań inżynierskich z uwzględnieniem aspektów pozatechnicznych. Potrafi formułować i testować hipotezy związane z problemami inżynierskimi i prostymi problemami badawczymi w budowie i eksploatacji maszyn. Potrafi ocenić przydatność i możliwość wykorzystania różnych technik i technologii w zakresie projektowania i wytwarzania maszyn i urządzeń. Absolwent ma

umiejętność samokształcenia się. Potrafi posługiwać się językiem obcym na poziomie B2 Europejskiego Systemu Opisu Kształcenia Językowego oraz w wyższym stopniu w zakresie specjalistycznej terminologii. Potrafi kierować grupą, inspirować jej działania oraz współpracować z innymi podmiotami.

#### Kompetencje społeczne:

Absolwent sprawnie pozyskuje informacje z literatury, baz danych i innych źródeł, potrafi integrować uzyskane informacje, dokonywać ich interpretacji, a także wyciągać wnioski oraz formułować i uzasadniać opinie. Sprawnie porozumiewa się przy użyciu różnych technik w środowisku zawodowym oraz w innych środowiskach. Sprawnie posługuje się technikami informacyjno-komunikacyjnymi właściwymi do wykonywania zadań inżynierskich. Absolwent wykorzystuje do formułowania i rozwiązywania zadań inżynierskich, metody analityczne, symulacyjne oraz eksperymentalne. Ma dobre przygotowanie do pracy w środowisku przemysłowym oraz doskonale zna zasady bezpieczeństwa związane z tą pracą. Posiada doświadczenie w wykonywaniu analiz ekonomicznych podejmowanych działań inżynierskich. Absolwent krytycznie analizuje i ocenia sposoby funkcjonowania rozwiązań technicznych: urządzeń, obiektów, systemów, procesów i usług. Identyfikuje i opisuje problemy inżynierskie oraz potrafi je rozwiązywać i ulepszać. Ocenia przydatność i prawidłowo wybiera metody i narzędzia najlepiej nadające się do rozwiązywania zadań inżynierskich. Absolwent projektuje i usprawnia procesy, obiekty lub systemy niezbędne dla wykonywania zadań inżynierskich z uwzględnieniem aspektów pozatechnicznych. Potrafi formułować i testować hipotezy związane z problemami inżynierskimi i prostymi problemami badawczymi w budowie i eksploatacji maszyn. Potrafi ocenić przydatność i możliwość wykorzystania różnych technik i technologii w zakresie projektowania i wytwarzania maszyn i urządzeń. Absolwent ma umiejętność samokształcenia się. Potrafi posługiwać się językiem obcym na poziomie B2 Europejskiego Systemu Opisu Kształcenia Językowego oraz w wyższym stopniu w zakresie specjalistycznej terminologii. Potrafi kierować grupą, inspirować jej działania oraz współpracować z innymi podmiotami.

#### Knowledge:

The graduate has in-depth knowledge of mathematics that enables solving problems in the design, manufacture and operation of machines. S/he has solid knowledge of analytical mechanics and vibration. The graduate has in-depth, theoretically underpinned knowledge of the engineering materials used in the construction of machines, testing of their properties, selection and development trends in this field. S/he has in-depth knowledge in the modelling and construction of machines using computer techniques. The graduate has in-depth knowledge of selected issues in the functioning, construction, maintenance, technical diagnostics, repair technology and safe use of machines and devices. The graduate has in-depth knowledge of the life cycle of mechanical devices. He or she has in-depth knowledge necessary to understand the social, economic, legal, ecological and other non-technical aspects of engineering activity. The graduate has solid knowledge of management, including quality management, logistics and business operations. S/he has solid knowledge of intellectual property protection. The graduate knows and has deep understanding of the foreign language theory and terminology appropriate for their studies, which makes it possible to use the foreign language at the B2

Skills:

The graduate skilfully obtains information from literature, databases and other sources and integrates the obtained information, interprets it, draws conclusions and formulates and justifies opinions. S/he skilfully communicates using different techniques in professional and other environments. S/he skilfully uses information and communication techniques appropriate for the performance of engineering tasks. The graduate uses analytical, simulation and experimental methods to formulate and solve engineering tasks, is well prepared for work in an industrial environment and has excellent knowledge of the safety rules associated with this work. The graduate has experience in performing economic analyses for undertaken engineering activities. The graduate critically analyses and evaluates the methods of operation of technical solutions, such as devices, facilities, systems, processes and services. S/he identifies and describes engineering issues and is able to solve and improve them. S/he evaluates suitably and appropriately chooses methods and tools that are best-suited to solve engineering tasks. The graduate designs and streamlines the processes, facilities or systems necessary to perform engineering tasks, taking into account non-technical aspects. S/he is able to formulate and test hypotheses related to engineering problems and simple research problems in machine construction and operation. Is able to assess the suitability and possibility of using various techniques and technologies in the design and manufacture of machines and devices. The graduate has self-study skills. The graduate is able to use a foreign language at the B2 level of the Common European Framework of Reference for Languages and at a higher level within the specialist terminology. The graduate is able to lead a group, inspire it and work with other actors.

#### Social competences:

The graduate is aware of the need to improve their specialist knowledge throughout life and is able to select the appropriate knowledge sources and learning methods for themselves and others. S/he understands the non-technical aspects of the engineer and manager's activity, including its social consequences and impact on the environment. The graduate is aware of the responsibility for decisions made as part of the engineering and managerial activity, especially in terms of their own and other peoples' safety and environmental protection. The graduate is aware of the importance of professional conduct, adherence to professional ethics and respecting the diversity of views. S/he is able to demonstrate entrepreneurship and ingenuity in the activity related to the implementation of professional tasks. The graduate understands the social role of an engineer and participates in the provision of reliable information and opinions on the development of technology and related hazards.

### Tabela kierunkowych efektów uczenia się

	unek studiów): <b>Mechanical Engineering</b> ia pierwszego stopnia oakademicki
symbol kierunkowych efektów uczenia się	efekty uczenia się (treść)
	Wiedza: zna i rozumie
ME_K1_W01	A student has knowledge of mathematics to the extent necessary for modelling and analysis of mechanical systems
ME_K1_W02	A student has knowledge of physics in the area needed to understand, describe and make use of physical phenomena in the design, manufacture and operation of mechanical systems
ME_K1_W03	A student has the knowledge of chemistry needed for the extensive understanding and description of phenomena occurring in the manufacture and operation of machine parts
ME_K1_W04	A student has advanced knowledge of the principles of engineering graphics and tools used in the preparation of technical documentation
ME_K1_W05	A student has specialist knowledge of strength analysis and the principles of design of mechanical structures and machine parts
ME_K1_W06	A student has knowledge of electrical engineering, electronics and automation that is appropriate for their studies
ME_K1_W07	A student has extensive knowledge related to selected issues in the construction, maintenance, technical diagnostics, repair technology and safe use of machinery
ME_K1_W08	A student has systematic knowledge of the manufacture and operation of mechanical machinery and devices
ME_K1_W09	A student has knowledge of metrology in the construction of machinery
ME_K1_W10	A student has advanced knowledge of engineering materials, their testing and development technology
ME_K1_W11	A student has knowledge of the life cycle of mechanical machinery and devices
ME_K1_W12	A student has the knowledge necessary to understand the social, economic, legal, ecological and other non-technical aspects of engineering activity
ME_K1_W13	A student has knowledge of management, logistics and business operation
ME_K1_W14	A student knows and understands the concepts and principles of industrial property protection and copyright law; is able to use patent information resources
ME_K1_W15	A student has knows and understands foreign language theory and terminology enough to use a foreign language at the B2 level of the Common European Framework of Reference for Languages

ME_K1_W16	A students has knows the principles of control systems in mechanical equipment and has knowledge of basic installations in mechanical engineering
	Umiejętności: potrafi
ME_K1_U01	A student is able to obtain information from literature, databases and other sources and integrate the obtained information, interpret it, draw conclusions and formulate and justify opinions
ME_K1_U02	A student has self-study skills
ME_K1_U03	A student is able to use a foreign language at the B2 level of the Common European Framework of Reference for Languages.
ME_K1_U04	A student is able to use information and communication techniques typical of the tasks in the area of design, manufacture and operation of machines
ME_K1_U05	A student is able to use analytical, simulation and experimental methods to formulate and solve engineering tasks
ME_K1_U06	A student has the necessary preparation to work in an industrial environment and knows the safety rules associated with this work
ME_K1_U07	A student is able to conduct a preliminary economic analysis of engineering activities undertaken in the field of machine design, manufacture and operation
ME_K1_U08	A student is able to conduct a critical analysis of functioning and evaluate the existing technical solutions, devices, facilities, systems, processes and services in the field of machine construction, manufacture and operation
ME_K1_U09	A student is able to design and construct a device, facility, system or process typical of the design, manufacture and operation of machinery, using appropriate methods, techniques and tools in accordance with the provided specification
ME_K1_U10	A student is able to communicate using different techniques in professional and other environments
	Kompetencje społeczne: jest gotów do
ME_K1_K01	A student is aware of the need to improve their knowledge throughout life and is able to select the appropriate learning methods for themselves and others
ME_K1_K02	A student understands the non-technical aspects of mechanic engineer's activity, including its social consequences and impact on the environment
ME_K1_K03	A student is aware of the responsibility for decisions made as part of the engineering activity, especially in terms of their own and other peoples' safety and environmental protection
ME_K1_K04	A student understands the importance of teamwork and is able to take responsibility for the results of joint activities
ME_K1_K05	A student is aware of the importance of professional conduct, adherence to professional ethics and respecting the diversity of views and cultures
ME_K1_K06	A student demonstrates entrepreneurship and ingenuity in the activity related to the implementation of professional tasks

	A student understands the social role of an engineer and
ME_K1_K07	participates in the provision of reliable information and opinions on
	the achievements of technology and its other aspects to the public

#### Objaśnienia

Symbol efektu tworzą:

- litera K - wyróżnik efektów kierunkowych,

- liczba 1 studia pierwszego stopnia,
- znak \_ (podkreślnik),

- litery W, U lub K – oznaczenie kategorii efektów (W – wiedza, U – umiejętności, K – kompetencje społeczne),

- 01, ... - numer efektu w obrębie danej kategorii, zapisany w postaci dwóch cyfr (numery 1-9 należy poprzedzić cyfrą 0).

#### Tabela odniesień efektów kierunkowych do charakterystyk drugiego stopnia Polskiej Ramy Kwalifikacji

program studiów (kierunek studiów): <b>Mechanical Engineering</b> poziom studiów: <b>Studia pierwszego stopnia</b> profil studiów: <b>Ogólnoakademicki</b>		
symbol kierunkowych efektów uczenia się	efekty uczenia się (treść)	kod składnika opisu
	Wiedza: zna i rozumie	
ME_K1_W01	A student has knowledge of mathematics to the extent necessary for modelling and analysis of mechanical systems	P6S_WG
ME_K1_W02	A student has knowledge of physics in the area needed to understand, describe and make use of physical phenomena in the design, manufacture and operation of mechanical systems	P6S_WG
ME_K1_W03	A student has the knowledge of chemistry needed for the extensive understanding and description of phenomena occurring in the manufacture and operation of machine parts	P6S_WG
ME_K1_W04	A student has advanced knowledge of the principles of engineering graphics and tools used in the preparation of technical documentation	P6S_WG
ME_K1_W05	A student has specialist knowledge of strength analysis and the principles of design of mechanical structures and machine parts	P6S_WG
ME_K1_W06	A student has knowledge of electrical engineering, electronics and automation that is appropriate for their studies	P6S_WG
ME_K1_W07	A student has extensive knowledge related to selected issues in the construction, maintenance, technical diagnostics, repair technology and safe use of machinery	P6S_WG
ME_K1_W08	A student has systematic knowledge of the manufacture and operation of mechanical machinery and devices	P6S_WG
ME_K1_W09	A student has knowledge of metrology in the construction of machinery	P6S_WG
ME_K1_W10	A student has advanced knowledge of engineering materials, their testing and development technology	P6S_WG
ME_K1_W11	A student has knowledge of the life cycle of mechanical machinery and devices	P6S_WG
ME_K1_W12	A student has the knowledge necessary to understand the social, economic, legal, ecological and other non-technical aspects of engineering activity	P6S_WK1 P6S_WK2
ME_K1_W13	A student has knowledge of management, logistics and business operation	P6S_WK2 P6S_WK3
ME_K1_W14	A student knows and understands the concepts and principles of industrial property protection and copyright law; is able to use patent information resources	P6S_WK2

ME_K1_W15	A student has knows and understands foreign language theory and terminology enough to use a foreign language at the B2 level of the Common European Framework of Reference for Languages	P6S_WG
ME_K1_W16	A students has knows the principles of control systems in mechanical equipment and has knowledge of basic installations in mechanical engineering	P6S_WG
	Umiejętności: potrafi	
ME_K1_U01	A student is able to obtain information from literature, databases and other sources and integrate the obtained information, interpret it, draw conclusions and formulate and justify opinions	P6S_UK1 P6S_UW
ME_K1_U02	A student has self-study skills	P6S_UU
ME_K1_U03	A student is able to use a foreign language at the B2 level of the Common European Framework of Reference for Languages.	P6S_UK3
ME_K1_U04	A student is able to use information and communication techniques typical of the tasks in the area of design, manufacture and operation of machines	P6S_UK1 P6S_UW
ME_K1_U05	A student is able to use analytical, simulation and experimental methods to formulate and solve engineering tasks	P6S_UW
ME_K1_U06	A student has the necessary preparation to work in an industrial environment and knows the safety rules associated with this work	P6S_UO1 P6S_UW
ME_K1_U07	A student is able to conduct a preliminary economic analysis of engineering activities undertaken in the field of machine design, manufacture and operation	P6S_UW
ME_K1_U08	A student is able to conduct a critical analysis of functioning and evaluate the existing technical solutions, devices, facilities, systems, processes and services in the field of machine construction, manufacture and operation	P6S_UK1 P6S_UW
ME_K1_U09	A student is able to design and construct a device, facility, system or process typical of the design, manufacture and operation of machinery, using appropriate methods, techniques and tools in accordance with the provided specification	P6S_UW
ME_K1_U10	A student is able to communicate using different techniques in professional and other environments	P6S_UK1 P6S_UK2 P6S_UO2
	Kompetencje społeczne: jest gotów do	
ME_K1_K01	A student is aware of the need to improve their knowledge throughout life and is able to select the appropriate learning methods for themselves and others	P6S_KK2
ME_K1_K02	A student understands the non-technical aspects of mechanic engineer's activity, including its social consequences and impact on the environment	P6S_KO1
ME_K1_K03	A student is aware of the responsibility for decisions made as part of the engineering activity, especially in terms of their own and other peoples' safety and environmental protection	P6S_KK1 P6S_KK2 P6S_KO1

ME_K1_K04	A student understands the importance of teamwork and is able to take responsibility for the results of joint activities	P6S_KR
ME_K1_K05	A student is aware of the importance of professional conduct, adherence to professional ethics and respecting the diversity of views and cultures	P6S_KR
ME_K1_K06	A student demonstrates entrepreneurship and ingenuity in the activity related to the implementation of professional tasks	P6S_KO3
ME_K1_K07		P6S_KO1 P6S_KO2

Uniwersalne charakterystyki poziomu 6 Polskiej Ramy Kwalifikacji zostały uwzględnione

#### Tabela pokrycia charakterystyk drugiego stopnia Polskiej Ramy Kwalifikacji przez kierunkowe efekty uczenia się

	runek studiów): <b>Mechanical Engineering</b> dia pierwszego stopnia loakademicki	
kod składnika opisu	charakterystyki drugiego stopnia Polskiej Ramy Kwalifikacji	symbol kierunkowyc h efektów uczenia się
	Wiedza: zna i rozumie	•
P6S_WG	Zna i rozumie w zaawansowanym stopniu – wybrane fakty, obiekty i zjawiska oraz dotyczące ich metody i teorie wyjaśniające złożone zależności między nimi, stanowiące podstawową wiedzę ogólną z zakresu dyscyplin naukowych lub artystycznych tworzących podstawy teoretyczne oraz wybrane zagadnienia z zakresu wiedzy szczegółowej – właściwe dla programu studiów.	
P65_WK1	Zna i rozumie fundamentalne dylematy współczesnej cywilizacji.	ME_K1_W12
P6S_WK2	Zna i rozumie podstawowe ekonomiczne, prawne, etyczne i inne uwarunkowania różnych rodzajów działalności zawodowej związanej z kierunkiem studiów, w tym podstawowe pojęcia i zasady z zakresu ochrony własności przemysłowej i prawa autorskiego.	ME_K1_W12 ME_K1_W13 ME_K1_W14
P6S_WK3	Zna i rozumie podstawowe zasady tworzenia i rozwoju różnych form przedsiębiorczości.	ME_K1_W13
	Umiejętności: potrafi	
P6S_UK1	Potrafi komunikować się z otoczeniem z użyciem specjalistycznej terminologii.	ME_K1_U01 ME_K1_U04 ME_K1_U08 ME_K1_U10
P6S_UK2	Potrafi brać udział w debacie – przedstawiać i oceniać różne opinie i stanowiska oraz dyskutować o nich.	ME_K1_U10
P6S_UK3	Potrafi posługiwać się językiem obcym na poziomie B2 Europejskiego Systemu Opisu Kształcenia Językowego.	ME_K1_U03
P6S_UO1	Potrafi planować i organizować pracę indywidualną oraz w zespole.	ME_K1_U06
P65_UO2	Potrafi współdziałać z innymi osobami w ramach prac zespołowych (także o charakterze interdyscyplinarnym).	ME_K1_U10
P6S_UU	Potrafi samodzielnie planować i realizować własne uczenie się przez całe życie.	ME_K1_U02

P6S_UW	Potrafi wykorzystywać posiadaną wiedzę – formułować i rozwiązywać złożone i nietypowe problemy oraz wykonywać zadania w warunkach nie w pełni przewidywalnych przez: - właściwy dobór źródeł i informacji z nich pochodzących, dokonywanie oceny, krytycznej analizy i syntezy tych informacji, - dobór oraz stosowanie właściwych metod i narzędzi, w tym zaawansowanych technik informacyjno- komunikacyjnych.	ME_K1_U01 ME_K1_U04 ME_K1_U05 ME_K1_U06 ME_K1_U07 ME_K1_U08 ME_K1_U09
	Kompetencje społeczne: jest gotów do	
P6S_KK1	Jest gotów do krytycznej oceny posiadanej wiedzy i odbieranych treści.	ME_K1_K03
P6S_KK2	Jest gotów do uznawania znaczenia wiedzy w rozwiązywaniu problemów poznawczych i praktycznych oraz zasięgania opinii ekspertów w przypadku trudności z samodzielnym rozwiązaniem problemu.	ME_K1_K01 ME_K1_K03
P6S_KO1	Jest gotów do wypełniania zobowiązań społecznych, współorganizowania działalności na rzecz środowiska społecznego.	ME_K1_K02 ME_K1_K03 ME_K1_K07
P6S_KO2	Jest gotów do inicjowania działań na rzecz interesu publicznego.	ME_K1_K07
P6S_KO3	Jest gotów do myślenia i działania w sposób przedsiębiorczy.	ME_K1_K06
P6S_KR	Jest gotów do odpowiedzialnego pełnienia ról zawodowych, w tym: - przestrzegania zasad etyki zawodowej i wymagania tego od innych, - dbałości o dorobek i tradycje zawodu.	ME_K1_K04 ME_K1_K05

#### Tabela odniesień kierunkowych efektów uczenia się do uzyskania kompetencji inżynierskich Polskiej Ramy Kwalifikacji

program studiów (kierunek studiów): <b>Mechanical Engineering</b> poziom studiów: <b>Studia pierwszego stopnia</b> profil studiów: <b>Ogólnoakademicki</b>		
symbol kierunkowych efektów uczenia się	efekty uczenia się (treść)	kod składnika opisu
	Wiedza: zna i rozumie	
ME_K1_W01	A student has knowledge of mathematics to the extent necessary for modelling and analysis of mechanical systems	
ME_K1_W02	A student has knowledge of physics in the area needed to understand, describe and make use of physical phenomena in the design, manufacture and operation of mechanical systems	
ME_K1_W03	A student has the knowledge of chemistry needed for the extensive understanding and description of phenomena occurring in the manufacture and operation of machine parts	
ME_K1_W04	A student has advanced knowledge of the principles of engineering graphics and tools used in the preparation of technical documentation	
ME_K1_W05	A student has specialist knowledge of strength analysis and the principles of design of mechanical structures and machine parts	
ME_K1_W06	A student has knowledge of electrical engineering, electronics and automation that is appropriate for their studies	
ME_K1_W07	A student has extensive knowledge related to selected issues in the construction, maintenance, technical diagnostics, repair technology and safe use of machinery	
ME_K1_W08	A student has systematic knowledge of the manufacture and operation of mechanical machinery and devices	
ME_K1_W09	A student has knowledge of metrology in the construction of machinery	
ME_K1_W10	A student has advanced knowledge of engineering materials, their testing and development technology	
ME_K1_W11	A student has knowledge of the life cycle of mechanical machinery and devices	P6S_WG
ME_K1_W12	A student has the knowledge necessary to understand the social, economic, legal, ecological and other non-technical aspects of engineering activity	P6S_WK
ME_K1_W13	A student has knowledge of management, logistics and business operation	
ME_K1_W14	A student knows and understands the concepts and principles of industrial property protection and copyright law; is able to use patent information resources	

	-	
ME_K1_W15	A student has knows and understands foreign language theory and terminology enough to use a foreign language at the B2 level of the Common European Framework of Reference for Languages	
ME_K1_W16	A students has knows the principles of control systems in mechanical equipment and has knowledge of basic installations in mechanical engineering	
	Umiejętności: potrafi	
ME_K1_U01	A student is able to obtain information from literature, databases and other sources and integrate the obtained information, interpret it, draw conclusions and formulate and justify opinions	
ME_K1_U02	A student has self-study skills	
ME_K1_U03	A student is able to use a foreign language at the B2 level of the Common European Framework of Reference for Languages.	
ME_K1_U04	A student is able to use information and communication techniques typical of the tasks in the area of design, manufacture and operation of machines	
ME_K1_U05	A student is able to use analytical, simulation and experimental methods to formulate and solve engineering tasks	P6S_UW1 P6S_UW2
ME_K1_U06	A student has the necessary preparation to work in an industrial environment and knows the safety rules associated with this work	
ME_K1_U07	A student is able to conduct a preliminary economic analysis of engineering activities undertaken in the field of machine design, manufacture and operation	
ME_K1_U08	A student is able to conduct a critical analysis of functioning and evaluate the existing technical solutions, devices, facilities, systems, processes and services in the field of machine construction, manufacture and operation	P6S_UW3
ME_K1_U09	A student is able to design and construct a device, facility, system or process typical of the design, manufacture and operation of machinery, using appropriate methods, techniques and tools in accordance with the provided specification	P6S_UW4
ME_K1_U10	A student is able to communicate using different techniques in professional and other environments	
	Kompetencje społeczne: jest gotów do	1
ME_K1_K01	A student is aware of the need to improve their knowledge throughout life and is able to select the appropriate learning methods for themselves and others	
ME_K1_K02	A student understands the non-technical aspects of mechanic engineer's activity, including its social consequences and impact on the environment	
ME_K1_K03	A student is aware of the responsibility for decisions made as part of the engineering activity, especially in terms of their own and other peoples' safety and environmental protection	
ME_K1_K04	A student understands the importance of teamwork and is able to take responsibility for the results of joint activities	
	· · ·	

ME_K1_K05	A student is aware of the importance of professional conduct, adherence to professional ethics and respecting the diversity of views and cultures	
ME_K1_K06	A student demonstrates entrepreneurship and ingenuity in the activity related to the implementation of professional tasks	
ME_K1_K07	A student understands the social role of an engineer and participates in the provision of reliable information and opinions on the achievements of technology and its other aspects to the public	

#### Tabela pokrycia kompetencji inżynierskich Polskiej Ramy Kwalifikacji przez kierunkowe efekty uczenia się

program studiów (kierunek studiów): <b>Mechanical Engineering</b> poziom studiów: <b>Studia pierwszego stopnia</b> profil studiów: <b>Ogólnoakademicki</b>						
kod składnika opisu	charakterystyki drugiego stopnia Polskiej Ramy Kwalifikacji	symbol kierunkowyc h efektów uczenia się				
	Wiedza: zna i rozumie	•				
P6S_WG	Zna i rozumie podstawowe procesy zachodzące w cyklu życia urządzeń, obiektów i systemów technicznych.	ME_K1_W11				
P6S_WK	Zna i rozumie podstawowe zasady tworzenia i rozwoju różnych form indywidualnej przedsiębiorczości.	ME_K1_W12				
	Umiejętności: potrafi	-				
P6S_UW1	Potrafi planować i przeprowadzać eksperymenty, w tym pomiary i symulacje komputerowe, interpretować uzyskane wyniki i wyciągać wnioski.	ME_K1_U05				
P6S_UW2	Potrafi przy identyfikacji i formułowaniu specyfikacji zadań inżynierskich oraz ich rozwiązywaniu: - wykorzystywać metody analityczne, symulacyjne i eksperymentalne, - dostrzegać ich aspekty systemowe i pozatechniczne, w tym aspekty etyczne, - dokonywać wstępnej oceny ekonomicznej proponowanych rozwiązań podejmowanych działań inżynierskich.	ME_K1_U05				
P6S_UW3	Potrafi dokonywać krytycznej analizy sposobu funkcjonowania istniejących rozwiązań technicznych i oceniać ich rozwiązania.	ME_K1_U08				
P6S_UW4	Potrafi projektować - zgodnie z zadaną specyfikacją - oraz wykonywać typowe dla kierunku studiów proste urządzenia, obiekty, systemy lub realizować procesy, używając odpowiednio dobranych metod, technik, narzędzi i materiałów.	ME_K1_U09				

Wydział Mechaniczny



Plan studiów Study plan

## Kierunek Studiów – Field of study

- MECHANICAL ENGINEERING

- MECHANIKA I BUDOWA MASZYN

Studia stacjonarne pierwszego stopnia - wg specjalności

First Cycle Programme – Full-Time Studies

#### CHARAKTERYSTYKA OGÓLNA

kierunek studiów: Mechanical Engineering

profil: Ogólnoakademicki

nazwa wydziału: Wydział Mechaniczny

nlan studiów	uchwała Senatu PO z dnia	nr 411 Senatu PO z dn.29.05.2024r.
plan studiów	obowiązuje od roku akademickiego	2024/2025
forma studiów (	(stacjonarne / niestacjonarne)	stacjonarne
poziom stud	liów (I stopnia / II stopnia)	I-go stopnia
czas	s trwania (w sem.)	7
tytuł zawodowy o	otrzymywany przez absolwenta	Inżynier
licz	ba punktów ECTS	210

#### PLAN STUDIÓW - STUDY PLAN

POLITECHNIKA OPOLSKA WYDZIAŁ MECHANICZNY	OPOLE UNIVERSITY OF TECHNOLOGY FACULTY OF MECHANICAL ENGINEERING						
Kierunek studiów:	Field of study:						
MECHANICAL ENGINEERING	MECHANIKA I BUDOWA MASZYN						
Studia Stacjonarne Pierws	szego Stopnia - Inżynierskie						
First Cycle Programme - Full-Time Studies (Engineer's degree)							

Specjalność - Specialization: Machine Design - Konstrukcje maszyn Manufacturing Technology - Technologie wytwarzania

	SEMESTR: 1 (1 <sup>st</sup> Semester)	Liczba godzin zajęć w semestrze; E - egzamin Working time (hours) a semester; E - Exam						
	Przedmiot			S	ECTS	TYP		
Nr	Subject unit - semester curricular	(Lectu re)	ical	(Labor atory classe s)	(Proje ct)	(Semi nar)		
1.1	Humanistic and social subject I Przedmiot humanistyczno-społeczny I	30	0	0	0	0	2.0	W-HS
1.2	Information technology in engineering Technologie informacyjne w inżynierii	30	0	30	0	0	4.0	к
1.3	Ergonomic and industrial safety Ergonomia i bezpieczeństwo pracy	15 0 0 0 0					1.0	к
1.4	Mechanical Engineering Introduction Wprowadzenie do inżynierii mechanicznej	15	0	15	0	0	3.0	к
1.5	Engineering graphics Grafika inżynierska	15	30	0	0	0	3.0	к
1.6	Fundamentals of materials science Podstawy nauki o materiałach	30	0	0	0	0	3.0	к
1.7	Fundamentals of electrical engineering Podstawy elektrotechniki	15	0	15	0	0	3.0	к
1.8	Technical metrology Metrologia techniczna	15E	15	0	0	0	3.0	к
1.9	Protection of invention property Ochrona własności intelektualnej	15	0	0	0	0	1.0	К
1.10	Mathematics I Matematyka I	(E)	60	0	0	0	4.0	Р
1.11	Mechanics I Mechanika ogólna I	15E	15	0	0	0	3.0	Р
Liczba goo semester)	dzin / ECTS w semestrze (Number of hours / ECTS in a	195	120	60	0	0	30	
Razem go	dzin w semestrze (Number of hours in a semester)				375			

	SEMESTR: 2 (2 <sup>nd</sup> Semester)	Workiı	E - ng time E	i zajęć - egzam (hours - Exan	iin ) a sem 1	ester;		
	Przedmiot	W	C	L	Р	S	ECTS	TYP
Nr	Subject unit - semester curricular	(Lectu re)	ical	(Labor atory classe s)	(Proje ct)	(Semi nar)		
2.1	Humanistic and social subject II Przedmiot humanistyczno-społeczny II	30	0	0	0	0	3.0	W-HS
2.2	Software engineering and data processing Inżynieria oprogramowania i przetwarzanie danych	15	0	30	0	0	3.0	к
2.3	General science of mechanics Maszynoznawstwo ogólne	30	0	0	0	0	3.0	к
2.4	Technologies and industrial apparatus Technologie i urządzenia przemysłowe	30	0	0	0	0	3.0	к
2.5	Technical drawing in practice Rysunek techniczny w praktyce	15	0	30	0	0	4.0	к
2.6	Material Engineering Inżynieria materiałowa	15E	0	30	0	0	3.0	к
2.7	Selected measuring techniques and systems Wybrane techniki i systemy pomiarowe	30E	0	30	0	0	4.0	к
2.8	Mathematics II Matematyka II	(E)	30	0	0	0	3.0	Р
2.9	Mechanics II Mechanika ogólna II	30E	30	0	0	0	4.0	Р
Liczba goo semester)	dzin / ECTS w semestrze (Number of hours / ECTS in a	195	60	120	0	0	30	
<mark>Razem go</mark>	dzin w semestrze (Number of hours in a semester)				375			
		Liczba godzin zajęć w semestrze; E - egzamin Working time (hours) a semester						
	SEMESTR: 3 (3 <sup>rd</sup> Semester)		E - ng time	egzam (hours	in ) a se <mark>r</mark> r			
	SEMESTR: 3 (3 <sup>rd</sup> Semester) Przedmiot		E - ng time	egzam	in ) a se <mark>r</mark> r		ECTS	ТҮР
Nr		Workii	E - ng time E C (Pract ical	egzam (hours - Exan L (Labor	nin ) a sem n P	nester; S	ECTS	ТҮР
<b>Nr</b> 3.1	Przedmiot	Workin W (Lectu	E - ng time E C (Pract ical classe	egzam (hours - Exan L (Labor atory classe	in ) a sem 1 P (Proje	s (Semi	ECTS	түр к
	Przedmiot Subject unit - semester curricular Differential and integral calculus	Workin W (Lectu re)	E - ng time E (Pract ical classe s)	egzam (hours - Exan L (Labor atory classe s)	in ) a sem 1 P (Proje ct)	s (Semi nar)	ECTS	
3.1	Przedmiot         Subject unit - semester curricular         Differential and integral calculus         Rachunek różniczkowy i całkowy         Strength of materials	Workin W (Lecture) 0	E - ng time E (Pract ical classe s) 30	egzam (hours - Exan L (Labor atory classe s) 0	in ) a sem ) P (Proje ct) 0	nester; S (Semi nar) 0	<b>ECTS</b> 3.0	к
3.1 3.2	Przedmiot         Subject unit - semester curricular         Differential and integral calculus         Rachunek różniczkowy i całkowy         Strength of materials         Wytrzymałość materiałów         Vehicle and machine propulsion         Napędy pojazdów i maszyn         Removal processes I         Obróbka ubytkowa I	Workin W (Lectu re)	E - ng time C (Pract ical classe s) 30 0	egzam (hours - Exan (Labor atory classe s) 0	hin ) a sem P (Proje ct) 0 0	sester; S (Semi nar) 0	ECTS 3.0 4.0	к К
3.1 3.2 3.3	Przedmiot         Subject unit - semester curricular         Differential and integral calculus         Rachunek różniczkowy i całkowy         Strength of materials         Wytrzymałość materiałów         Vehicle and machine propulsion         Napędy pojazdów i maszyn         Removal processes I         Obróbka ubytkowa I         Technical drawing and CAD I         Zapis konstrukcji z wykorzystaniem CAD I	Workin W (Lectu re) 0 45E 30E	E	egzam (hours - Exan (Labor atory classe s) 0 0 0 30	in ) a sem P (Proje ct) 0 0 0	ester; S (Semi nar) 0 0 0	ECTS 3.0 4.0 5.0	K K K
3.1 3.2 3.3 3.4	Przedmiot           Subject unit - semester curricular           Differential and integral calculus           Rachunek różniczkowy i całkowy           Strength of materials           Wytrzymałość materiałów           Vehicle and machine propulsion           Napędy pojazdów i maszyn           Removal processes I           Obróbka ubytkowa I           Technical drawing and CAD I           Zapis konstrukcji z wykorzystaniem CAD I           Selected chipless technologies           Wybrane technologie bezwiórowe	Workin W (Lectu re) 0 45E 30E 30E	E - g time C (Pract ical classe s) 30 0 0 0	egzam (hours - Exan (Labor atory classe s) 0 0 30 30	in ) a sem P (Proje ct) 0 0 0 0	ester; S (Semi nar) 0 0 0 0	ECTS 3.0 4.0 5.0 5.0	к к к
3.1 3.2 3.3 3.4 3.5	Przedmiot         Subject unit - semester curricular         Differential and integral calculus         Rachunek różniczkowy i całkowy         Strength of materials         Wytrzymałość materiałów         Vehicle and machine propulsion         Napędy pojazdów i maszyn         Removal processes I         Obróbka ubytkowa I         Technical drawing and CAD I         Zapis konstrukcji z wykorzystaniem CAD I         Selected chipless technologies         Wybrane technologie bezwiórowe         Construction documentation         Dokumentacja konstrukcyjna	Working           W           (Lecture)           0           45E           30E           30E	E	egzam (hours - Exan (Labor atory classe s) 0 0 0 30 30 30 30	in ) a sem P (Proje ct) 0 0 0 0 0	ester; S (Semi nar) 0 0 0 0 0 0	ECTS 3.0 4.0 5.0 3.0 3.0	к к к к
3.1 3.2 3.3 3.4 3.5 3.6	Przedmiot           Subject unit - semester curricular           Differential and integral calculus           Rachunek różniczkowy i całkowy           Strength of materials           Wytrzymałość materiałów           Vehicle and machine propulsion           Napędy pojazdów i maszyn           Removal processes I           Obróbka ubytkowa I           Technical drawing and CAD I           Zapis konstrukcji z wykorzystaniem CAD I           Selected chipless technologies           Wybrane technologie bezwiórowe           Construction documentation           Dokumentacja konstrukcyjna           Physical education           Wychowanie fizyczne	Working           W           (Lecture)           0           45E           30E           30E           15	E - g time E (Pract ical classe s) 30 0 0 0 0 0 0 0 0 0	egzam (hours - Exan (Labor atory classe s) 0 0 0 0 30 30 30 30 30	in ) a sem P (Proje ct) 0 0 0 0 0 0 0	ester; S (Semi nar) 0 0 0 0 0 0 0 0	ECTS 3.0 4.0 5.0 5.0 3.0 4.0	К К К К К
3.1 3.2 3.3 3.4 3.5 3.6 3.7	Przedmiot         Subject unit - semester curricular         Differential and integral calculus         Rachunek różniczkowy i całkowy         Strength of materials         Wytrzymałość materiałów         Vehicle and machine propulsion         Napędy pojazdów i maszyn         Removal processes I         Obróbka ubytkowa I         Technical drawing and CAD I         Zapis konstrukcji z wykorzystaniem CAD I         Selected chipless technologies         Wybrane technologie bezwiórowe         Construction documentation         Dokumentacja konstrukcyjna	Workin           W           (Lecture)           0           45E           30E           30E           15           15	E - g time C (Pract ical classe s) 30 0 0 0 0 0 0 0 0 0 0 0 0 0	egzam (hours - Exan (Labor atory classe s) 0 0 0 30 30 30 30 30 30 0	in ) a ser P (Proje ct) 0 0 0 0 0 0 0 0 0 0 30	ester; S (Semi nar) 0 0 0 0 0 0 0 0	ECTS 3.0 4.0 5.0 3.0 4.0 4.0 4.0	к к к к к

Liczba go semestei	odzin / ECTS w semestrze (Number of hours / ECTS in a r)	135	60	150	30	0	30			
Razem g	odzin w semestrze (Number of hours in a semester)				375					
	SEMESTR: 4 (4 <sup>th</sup> Semester)	Liczba godzin zajęć w semestrze; E - egzamin Working time (hours) a semester; E - Exam				E - egzamin Working time (hours) a seme		in ) a semester;		
	Przedmiot	W	C	L	Р	S	ECTS	TY		
Nr	Subject unit – semester curricular	(Lectu re)	ical	(Labor atory classe s)	(Proje ct)	(Semi nar)				
4.1	Engineering statistics Statystyka inżynierska	0	30	0	0	0	2.0	к		
4.2	Strength of materials in practice Wytrzymałość materiałów w praktyce	0	0	30	15	0	3.0	К		
4.3	Fundamentals of machine design Podstawy konstrukcji maszyn	45E	0	0	0	0	3.0	К		
4.4	Technological processes design Projektowanie procesów technologicznych	30E	0	0	30	0	4.0	к		
4.5	Technical drawing and CAD II Zapis konstrukcji z wykorzystaniem CAD II	0	0	30	0	0	2.0	к		
4.6	Removal processes II Obróbka ubytkowa II	30E	0	30	0	0	4.0	К		
4.7	Automatics and robotics Automatyka i robotyka	30	15	15	0	0	4.0	К		
4.8	Machinery damage Uszkodzenia maszyn	0	0	30	0	0	2.0	к		
4.9	Fluid thermomechanics I Termomechanika płynów I	15	15	30	0	0	4.0	Р		
4.10	Physical education Wychowanie fizyczne	0	30	0	0	0	0.0	W		
4.11	Foreign language Język obcy Foreign language	0	0	30	0	0	2.0	w		
iczba go	Język obcy odzin / ECTS w semestrze (Number of hours / ECTS in a									
semester		150	90	195	45	0	30			
Razem g	odzin w semestrze (Number of hours in a semester)				480					
	SEMESTR: 5 (5 <sup>th</sup> Semester)		E - ng time	n zajęć egzam (hours - Exan	in ) a se <mark>r</mark> r					
	Przedmiot	W	С	L	Р	S	ECTS	TYI		
Nr	Subject unit - semester curricular	(Lectu re)	ical	(Labor atory classe s)	(Proje	(Semi nar)				
5.1	Fundamentals of machine design in practice Podstawy konstrukcji maszyn w praktyce	0	0	30	0	0	2.0	К		
5.2	Finite element method Metoda elementów skończonych	30E	0	45	0	0	6.0	К		
5.3	Technical drawing and CAD III Zapis konstrukcji z wykorzystaniem CAD III	0	0	30	0	0	2.0	К		
5.4	Fluid thermomechanics II Termomechanika płynów II	15E	15	30	0	0	5.0	Р		

5.5         legyk obcy         0         0         30         0         0         2.0         W           5.6         Professional practice prattyka zawodowa         0         0         0         0         0.0         2.0         W           5.6         Professional practice prattyka zawodowa         0         0         0         0         0.0         2.0         W           Szem godzin w senestrze (Number of hours / ECTS in a seren godzin w senestrze (Number of hours / ECTS in a seren godzin w senestrze (Number of hours / ECTS in a seren godzin / ECTS w senestrze (Number of hours / ECTS in a seren godzin / ECTS w senestrze (Number of hours / ECTS in a seren godzin / ECTS w senestrze (Number of hours / ECTS in a seren godzin / ECTS w senestrze (Number of hours / ECTS in a seren godzin / ECTS w senestrze (Number of hours / ECTS in a seren godzin / ECTS w senestrze (Number of hours / ECTS in a seren godzin / ECTS w senestrze (Number of hours / ECTS in a seren godzin / ECTS w senestrze (Number of hours / ECTS in a seren godzin w senestrze (Number of hours / ECTS in a seren godzin w senestrze (Number of hours / ECTS in a seren godzin w senestrze (Number of hours / ECTS in a seren godzin w senestrze (Number of hours / ECTS in a seren godzin w senestrze (Number of hours / ECTS in a seren godzin w senestrze (Number of hours / ECTS in a seren godzin w senestrze (Number of hours / ECTS in a seren godzin w senestrze (Number of hours / ECTS in a seren godzin w senestrze (Number of hours / ECTS in a seren godzin w senestrze (Number of hours / ECTS in a seren godzin w senestrze (Number of hours / ECTS in a seren godzin w senestrze (Number of hours / ECTS in a seren godzin w senestrze (Number of hours / ECTS in a		Foreign language								
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3.5.         Practyle zawodowa         0         0         0         0         100         0         0.										
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5.1         Praca przejściowa - technologiczna         0         0         0         15         0         1.5         0         1.5         0         3.0         W-K           5.2         Systemy narzędziowe         15         0         15         0         30         0         0         3.0         W-K           5.3         Programming of cn machines Programowanie obrabiarek CNC         15         0         30         0         45         30         0         7           Nazem godzin / ECTS w semestrze (Number of hours / ECTS in a semester)         30         0         45         30         0         7           Nazem godzin w semestrze (Number of hours in a semester)         Icitzba godzin zajęć w semestrze; E - egramin- Working time (hours) a semestrze; (hours) a semestrze;         F		Specjalność – Specialization: Manufacturing Techno	ology - T	echnolo	gie wytv	varzania	3	-		
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6.4Advanced manufacturing techniques Zaawansowane techniki wytwarzania30015003.0K6.5Individual report - simulation work Praca przejściowa symulacyjna00004503.0K6.6Foreign language Język obcyForeign language Język obcy(E)030002.0W6.6Diploma work (Engineering project) Praca dyplomowa (projekt inżynierski)0000005.0WLiczba godzin / ECTS w semestrze (Number of hours / ECTS in a Semester)90010545152245	6.1	Przedmiot         Subject unit - semester curricular         Exploitation of vehicles and machinery         Eksploatacja pojazdów i maszyn         Techniques of welding	Workin W (Lectu re) 30E	E - ng time E (Pract ical classe s) 0	egzam (hours - Exan L (Labor atory classe s) 30	nin ) a sem ) P (Proje ct) 0	nester; S (Semi nar) 0	4.0	к	
6.5Individual report - simulation work Praca przejściowa symulacyjna0004503.0K6.6Foreign language Język obcy(E)030002.0W6.6Foreign language Język obcy(E)030002.0W6.7Diploma work (Engineering project) Praca dyplomowa (projekt inżynierski)000005.0Wiczba godzin / ECTS w semestrze (Number of hours / ECTS in a semester)900105451522	6.1 6.2	Przedmiot         Subject unit - semester curricular         Exploitation of vehicles and machinery         Eksploatacja pojazdów i maszyn         Techniques of welding         Techniki spajania materiałów         Diploma seminar I	Workir W (Lectu re) 30E 30	E - ng time C (Pract ical classe s) 0	egzam (hours - Exan L (Labor atory classe s) 30 30	nin ) a sem P (Proje ct) 0 0	sester; S (Semi nar) 0	4.0	к к	
Foreign language Język obcyForeign language Język obcy(E)030002.0W6.7Diploma work (Engineering project) Praca dyplomowa (projekt inżynierski)0000005.0WLiczba godzin / ECTS w semestrze (Number of hours / ECTS in a semester)900105451522	6.1 6.2 6.3	Przedmiot         Subject unit - semester curricular         Exploitation of vehicles and machinery         Eksploatacja pojazdów i maszyn         Techniques of welding         Techniki spajania materiałów         Diploma seminar I         Seminarium dyplomowe I         Advanced manufacturing techniques	Workir W (Lectu re) 30E 30 0	E - ng time E C (Pract ical classe s) 0 0 0	egzam (hours - Exan (Labor atory classe s) 30 30 30	in ) a sem P (Proje ct) 0 0 0	s (Semi nar) 0 0 15	4.0 4.0 1.0	K K K	
6.6       Język obcy       (E)       0       30       0       0       2.0       W         Foreign language Język obcy       Foreign language       0       0       0       0       0       2.0       W         6.7       Diploma work (Engineering project) Praca dyplomowa (projekt inżynierski)       0       0       0       0       0       5.0       W         Liczba godzin / ECTS w semestrze (Number of hours / ECTS in a semester)       90       0       105       45       15       22	6.1 6.2 6.3 6.4	Przedmiot         Subject unit - semester curricular         Exploitation of vehicles and machinery         Eksploatacja pojazdów i maszyn         Techniques of welding         Techniki spajania materiałów         Diploma seminar I         Seminarium dyplomowe I         Advanced manufacturing techniques         Zaawansowane techniki wytwarzania         Individual report - simulation work	Workir W (Lectu re) 30E 30 0 30	E - ng time E C (Pract ical classe s) 0 0 0	egzam (hours - Exan (Labor atory classe s) 30 30 30 15	in ) a sem P (Proje ct) 0 0 0 0	s (Semi nar) 0 0 15 0	4.0 4.0 1.0 3.0	к к к	
Foreign language Język obcyForeign language Język obcyImage: Comparison of the state of the s	6.1 6.2 6.3 6.4	Przedmiot         Subject unit - semester curricular         Exploitation of vehicles and machinery         Eksploatacja pojazdów i maszyn         Techniques of welding         Techniki spajania materiałów         Diploma seminar I         Seminarium dyplomowe I         Advanced manufacturing techniques         Zaawansowane techniki wytwarzania         Individual report - simulation work         Praca przejściowa symulacyjna	Workir W (Lectu re) 30E 30 0 30	E - ng time E C (Pract ical classe s) 0 0 0	egzam (hours - Exan (Labor atory classe s) 30 30 30 15	in ) a sem P (Proje ct) 0 0 0 0	s (Semi nar) 0 0 15 0	4.0 4.0 1.0 3.0	к к к	
Język obcy       Image: semester       Język obcy       Image: semester        Image: sem	6.1 6.2 6.3 6.4 6.5	Przedmiot         Subject unit - semester curricular         Exploitation of vehicles and machinery         Eksploatacja pojazdów i maszyn         Techniques of welding         Techniki spajania materiałów         Diploma seminar I         Seminarium dyplomowe I         Advanced manufacturing techniques         Zaawansowane techniki wytwarzania         Individual report - simulation work         Praca przejściowa symulacyjna         Foreign language	Workir W (Lectu re) 30E 30 0 30	E - ng time E C (Pract ical classe s) 0 0 0 0 0	egzam (hours - Exan (Labor atory classe s) 30 30 30 0 15 0	in ) a serr P (Proje ct) 0 0 0 0 0 45	sester; (Semi nar) 0 0 15 0 0 0	4.0 4.0 1.0 3.0 3.0	к к к	
6.7Praca dyplomowa (projekt inżynierski)000005.0WLiczba godzin / ECTS w semestrze (Number of hours / ECTS in a semester)900105451522	6.1 6.2 6.3 6.4 6.5	Przedmiot         Subject unit - semester curricular         Exploitation of vehicles and machinery         Eksploatacja pojazdów i maszyn         Techniques of welding         Techniki spajania materiałów         Diploma seminar I         Seminarium dyplomowe I         Advanced manufacturing techniques         Zaawansowane techniki wytwarzania         Individual report - simulation work         Praca przejściowa symulacyjna         Foreign language         Język obcy	Workir W (Lectu re) 30E 30 0 30 0	E - ng time E C (Pract ical classe s) 0 0 0 0 0	egzam (hours - Exan (Labor atory classe s) 30 30 30 0 15 0	in ) a serr P (Proje ct) 0 0 0 0 0 45	sester; (Semi nar) 0 0 15 0 0 0	4.0 4.0 1.0 3.0 3.0	к к к к	
semester) 90 0 105 45 15 22	6.1 6.2 6.3 6.4 6.5	Przedmiot         Subject unit - semester curricular         Exploitation of vehicles and machinery         Eksploatacja pojazdów i maszyn         Techniques of welding         Techniki spajania materiałów         Diploma seminar I         Seminarium dyplomowe I         Advanced manufacturing techniques         Zaawansowane techniki wytwarzania         Individual report - simulation work         Praca przejściowa symulacyjna         Foreign language         Język obcy         Foreign language	Workir W (Lectu re) 30E 30 0 30 0	E - ng time E C (Pract ical classe s) 0 0 0 0 0	egzam (hours - Exan (Labor atory classe s) 30 30 30 0 15 0	in ) a serr P (Proje ct) 0 0 0 0 0 45	sester; (Semi nar) 0 0 15 0 0 0	4.0 4.0 1.0 3.0 3.0	к к к к	
Razem godzin w semestrze (Number of hours in a semester) 255	6.1 6.2 6.3 6.4 6.5 6.6	Przedmiot         Subject unit - semester curricular         Exploitation of vehicles and machinery         Eksploatacja pojazdów i maszyn         Techniques of welding         Techniki spajania materiałów         Diploma seminar I         Seminarium dyplomowe I         Advanced manufacturing techniques         Zaawansowane techniki wytwarzania         Individual report - simulation work         Praca przejściowa symulacyjna         Foreign language         Język obcy         Diploma work (Engineering project)	Workir W (Lectu re) 30E 30 0 30 0 (E)	E - ng time E C (Pract ical classe s) 0 0 0 0 0 0	egzam (hours - Exan (Labor atory classe s) 30 30 30 15 0 15 0 30	in ) a sem P (Proje ct) 0 0 0 0 45 0	ester; S (Semi nar) 0 0 15 0 0 0 0	4.0 4.0 1.0 3.0 2.0	K K K K W	
	6.1 6.2 6.3 6.4 6.5 6.6 6.7	Przedmiot         Subject unit - semester curricular         Exploitation of vehicles and machinery         Eksploatacja pojazdów i maszyn         Techniques of welding         Techniki spajania materiałów         Diploma seminar I         Seminarium dyplomowe I         Advanced manufacturing techniques         Zaawansowane techniki wytwarzania         Individual report - simulation work         Praca przejściowa symulacyjna         Foreign language         Język obcy         Diploma work (Engineering project)         Praca dyplomowa (projekt inżynierski)         dzin / ECTS w semestrze (Number of hours / ECTS in a	Workir W (Lectu re) 30E 30 0 30 0 (E) 0	E - g time E (Pract ical classe s) 0 0 0 0 0 0 0 0 0 0 0 0 0	egzam (hours - Exan (Labor atory classe s) 30 30 0 15 0 15 0 30 30	in ) a sem P (Proje ct) 0 0 0 0 45 0 45	S         (Semi nar)         0         0         15         0	4.0 4.0 1.0 3.0 3.0 2.0 5.0	K K K K W	

	Specjalność – Specialization: Machine Desic	an - Kon	strukcie	maszvn	ľ			
6.1	Individual report - structural work	1				_	2.0	W K
6.1	Praca przejściowa - konstrukcyjna	0	0	0	30	0	2.0	W-K
6.2	Computational engineering Inżynieria obliczeniowa	15	0	30	0	0	3.0	W-K
6.3	CAM process design Projektowanie procesów CAM	15E	0	30	0	0	3.0	W-K
Liczba god semester)	Izin / ECTS w semestrze (Number of hours / ECTS in a	30	0	60	30	0	8	
Razem goo				120				
	Specjalność – Specialization: Manufacturing Techno	ology - T	echnolo	gie wytv	varzania	3		
6.1	Technological instrumentation Oprzyrządowanie technologiczne	30E	0	15	15	0	4.0	W-K
6.2	Fundamentals of programming in a CAM system Podstawy programowania w systemie CAM	15	0	0	15	0	2.0	W-K
6.3	Machine control techniques Techniki sterowania maszyn	15	0	0	15	0	2.0	W-K
Liczba god semester)	zin / ECTS w semestrze (Number of hours / ECTS in a	60	0	15	45	0	8	
Razem goo	dzin w semestrze (Number of hours in a semester)				120			
		Liczba		ı zajęć v		strze;		
	SEMESTR: 7 (7 <sup>th</sup> Semester)	Workir	n <mark>g time</mark>	egzam (hours	) a sen	nester;		
	Przedmiot	w	C	- Exan	ו P	S	ECTS	ТҮР
		••	-	Labor	-	5	LCIS	
Nr	Subject unit - semester curricular	(Lectu re)	ical		(Proje	(Semi nar)		
7.1	Exploitation of industrial apparatus Eksploatacja aparatury przemysłowej	0	0	0	30	0	2.0	К
7.2	Diploma seminar II Seminarium dyplomowe II	0	0	0	0	15	1.0	К
7.3	Diploma work (Engineering project) Praca dyplomowa (projekt inżynierski)	(E)	0	0	0	0	10.0	W
Liczba god semester)	zin / ECTS w semestrze (Number of hours / ECTS in a	0	0	0	30	15	13	
Razem goo	dzin w semestrze (Number of hours in a semester)				45			
	Specjalność – Specialization: Machine Desig	gn - Kon	strukcje	maszyn	1	-		
7.1	Construction of vehicles and machines Konstrukcje pojazdów i maszyn	30E	0	15	15	0	4.0	W-K
7.2	Rapid Manufacturing Techniques Techniki szybkiego wytwarzania	30	0	0	30	0	4.0	W-K
7.3	Diagnostics of machines and devices Diagnostyka maszyn i urządzeń	30E	0	30	0	0	4.0	W-K
7.4	Hydraulic and pneumatic drives and control Napędy i sterowanie hydrauliczne i pneumatyczne	30	0	30	15	0	5.0	W-K
	Izin / ECTS w semestrze (Number of hours / ECTS in a	120	0	75	60	0	17	
semester)	Razem godzin w semestrze (Number of hours in a semester)				255			
	Specjalność – Specialization: Manufacturing Techno	ology - T	echnolo	gie wytv	varzania	a 🛛		
		ology - T 30E	<mark>echnolo</mark> 15	<mark>gie wytv</mark> 15	varzania 0	0	4.0	W-K
Razem goo	Specjalność – Specialization: Manufacturing Techno Technology machinery and equipment repair				1		4.0 4.0	W-К W-К
Razem goo 7.1	Specjalność – Specialization: Manufacturing Techno Technology machinery and equipment repair Technologia napraw maszyn i urządzeń Bases of quality engineering	30E	15	15	0	0		

7.5 Fu	undamentals of coordinate metrology odstawy metrologii współrzędnościowej	0	30	0	0	3.0	W-K		
	n / ECTS w semestrze (Number of hours / ECT	15	60	75	0	17			
Razem godzi	n w semestrze (Number of hours in a semest			255					
	PLAN STUDIÓW RAZ	EM (TOTAL	STUD	Y PLAN	)				
S	Specjalność (Specialization)				kontakt : <mark>hours</mark>	owe		ECT	S
	Machine Design Konstrukcje maszyn			2770				21	D
	Manufacturing Technology Technologie wytwarzania			2770				21	D
	STATYSTYKA PF	ROGRAMU S	TUDIĆ	W			<u> </u>		
Тур	Przedmioty - p. ECTS r	azem			wg. pla	anu	ι	ıdział	
	Machine Design	Konstrukcj	e mas	zyn					
K	Kierunkowy				121		57	.62 %	b
Р	Podstawowy				23		10	10.95 %	
W	Wybieralny				23 1		10	10.95 %	
W-HS	Humanistyczny lub społeczny	, wybieraln	у		5			2.38 %	
W-K	Wybieralny kierunko	wy			32		15	5.24 %	D
W-PR	Praktyka				6		2	.86 %	
			Łącz	nie	210		1	00 %	
	Manufacturing Technolo	gy Technol	ogie w	ytwarz	zania				
К	Kierunkowy				121		57	<b>7.62</b> %	5
Р	Podstawowy				23		10	).95 %	5
W	Wybieralny				23		10	).95 %	5
W-HS	Humanistyczny lub społeczny	, wybieraln	у		5			.38 %	
W-K	Wybieralny kierunko	wy			32		15	5.24 %	0
W-PR	Praktyka				6		2	.86 %	
			Łącz	nie	210		1	00 %	
MECHAN Plan i pro	studiów dostosowany do kierunkowycl ICAL ENGINEERING (studia pierwszego ogram studiów: ony przez Sepat PO		czenia	się dl	a kieru	nku stı	udiów		

uchwalony przez Senat PO
zaopiniowany przez samorząd studencki.

Politechnika Opolska Wydział Mechaniczny Opole 2024 r.

# Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Course Description Card							
Field of study		Mechar	nical E	Enginee	ring		
Profile of Education General Academic							
Level of study First Cycle Studies							
Specialization							
Form of Study Full-Time Studies							
Semester Sixth							
Course Title		Advanc	ed m	anufact	uring techniques		
Nazwa przedm	niotu	Zaawai	ารอพส	ane tech	niki wytwarzania		
ECTS poir	nts	3			Subject type		К
Language of	lecture	angielsk i		Mode c	f completing the cours	e	Course credit
Course co	de	6	5.K.4		Subject related to scientific research/pract. profess. prepar. (Y/N)		Т
	Knowle	dge	1	Knows parts.	the basics of machine	constru	ction and machine
Preliminary requirements	Skills		1		to determine the effec acturing techniques.	t of usir	ng basic
of the course			2				
	Social		1	ls able	to analyze the tasks as	ssigned	to be carried out.
	Compe	tence	2		e of the responsibility and the responsibility and the responsibility and the responsibility and the response to the response	and con	sequences of
Course Goals classical meth					edge and gaining prac nents.	tical ski	lls on new, non-
classical methods of machining machine elements. Programme content Processing of the material in the hardened state. Polygonal turning. Practical application of RP in relation to shaping forms and tools. Explosive plating. Shape memory metals. Optimization of tool movement paths. Machine parts manufactured using powder metallurgy.							

Learning	οι	itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s		
Knowled ge	1	Has knowledge of unconventional techniques needed to understand and describe phenomena occurring in the production and operation of machine components	ME_K1_ W03	WL	СН		
	2						
Skills	Skills Is able to use analytical, simulation and experimental methods to formulate and solve advanced engineering tasks				СН		
	2						
Social Compet		Demonstrates entrepreneurship and ingenuity in activities related to the implementation of professional tasks	ME_K1_ K06	WL	СН		
ence	2						
Methods of verification of learning outcomes:							

Methods of verification of learning outcomes:

A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	30					
Calculation class (C)	0					
Laboratory class (L)	15	dr hab. inż. Niesłony Piotr				
Project (P)						
Seminar (S)	0					
		Student workload				
Types of student act	ivities*	Average number of hours* allocated on completed activities				
Lecture (W)		30				
Calculation class (C)		0				
Laboratory class (L)		15				
Project (P)		0				
Seminar (S)		0				
Preparation for class	es	10				
Preparation of a report project/presentation		10				

Independent study of the course topics	9
Examination or final colloquium	1
Additional contact hours	0
Total student workload	75
Number of contact hours (from the study plan)	45

\* hour (class) means 45 minutes

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Course Description Car	u						
Field of study	Mecha	Mechanical Engineering					
Profile of Education	Genera	General Academic					
Level of study	First Cy	cle Studies					
Specialization							
Form of Study	Full-Tir	ne Studies					
Semester	Fourth						
Course Title	Autom	Automatics and robotics					
Nazwa przedmiotu	Autom	Automatyka i robotyka					
ECTS points	4	Subject type			К		
Language of lecture	Language of lecture angielsk		of completing the cours	e	Course credit		
Course code		ł.K.7	Subject related to scientific research/pract. profess. prepar. (Y/N)		Т		

		1	Mathematical analysis (differentiation, integration, continuous and discrete signals; addition, convolution, multiplication of signals, fn modulo)
		2	Mechanics (statics and dynamics - balance of forces, kinematics and dynamics of point movement of the machine mechanism element; its acceleration and speed)
	Knowlodgo	3	Physics (properties of solids, gases and liquids - resistance to motion in a gaseous and liquid medium), Newton's laws of dynamics, friction, acceleration, speed
	Knowledge	4	Strength of materials (stresses, loads, permissible stresses, properties of Fe, Al alloys, plastics, rubber, allotropic transformations)
		5	Electrical engineering (application of Ohm's law, properties of passive electronic components, bipolar transistor, field- effect transistor, relay)
Preliminary requirements		6	Basics of machine construction (direct and indirect transmissions, dynamic and kinematic transmission, bearings, clutches, inertia
of the course		1	Differentiation and integration of continuous and discrete functions, multiplication and addition of signals/functions
		2	Calculation of stresses in the material, determination of permissible stresses, calculation of cross-sections and selection of construction materials. from strength conditions
	Skills	3	Preparing a balance of forces for a material point in translational motion. Calculation of a(t) and v(t) for a point in forced motion F(t)
		4	Calculation of voltage drops on passive components for DC systems, knowledge of the characteristics of the PMDC moto
		5	Correct use of supports, bearings, gears and drives in machines and vehicles in accordance with design and operational assumptions.
	Social	1	Ability to work in a team. Clear communication
	Social Competence	2	Formulating concise conclusions Analysis of human- machine interaction

Course Goals To familiarize students with the basics of automation and robotization of production. Discussion of the impact of automation and robotics systems on the design and operational characteristics of machines and devices Explaining the importance of robotic automation in industry in the context of quality, energy consumption, economy and production management.

Programme content Automation and robotics systems - basic functions, structures and operational goals. The role of control and program control for automation and robotics in the design of machines and devices. The impact of automation and robotics - on the quality of production, its energy consumption and economic indicators. The role of automation and robotics in ensuring production flexibility. Integration of systems within the enterprise.

Learning	οι	utcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s	
Knowled	1	S/he has knowledge related to selected issues in the field of machine construction, operation, and condition diagnosis technical, repair technology and safe use	ME_K1_ W06	WCL	ACH	
ge -		S/he has knowledge of development trends in the design, manufacture, construction and operation of machines	ME_K1_ W06	WCL	АСН	
Skills 1		S/he is able to use computer methods of mechanics when solving engineering tasks in the field of design, production and operation of machines	ME_K1_ U08	L	н	
	2					
Social Compet ence		S/he is aware of the responsibility associated with decisions made as part of engineering activities, especially in terms of the safety of oneself and other people	ME_K1_ K03	WCL	A C H	
	2					
Methods of verification of learning outcomes: A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, J-						

on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan						
The course format Hours/sem. (h)			Tutor (coordinator) of the course e/academic degree/professional title, name and surname			
Lecture (W)	30					
Calculation class (C)	15					
Laboratory class (L)	15	dr hab. inż.	r hab. inż. Brol Sebastian			
Project (P)	0					
Seminar (S)	0					
		Student w	orkload			
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			30			
Calculation class (C)			15			
Laboratory class (L)			15			
Project (P)			0			
Seminar (S)			0			

Preparation for classes	15
Preparation of a report/paper/ project/presentation	15
Independent study of the course topics	15
Examination or final colloquium	0
Additional contact hours	0
Total student workload	105
Number of contact hours (from the study plan)	60

\* hour (class) means 45 minutes

dr hab. inż. Augustynowicz Andrzej Head of the organizational unit (stamp/signature)

dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology

Faculty of Mechanical Engineering

Course Description Card							
· · ·							
Field of study	меспа	nical Enginee	ring				
Profile of Education	Genera	l Academic					
Level of study	First Cy	cle Studies/					
Specialization							
Form of Study	Full-Tir	ne Studies					
Semester	Third	Third					
Course Title	Constr	Construction documentation					
Nazwa przedmiotu	Dokum	Dokumentacja konstrukcyjna					
ECTS points	4		Subject type		К		
Language of lecture	angielsk i	Mode c	of completing the course	e Co	ourse credit		
Course code	3.K.7		Subject related to scientific research/pract. profess. prepar. (Y/N)		N		

		Knowledge	1	S/he has basic knowledge o metrology	f technica	al drawing	and			
Prelimina		Knowledge	2	S/he knows the principles of designing machine elements						
requirem			1	S/he has ability to use CAD engineering software						
of the co			2	S/he has ability to interpret	design as	sumptior	IS			
		Social	1	Correctly identifies dilemmas related to performing the profession						
		Competence	2							
Course G standard		s To familiarize stud	ents	s with geometric dimensionin	ng and to	lerancing				
				eometric tolerances and the selected machine units	principles	s of their	use.			
Learning	ou	tcomes for the course cyc		fter completing the training	The referenc e to the learning outcome s		Methods of verificati on of learning outcome s			
Knowled			he is able to interpret the markings contained in etchnical documentation			W	С			
ge	2									
Skills	1	S/he is able to prepar using computer meth		echnical documentation	ME_K1_ U09	Р	KL			
	2									
Social Compet			e is aware of the importance of professional duct and compliance with the principles of fessional ethics				CL			
ence 2										
A-written ex on partial ma assessment implemental	am, arks fron tion	of written answers, G-term n preparations for exercises, of the project, M-assessmen	ssme papei K-as: t of d	nt, D-oral assessment, E-based on par r, H-assessment from reports, I-assess sessment from the project implement efense of project, N-assessment of for s' activity, R-observation of the regula	sment from r ation, L-asse rm of presen	ealization of ssment of th	exercises, J- e written			

Hours in the study plan								
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname						
Lecture (W)	15							
Calculation class (C)	0							
Laboratory class (L)	0	dr hab. inż. Robak Grzegorz						
Project (P)	30							
Seminar (S)	0							
Student workload								

Types of student activities*	Average number of hours* allocated on completed activities
Lecture (W)	15
Calculation class (C)	0
Laboratory class (L)	0
Project (P)	30
Seminar (S)	0
Preparation for classes	10
Preparation of a report/paper/ project/presentation	30
Independent study of the course topics	15
Examination or final colloquium	0
Additional contact hours	0
Total student workload	100
Number of contact hours (from the study plan)	45

\* hour (class) means 45 minutes

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card							
Field of study	Mecha	Mechanical Engineering					
Profile of Education	Genera	General Academic					
Level of study	First Cycle Studies						
Specialization							
Form of Study	Full-Time Studies						
Semester	Third	Third					
Course Title	Differe	Differential and integral calculus					
Nazwa przedmiotu	Rachur	Rachunek różniczkowy i całkowy					
ECTS points	3	Subject type			К		
Language of lecture	angielsk i	Mode c	of completing the course		Course credit		
Course code		3.K.1	Subject related to scientific research/pract. profess. prepar. (Y/N)		N		

		Knowledge	1	S/he has knowledge of basic mathematics issues: linear algebra, analytical geometry, geometry, elements of matrix calculus					
		2							
Preliminary requirements of the course		1	Ability to analyze and effectively solve tasks in the field of mathematics and physics.						
		2							
	Social	1	S/he is aware of the need to supplement specialist knowledge and is able to select appropriate sources of knowledge and teaching methods.						
		Competence	2	S/he is able to analyze and effectively carry out tasks in the field of mathematics and physics.					
Course Goals Familiarization with the differential and integral calculus of functions of one and many variables, familiarization with methods of formulating problems leading to differential equations, with particular emphasis on practical aspects in the area of solving these equations									
Programme content Differential and integral calculus of functions of one and many variables, ordinary differential equations - methods of solving									
Learning outcomes for the course - after completing the training cycle						Methods of verificati on of learning outcome s			
Knowled		S/he has general knowledge of differential and integral calculus C F G							
ge	2	S/he knows the principles and methods of solving problems leading to the use of derivatives and methods of solving WE_K1_W04 C F G							
Skille		Can see a mathematical problem and find an ME_K1_ C F G adequate method to solve it					F G		
Skills		S/he is able to find solutions to technical problems ME_K1_U09 C F G							
Social		S/he is able to present calculation results in a public ME_K1_ forum. C F				FG			
Compet ence 2 S/he is able to critica available sources.			ally	verify knowledge using	ME_K1_ K01	С	FG		
Methods of v	/erif	ication of learning outcom	es.			•			

Methods of verification of learning outcomes:

A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan

The course format	Hours/sem. (h)		Tutor (coordinator) of the course (title/academic degree/professional title, name and surname		
Lecture (W)	0				
Calculation class (C)30Laboratory class (L)0					
		dr hab. inż.	łr hab. inż. Lachowicz Cyprian		
Project (P)	0	•			
Seminar (S)	0				
Student workload					
Types of student activities*			Average number of hours* allocated on completed activities		
Lecture (W)			0		
Calculation class (C)			30		
Laboratory class (L)			0		
Project (P)			0		
Seminar (S)			0		
Preparation for classes			10		
Preparation of a report/paper/ project/presentation			20		
Independent study of the course topics			15		
Examination or final colloquium			0		
Additional contact hours			0		
Total student workload			75		
Number of contact hours (from the study plan)			30		
* hour (class) moons					

\* hour (class) means 45 minutes

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card				
Field of study	Mechanical Engineering			
Profile of Education	General Academic			
Level of study	First Cycle Studies			
Specialization				
Form of Study	Full-Time Studies			
Semester	Sixth			
Course Title	Diploma seminar I			

				rium	ium dyplomowe I					
ECTS points 1				Subject type			К			
Language of lecture angielsk				Mode o	of completing the cou	irse	Course credit			
Course code 6.			5.K.3		Subject related to scientific research/pract. profess. prepar. (Y/N	۱)	Ν			
Prelimir		Knowle	dge	1	materia	he basic methods, techniques, tools and s used to solve engineering problems.				
requirem of the co	nen	ts Skills		1 2 1	2 Is able to prepare a multimedia presentation					
		Social Compe	tence	2	ls able t	Can think creatively s able to use information and communication techniques to carry out typical engineering activities				
Course G	oal	s Present	tation of t	ne pi	rinciples	of preparing an engi	neering d	iploma th	esis.	
						scopes of engineering ma thesis.	g works. E	Discussior	n of the	
Learning	ou	tcomes fo		se - a rcle	after con	npleting the training	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s	
Knowled ge		simple en	gineering	task	s in the f	required to solve ïeld of construction, peration of	ME_K1_ W07	S	NO	
	2	Has know diploma tl	•	opyr	ight nece	essary to prepare a	ME_K1_ W14	S	NO	
Skills	1	Is able to	use variou	IS CO	ommunica	ation techniques	ME_K1_ U10	S	NO	
СШЛС	2	ls able to obtained f				e information	ME_K1_ U01	S	NO	
Social	1	ls aware c of a techn			-	aduate - engineer	ME_K1_ K07	S	NO	
Compet ence		Is aware of the importance and understands non- technical aspects and effects of engineering activities					ME_K1_ K02	S	NO	

Methods of verification of learning outcomes:

Hours in the study plan								
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname					
Lecture (W)	0							
Calculation class (C)	0							
Laboratory class (L)	0	dr hab. inż	. Robak Grzegorz					
Project (P)	0							
Seminar (S)	15							
		Student v	vorkload					
Types of student act	ivities*		Average number of hours* allocated on completed activities					
Lecture (W)			0					
Calculation class (C)			0					
Laboratory class (L)			0					
Project (P)			0					
Seminar (S)			15					
Preparation for class	es		0					
Preparation of a report project/presentation	ort/paper/		5					
Independent study o	f the course top	oics	5					
Examination or final	colloquium		0					
Additional contact he	ours		0					
Total student worklo	ad		25					
Number of contact h	ours (from the s	study plan)	15					
* hour (class) means	15 minutos							

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

## Opole University of Technology Faculty of Mechanical Engineering Course Description Card

course bescription curv	
Field of study	Mechanical Engineering
Profile of Education	General Academic
Level of study	First Cycle Studies
Specialization	
Form of Study	Full-Time Studies
Semester	Seventh

· · ·				na seminar II							
Nazwa pr	dmiotu	Semina	Seminarium dyplomowe II								
ECTS points 1						Subject type			<		
Langua	ge	of lecture	angielsk i		Mode o	of completing the cou	irse	Course	e credit		
Course code 7.			′.K.2		Subject related to scientific research/pract. profess. prepar. (Y/N	1)	N				
		Knowle	dge	1		s theoretically organ s included in the stud			edge of		
Prelimir requirem	nen	ts Skills		1	1 S/he is able to obtain information from various sources						
of the co	ours			1							
			Social Competence			<ul> <li>2 S/he is able to use information and communication techniques to carry out typical engineering activities</li> </ul>					
			-			e issues necessary to ng diploma exam	pass the	enginee	ring		
-		content diploma e	-	•	ics for th	ne diploma exam. An	alysis of t	he course	e of the		
Learning	ou	tcomes fo		se - a vcle	after con	npleting the training	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s		
Knowled ge	1	S/he knows the techniques and tools required to solve simple engineering tasks in the field of construction, manufacturing technology andME_K1 W07SN							NO		
		S/he has k prepare a				necessary to	ME_K1_ W14	S	NO		
Ckille		S/he is ab technique		ariou	us comm	nunication	ME_K1_ U10	S	NO		
Skills		S/he is ab obtained f				ly use information	ME_K1_ U01	S	NO		
Social		S/he is aw engineer				f a graduate - y	ME_K1_ K07	S	NO		
Compet ence	2	S/he is aware of the importance and understands non-technical aspects and effects of engineering activities					ME_K1_ K02	S	NO		

A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan									
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course le/academic degree/professional title, name and surname						
Lecture (W)	0								
Calculation class (C)	0								
Laboratory class (L)	0	dr hab. inż.	Robak Grzegorz						
Project (P)	0								
Seminar (S)	15								
		Student v	vorkload						
Types of student act	ivities*		Average number of hours* allocated on completed activities						
Lecture (W)			0						
Calculation class (C)			0						
Laboratory class (L)			0						
Project (P)			0						
Seminar (S)			15						
Preparation for class	es		0						
Preparation of a report project/presentation			5						
Independent study o	of the course top	oics	5						
Examination or final	colloquium		0						
Additional contact he	ours		0						
Total student worklo	ad		25						
Number of contact h	ours (from the	study plan)	15						

\* hour (class) means 45 minutes

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology

Faculty of Mechanical Engineering

Course Description Card

Field of study	Mechanical Engineering
Profile of Education	General Academic

Level of study	First C	First Cycle Studies						
Specialization		,						
Form of Study	Full-Tir	Full-Time Studies						
Semester		Sixth						
Course Title		Diplom	na w	vork	c (Engir	neering project)		
Nazwa przedm	iotu	Praca d	dyp	lom	nowa (p	orojekt inżynierski)		
ECTS poir	nts	5				Subject type		W
Language of	lecture	angielsk i			Mode c	of completing the cours	se	Course credit
Course co	6	6.W.2			Subject related to scientific research/pract. profess. prepar. (Y/N)		N	
	Knowledge			1	Gener subjec	ral knowledge acquired on previously completed cts		
				2	6			
Preliminary requirements	Skills			1	General skills acquired in previously completed subjects			
of the course			Ī	2				
	Social (	Competer	nce	1	General competences acquired in previously conducted subjects			
				2				
of obtaining co searching for s extensive repo	ompeten ource m orts desc presen	ices durin naterials a cribing the t the assu	ig s and e w ump	tud pro ork otio	ies. Te oper us carrieo ns, pur	se of the diploma thes aching the student the se of them. Teaching th d out. Teaching how to pose and methodology	methoo ne stude edit a t	dology of int to prepare echnical text, and
Programme co	ntent /	Analysis c	of th	ne t	opic of	an engineering diplom eveloping the concept a		

Programme content Analysis of the topic of an engineering diploma thesis. Collecting literature related to the topic of the work. Developing the concept and method of solving the engineering problem posed in the topic of the work, as well as developing a work implementation plan.

Learning	οι	Itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s
Knowled 1		He/She has the knowledge to prepare an engineering project in the field of construction and production technology of mechanical devices		Ρ	K R
ge	2	He/She has knowledge in the field of intellectual property protection and patent law	ME_K1_ W14	Р	K R
Skills	1	The graduate is able to analyze the engineering subject of the diploma thesis, as well as search for relevant literature items and subject them to a directional analysis	ME_K1_ U01	Р	K R
	2	He/She can analyze and evaluate the correctness of the proposed engineering solutions	ME_K1_ U08	Р	K R
Social	1	The graduate has and understands the need for continuous education	ME_K1_ K01	Р	K R
Compet - ence	2	He/She is aware of the importance of professional and ethical conduct in professional matters	ME_K1_ K05	Р	K R

Methods of verification of learning outcomes:

Hours in the study plan							
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	0						
Calculation class (C)	0						
Laboratory class (L)	0	dr hab. inż.	Kluger Krzysztof				
Project (P)	0						
Seminar (S)	0						
		Student w	vorkload				
Types of student act	ivities*		Average number of hours* allocated on completed activities				
Lecture (W)			0				
Calculation class (C)			0				
Laboratory class (L)			0				
Project (P)			0				
Seminar (S)			0				
Preparation for class	es		50				

Preparation of a report/paper/ project/presentation	9
Independent study of the course topics	65
Examination or final colloquium	1
Additional contact hours	0
Total student workload	125
Number of contact hours (from the study plan)	0

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Descrip	tion Ca	rd								
Field of study Mechani				chanical Engineering						
Profile of Educa	ation	Genera	General Academic							
Level of study		First C	First Cycle Studies							
Specialization										
Form of Study		Full-Tir	Full-Time Studies							
Semester		Sevent	h							
Course Title		Diplom	na w	/orł	k (Engir	neering project)				
Nazwa przedm	iotu	Praca d	dypl	lom	nowa (p	orojekt inżynierski)				
ECTS poir	nts	10				Subject type		W		
Language of	Language of lecture a				Mode c	f completing the course		Examination		
Course co	Course code			.1		Subject related to scientific research/pract. profess. prepar. (Y/N)	t. N			
	Knowle	dge	Ĭ	1	General knowledge acquired on previously completed subjects			iously completed		
				2						
Preliminary requirements	Skills			1	General skills acquired in previously completed subjects					
of the course			Ī	2						
	Social Competence		nce	1	General competences acquired in previously conducted subjects			eviously		
				2						

Course Goals Course Goals The main purpose of the diploma thesis is to check the degree of obtaining competences during studies. Teaching the student the methodology of searching for source materials and proper use of them. Teaching the student to prepare extensive reports describing the work carried out. Teaching how to edit a technical text, and in particular to present the assumptions, purpose and methodology of reaching a solution to the problem posed in the diploma thesis.

Programme content Solving the engineering problem posed in the topic of the diploma thesis and developing the obtained solution results and their critical analysis. Preparation of final conclusions.

Learning	οι	utcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s
Knowled <sup>1</sup>		He/ She has the knowledge to carry out the necessary strength calculations for an engineering project		Р	K R
ge	2	He/She uses the necessary knowledge to conduct economic analyzes of an engineering project	ME_K1_ W12	Р	KR
Skills	1	The graduate student is able to analyze the engineering subject of the diploma thesis, as well as search for relevant literature items and subject them to a directional analysis	ME_K1_ U01	Ρ	K R
	2	He/She can take into account economic aspects in the created engineering projects	ME_K1_ U07	Р	KR
Social	1	The graduate has and understands the need for continuous education.	ME_K1_ K01	Р	KR
Compet ence	2	He/She can transfer the acquired knowledge in the field of construction and operation of machines	ME_K1_ K07	Р	K R

Methods of verification of learning outcomes:

Hours in the study plan					
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname			
Lecture (W)	0				
Calculation class (C)	0				
Laboratory class (L)	0	dr hab. inż. Kluger Krzysztof			
Project (P)	0				
Seminar (S)	0				
Student workload					

Types of student activities*	Average number of hours* allocated on completed activities
Lecture (W)	0
Calculation class (C)	0
Laboratory class (L)	0
Project (P)	0
Seminar (S)	0
Preparation for classes	109
Preparation of a report/paper/ project/presentation	15
Independent study of the course topics	125
Examination or final colloquium	1
Additional contact hours	0
Total student workload	250
Number of contact hours (from the study plan)	0

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card							
Field of study	Mecha	Mechanical Engineering					
Profile of Education	Genera	al Academic					
Level of study	First Cy	cle Studies					
Specialization							
Form of Study	Full-Tir	ne Studies					
Semester	First						
Course Title	Engine	ering graphic	S				
Nazwa przedmiotu	Grafika	inżynierska					
ECTS points	3		Subject type		К		
Language of lecture	angielsk i	ielsk Mode of completing the course			Course credit		
Course code	]	L.K.4	Subject related to scientific research/pract. profess. prepar. (Y/N)		Ν		

	Knowledge	1	Has detailed knowledge of projection methods of spatial objects.
		2	Knows the drafting methods of relations between spatial objects.
Preliminary		1	Has the ability to graphically solve tasks from stereometry.
requirements of the course		2	Has a practical skill of aesthetic drawing with traditional methods
		3	Can use projections on the plane for the recording and reading of information about a spatial objects.
	Social	1	Understands the need to identify geometric objects
	Competence	2	Is able to describe relationships between spatial objects

Course Goals To familiarize students with the correct definition of the position of a point, line and complex shapes in three-dimensional space. Providing students with knowledge regarding the basics of standardization applicable in the engineering construction record. Students master the freehand sketch and the principles of projection according to the European method. Students will acquire the ability to dimension simple and complex engineering structures.

Programme content Types of technical drawings. Types and meaning of drawing lines, sheet formats, normalized drawing scale. Orthogonal projections, arrangement of projections on the drawing plane according to European and American method. Reduction of the number of projections by applying views, cross-sections, local cross-sections, auxiliary projections in engineering graphics. Basic principles of standardization used in technical drawing. Principles of dimensioning of projections of components, arrangement of dimensions. Tolerance of dimensions, shape and position. Determination of surface roughness. Simplifications in drawing of inseparable and disconnectable connections of machines components. Scope and examples of executive, assemblytive and montage drawings. Examples of industrial plant diagrams.

Learning	οι	itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s
	1	Has knowledge of methods for projecting complex spatial objects.	ME_K1_ W04	W C	C F I J P R
Knowled	2	Has knowledge of constructing projections of spatial objects on the drawing plane.	ME_K1_ W04	W C	C F I J P R
ae	3	Knows the necessary principles of engineering graphics and traditional tools used in the development of construction documentation	ME_K1_ W04	W C	C F I J P R
4		Knows the scope of standardization and requirements for construction documentation		W C	C F I J P R
	1	Has advanced spatial imagination.	ME_K1_ U07	W C	C F I J P R
Skills 2 3		Has practical ability to draw aesthetically using traditional methods.	ME_K1_ U04	W C	C F I J P R
		Is able to make a simple technical drawing of a machine element, mechanism and device using the principles of standardization and databases.	ME_K1_ U09	W C	C F I J P R
	1	Is able to record and transmit information about spatial objects.	ME_K1_ K03	W C	C F I J P R
Social	2	Understands the need to improve spatial imagination.	ME_K1_ K01	W C	C F I J P R
Compet – ence 3	3	Is aware of the importance and responsibility of actions.	ME_K1_ K02	W C	C F I J P R
	4	Able to cooperate and work in a group.	ME_K1_ K04	W C	C F I J P R
Methods of v	/eri	fication of learning outcomes:			

	Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname					
Lecture (W)	15						
Calculation class (C)	30						
Laboratory class (L)	0	dr inż. Böhm Michał					
Project (P)	0						
Seminar (S)	0						
Student workload							

Types of student activities*	Average number of hours* allocated on completed activities
Lecture (W)	15
Calculation class (C)	30
Laboratory class (L)	0
Project (P)	0
Seminar (S)	0
Preparation for classes	8
Preparation of a report/paper/ project/presentation	12
Independent study of the course topics	8
Examination or final colloquium	2
Additional contact hours	0
Total student workload	75
Number of contact hours (from the study plan)	45

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card							
Field of study	Mecha	Mechanical Engineering					
Profile of Education	Genera	al Academic					
Level of study	First Cy	ycle Studies					
Specialization							
Form of Study	Full-Tir	ne Studies					
Semester	Fourth						
Course Title	Engine	ering statistic	CS				
Nazwa przedmiotu	Statyst	yka inżyniers	ska				
ECTS points	2		Subject type		К		
Language of lecture	angielsk i	ngielsk Mode of completing the course			Course credit		
Course code	2	4.K.1	Subject related to scientific research/pract. profess. prepar. (Y/N)		N		

		Knowledge	1	knowledge of basic mathematics: algebra					
		Knowledge	2						
Preliminary	, Skills	1	Ability to analyze and effectively solve tasks in the field of mathematics and physics.						
requirem			2						
of the co		se Social	1	Is aware of the need to supplement specialist knowledge and is able to select appropriate sources of knowledge and teaching methods.					
		Competence	2	Be able to analyze and effect field of mathematics and phy		y out tasl	ks in the		
		s Familiarization wi technology	th t	he basics of probability theor	y and the	use of sta	atistical		
Program	ne	content Theory of	orok	bability. Statistics - building m	odels, rea	asoning			
Learning outcomes for the course - cycle				after completing the training	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s		
Knowled	d 1 Has general knowledge of engineering statistics					С	F G		
ge	2			d methods of solving use of statistical methods	ME_K1_ W01	С	F G		
Skille	1	Can see a mathema adequate method to		l problem and find an ve it	ME_K1_ U01	С	F G		
		s able to perform statistical analysis of the obtained research results			ME_K1_ U09	С	F G		
Compet 2 Is able t		•	lcul	ation results in a public	ME_K1_ K06	С	F G		
		Is able to critically v sources.	erify	y knowledge using available	ME_K1_ K01	С	F G		
Methods of v	verif	ication of learning outcome	es:						

Hours in the study plan				
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname		

Lecture (W)	0						
Calculation class (C)	30		dr hab. inż. Lachowicz Cyprian				
Laboratory class (L)	0	dr hab. inż.					
Project (P)	0						
Seminar (S)	0	1					
		Student v	vorkload				
Types of student act	ivities*		Average number of hours* allocated on completed activities				
Lecture (W)			0				
Calculation class (C)			30				
Laboratory class (L)			0				
Project (P)			0				
Seminar (S)			0				
Preparation for classes			5				
Preparation of a report project/presentation	ort/paper/		10				
Independent study o	f the course to	pics	5				
Examination or final	colloquium		0				
Additional contact ho	ours		0				
Total student worklo	ad		50				
Number of contact h	ours (from the	study plan)	30				

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card

course bescription ea	ä					
Field of study	Mecha	nical Engineering				
Profile of Education	Genera	al Academic				
Level of study	First C	ycle Studies				
Specialization						
Form of Study	Full-Tir	Full-Time Studies				
Semester	First	First				
Course Title	Ergono	Ergonomic and industrial safety				
Nazwa przedmiotu	Ergono	Ergonomia i bezpieczeństwo pracy				
ECTS points	1	Subject type	К			

Language of lecture i		angielsk i		Mode o	of completing the course		Course credit			
Course code		1.K.2			Subject related to scientific research/pract. profess. prepar. (Y/N	N				
		Knowle	dae	1	No req	No requirements				
			uge	2						
Durituriu				1	+	t is able to analyze t	•			
Prelimir requirem	ent	s		2		Student is able to acquire knowledge in the scope provided by the instructor				
of the co	urs	e Social		1	Studen knowle	t understands the ne dge	ed to lear	n and ac	cumulate	
			Competence			Student contributes to positive interaction with the environment				
Course G various a			n of the cl	lasses	s is to fa	miliarize students wi	th ergono	mic solut	ions in	
	am					ut ergonomics and it spaces, computer w				
Learning outcomes for the course - after completing the training et to the course (W, C, L, outcome cycle cy								verificati		
Knowled				-	•	omics and t workplaces	ME_K1_ W12	W	С	
ge	2									
Skills	1									
	2									
Social Compet	1	Student understands the impact of ergonomic solutions on the work environment					ME_K1_ K02	W	С	
ence	2									
	am, I	B-oral exam,	C-written as	sessme		assessment, E-based on pai sment from reports, I-assess				

on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan							
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname					

Lecture (W)	15				
Calculation class (C)	0				
Laboratory class (L)	0	dr inż. Łago	oda Agnieszka		
Project (P)	0				
Seminar (S)	0				
		Student v	vorkload		
Types of student act	ivities*		Average number of hours* allocated on completed activities		
Lecture (W)			15		
Calculation class (C)			0		
Laboratory class (L)			0		
Project (P)			0		
Seminar (S)			0		
Preparation for class	es		14		
Preparation of a report project/presentation	ort/paper/		0		
Independent study o	f the course to	pics	0		
Examination or final	colloquium		1		
Additional contact ho	ours		0		
Total student worklo	ad		30		
Number of contact h	ours (from the	study plan)	15		
*					

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card

Field of study	Mecha	nical Engineering						
Profile of Education	Genera	General Academic						
Level of study First Cycle Studies								
Specialization								
Form of Study	Full-Tir	Full-Time Studies						
Semester	Sevent	Seventh						
Course Title	Exploit	ation of industrial apparatus						
Nazwa przedmiotu	Eksplo	Eksploatacja aparatury przemysłowej						
ECTS points	2	Subject type	K					

Language of lecture			angielsk i		Mode of completing the course			ırse	Course credit	
Course code			-	7.K.1			Subject related to scientific research/pract. profess. prepar. (Y/N	N		
		Knowle	Knowledge		1	Has knowledge of industrial technology and equipment.				
Prelimir requirem	nen	ts Skills			2		ains information from literature and other sources ted to technical sciences.			sources
of the co	urs		Competer	ice	2		o work in a group. Ur n activities.	nderstand	s the imp	ortance
							e construction of ind	ustrial equ	uipment a	and
Programr ensure th	ne ie r	eliability a	The acqui and safety	red ' of	kn dev	owledg vices in	e allows for a system plementing technol ion.			
Learning outcomes for the course - after completing the training cycle C								verificati		
Knowled ge	1	Has specialist knowledge in the design of machine parts and mechanical structures required to understand the construction and operation of W05 P K L P mechanical devices.							K L P	
	2	Can lise a	nalytical	sim		ation an	id experimental	ME K1		
Skills	T	methods i						U05	Р	KLP
Social Compet	Т	Can take ı activities	responsib	esponsibility for the results of joint ME_K1_ K04 P K L					KLP	
ence Methods of v	2 /erif	ication of lear	rning outcom	es:						
			-		men	t, D-oral a	assessment, E-based on pa	rtial marks of	foral answer	s, F-based

A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan

The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname					
Lecture (W)	0							
Calculation class (C)	0							
Laboratory class (L)	0	dr hab. inż.	. Czernek Krystian					
Project (P)	30							
Seminar (S)	0							
Student workload								
Types of student act	ivities*		Average number of hours* allocated on completed activities					
Lecture (W)			0					
Calculation class (C)			0					
Laboratory class (L)			0					
Project (P)			30					
Seminar (S)			0					
Preparation for class	es		0					
Preparation of a report project/presentation			20					
Independent study o	f the course top	pics	0					
Examination or final	colloquium		0					
Additional contact he	ours		0					
Total student worklo	ad		50					
Number of contact h	ours (from the s	study plan)	30					
* hour (class) moons								

dr hab. inż. Hapanowicz Jerzy Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card							
Field of study	Mechanical Engineering						
Profile of Education	General Academic						
Level of study	First Cycle Studies						
Specialization							
Form of Study	Full-Time Studies						
Semester	Sixth						
Course Title	Exploitation of vehicles and machinery						

Nazwa pr	zedn	niotu	Eksploa	ata	cja pojazdo	ów i maszyn			
ECTS points			4	Subject type				К	
Langua	ge of	lecture	angielsk i	Mode of completing the cou			ırse	Examination	
Cour	rse co	ode	(	6.K.1		Subject related to scientific research/pract. profess. prepar. (Y/N	т		
		Knowle	dge	1	during the operation of machine elements.				
Prelimir requirem of the co	nents	Skills	Skills		S/he is able to obtain information from literature, databases and other sources, also in a foreign language; is able to integrate the obtained information and interpret it.				
		Social Competence		2	S/he is able to obtain information from literature, databases and other sources, also in a foreign language, is able to integrate the obtained information and interpret it.				
				2					
Course G Program			-			n terms of efficiency			
character models. F	ristics Princi Ict of	s of non- ples of n element	renewabl naintainin : design a	e ai Ig tl	nd renewa he level of	ble elements, compl reliability of facilitie of consumables on	ex systen s in the o	ns and rel peration p	iability process.
Learning outcomes for the course - after completing the training course learning (W, C, L, outcome S) (W, C, L, outcome S)								Methods of verificati on of learning outcome s	
Knowled ge		S/he has extended knowledge of the life cycle of ME_K1_ machines and mechanical devices. W07						W L	AI
90	2 S/	he is abl	e to inter	arat	e the infor	mation obtained			
Skills	1 in ju		t, draw co	grate the information obtained, onclusions and formulate and			ME_K1_ U08	L	I
	2	. ·							
Social Compet ence	1 m cc	S/he understands non-technical aspects of a mechanical engineer's activity, including social consequences and impact on the environment.ME_K1_ K05LI					I		
-	2								

Methods of verification of learning outcomes:

A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan									
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course le/academic degree/professional title, name and surname						
Lecture (W)	30								
Calculation class (C)	0								
Laboratory class (L)	30	dr inż. Praż	nowski Krzysztof						
Project (P)	0								
Seminar (S)	0								
Student workload									
Types of student act	ivities*		Average number of hours* allocated on completed activities						
Lecture (W)			30						
Calculation class (C)			0						
Laboratory class (L)			30						
Project (P)			0						
Seminar (S)			0						
Preparation for class	es		20						
Preparation of a report project/presentation			0						
Independent study o	of the course top	pics	20						
Examination or final	colloquium		0						
Additional contact he	ours		0						
Total student worklo	ad		100						
Number of contact h	ours (from the	study plan)	60						

\* hour (class) means 45 minutes

dr hab. inż. Augustynowicz Andrzej Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card

Field of study	Mechanical Engineering
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Profile of Educa	ation	Genera	General Academic					
Level of study		First Cy	First Cycle Studies					
Specialization								
Form of Study		Full-Tin	ne Studies					
Semester		Fifth						
Course Title		Finite e	element meth	nod				
Nazwa przedm	iotu	Metoda	a elementów	skończonych				
ECTS poir	nts	6		Subject type		К		
Language of	lecture	angielsk i	Mode	of completing the cours	e	Examination		
Course co	de	Ę	5.K.2	Subject related to scientific research/pract. profess. prepar. (Y/N)		Т		
	Knowle	dge		S/he has knowledge of machine design using computer technology.				
Preliminary requirements	Skills		Proficie 1 progran underta	Proficient in the use of computer methods and programmes useful for the engineering activities undertaken.				
of the course			2					
	Social Competence		1 through of know	S/he is aware of the need to supplement expertise throughout life and is able to select appropriate sources of knowledge and methods of learning for themselves and others.				
			2					
Course Goals To familiarise students with the technique of carrying out finite element calculations.								
Programme co	ntent l	inite eler	nent calculat	ions of mechanical eng	ineering	g problems.		

Learning	OL	itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s
Knowled	1	S/he has knowledge of structural modelling and calculation using FEM.	ME_K1_ W01	WL	ABI
ge	2				
Skills	1	S/he use computer methods and programmes that are useful for the engineering activities undertaken.	ME_K1_ U02	WL	ABI
	2				
Social Compet	1	S/he is able to comprehensively analyse and effectively carry out assigned tasks	ME_K1_ K05	WL	ABI
ence	2				

Methods of verification of learning outcomes:

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	30					
Calculation class (C)	0	prof. dr hab. inż. Niesłony Adam				
Laboratory class (L)	45					
Project (P)	0					
Seminar (S)	0					
Student workload						

Types of student activities*	Average number of hours* allocated on completed activities				
Lecture (W)	30				
Calculation class (C)	0				
Laboratory class (L)	45				
Project (P)	0				
Seminar (S)	0				
Preparation for classes	20				
Preparation of a report/paper/ project/presentation	20				
Independent study of the course topics	33				
Examination or final colloquium	2				
Additional contact hours	0				

Total student workload	150
Number of contact hours (from the study plan)	75

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature)

dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole Universit Faculty of Mecl Course Descrip	nanical l	Engineerir	ng					
Field of study		1	nical	Enginee	ring			
Profile of Educ	ation	General Academic						
Level of study	dy First Cycle Studies							
Specialization								
Form of Study		Full-Tin	ne S	tudies				
Semester		Fourth						
Course Title		Fluid th	erm	omechar	nics I			
Nazwa przedm	iotu	Termor	necł	nanika pł	ynów I			
ECTS poir	nts	4			Subject type		Р	
Language of	lecture	angielsk i		Mode of completing the course Co			Course credit	
Course code			.P.1	.P.1 Subject related to scientific N research/pract. profess. prepar. (Y/N)			Ν	
	Knowle	dao	1	1 Knowledge of basic laws of physics and mechanics.				
	KIIOWIE	uye	2	Familiar	ity with the basics of m	athema	atical analysis.	
Preliminary requirements	Skills		1	1 Ability to balance forces, moments of mass, momentum, and energy.				
of the course	of the course			Ability to	o solve simple integrals	ve simple integrals and algebraic equations.		
	Social		1	Ability to work both in a team and independently.				
Competence 2 Awareness of the significance of engineering actio					eering actions.			
Course Goals Understanding the physical properties of fluids. Learning the elements of fluid statics and dynamics. Acquiring skills in measuring selected thermo-fluid processes. Introduction to the fundamentals of thermodynamic processes.								

Programme content Physical properties of fluids. Elements of fluid statics, kinematics, and dynamics. Fundamentals of thermodynamic phenomena. Ideal gas. Heat transfer.

Learning	οι	Itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s
Knowled ge	1	S/he has knowledge in physics focused on concepts necessary for understanding, describing, and utilizing fluid mechanics in the design and manufacturing of various industrial patterns.	ME_K1_ W02	W C	С
	2	S/he has knowledge in the field of flow metrology.	ME_K1_ W09	L	ΗP
Skills	1	S/he has the ability for self-education and developing a research toolkit in the field of fluid mechanics.	ME_K1_ U02	WCL	CI
2		S/he can formulate and solve engineering, simulation, and experimental tasks.	ME_K1_ U05	L	СНІ
Social Compet ence	1	S/he is aware of the need for lifelong learning and can select appropriate learning methods for himself/herself and others.	ME_K1_ K01	WCL	Р
	2				

Methods of verification of learning outcomes:

Hours in the study plan					
The course format	course format Hours/sem. (h) Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	15				
Calculation class (C)	15				
Laboratory class (L)	30	dr inż. Bors	nż. Borsuk Grzegorz		
Project (P)	0				
Seminar (S)	0				
		Student w	vorkload		
Types of student act	ivities*		Average number of hours* allocated on completed activities		
Lecture (W)			15		
Calculation class (C)			15		
Laboratory class (L)			30		
Project (P)			0		
Seminar (S)			0		
Preparation for class	es		8		

Preparation of a report/paper/ project/presentation	15
Independent study of the course topics	15
Examination or final colloquium	2
Additional contact hours	0
Total student workload	100
Number of contact hours (from the study plan)	60

dr hab. inż. Kłosok-Bazan Iwona Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Courco Docorin	tion Ca	rd J	5					
Course Descrip								
Field of study		_	Mechanical Engineering					
Profile of Educ	ation	Genera	-		-			
Level of study		First Cycle Studies						
Specialization								
Form of Study		Full-Time Studies						
Semester		Fifth						
Course Title		Fluid th	erm	nom	nechar	nics II		
Nazwa przedm	niotu	Termor	necł	han	nika pł	ynów II		
ECTS poir	nts	5				Subject type		Р
Language of lecture angielsk				Mode of completing the course			Examination	
Course code 5.P			5.P.1	-		Subject related to scientific research/pract. profess. prepar. (Y/N)		Т
	Knowle	dge			Basic laws of statics, kinematics, fluid dynamics, and thermodynamic issues.			
				2				
Preliminary requirements of the course	Skills	kills			Practical use of the laws related to the movement of heat and mass.			
			[	2				
	Casial			1	Teamwork skills.			
	Social	Competen	ce :	2	Awareness of the importance of engineering activities.			
						nermal-flow issues: two-pha eat and flow issues.	ise motio	n, wear of elements

Programme content Subject content regarding complex thermal and flow issues. To familiarize the student with two-phase flows and practical cases of thermal-flow issues related to measurements and modeling.

Learning outcomes for the course - after completing the training cycle				Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s
Knowled ge	1	S/he has knowledge of mathematics, physics, chemistry, and thermodynamics, including knowledge necessary to model and analyze thermal and flow phenomena and systems.	ME_K1_ W02	WCL	A H J P R
	2				
Skills	1	The student can obtain information from literature, databases, and other sources, integrate the information obtained, interpret, and draw conclusions, and formulate and justify opinions.	ME_K1_ U01	WCL	A C H J P R
		S/he can analyze and evaluate existing technical solutions, devices, facilities, systems, and processes related to energy conversion.	ME_K1_ U08	WCL	A H J P R
Social Compet ence	1	S/he understands the role of an engineer as a person who is required to have proper knowledge of technical phenomena.	ME_K1_ K07	WCL	A H J P R
	2				

Methods of verification of learning outcomes:

Hours in the study plan						
The course format	Tutor (coordinator) of the course The course format Hours/sem. (h) (title/academic degree/professional title, name and surname					
Lecture (W)	15					
Calculation class (C)	15					
Laboratory class (L)	30	dr inż. Wydrych Jacek				
Project (P)	0					
Seminar (S)	0					
		Student workload				
Types of student act	ivities*	Average number of hours* allocated on completed activities				
Lecture (W)		15				
Calculation class (C)		15				

Laboratory class (L)	30
Project (P)	0
Seminar (S)	0
Preparation for classes	10
Preparation of a report/paper/ project/presentation	31
Independent study of the course topics	22
Examination or final colloquium	2
Additional contact hours	0
Total student workload	125
Number of contact hours (from the study plan)	60

dr hab. inż. Kłosok-Bazan Iwona Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Politechnika Opolska								
Wydział Mechaniczny								
Karta Opisu Przedmiotu								
Kierunek studiów	Mechai	nical Enginee	ring					
Profil kształcenia	Ogólno	akademicki						
Poziom studiów	Studia	pierwszego s	topnia					
Specjalność								
Forma studiów	Studia	Studia stacjonarne						
Semestr studiów	Trzeci	Trzeci						
Nazwa przedmiotu	Foreigr	Foreign language						
Subject Title	Język o	bcy						
Liczba punktów ECTS	2		Typ przedmiotu		W			
Język wykładowy	polski	polski Tryb zaliczenia przedmiotu (E/Z) Zaliczenie na ocenę						
Kod przedmiotu	Przedmiot powiązany z badaniami 3.W.2 naukowymi/ N prakt. przygot. zawodowym (T/N)				Ν			

	Wiedza		In accordance with the recommendations of PRK level 4.
		2	
Oczekiwania wstępne w zakresie	Umiejętności	1	In accordance with the recommendations of PRK level 4.
przedmiotu		2	
pillouniota	Kompetencje społeczne	1	In accordance with the recommendations of PRK level 4.
		2	

Cele przedmiotu: Development of the four basic language skills (speaking, reading, writing, and listening) as well as communicative skills and competencies at level A of the Common European Framework of Reference for Languages (CEFR).

Treści programowe zapewniające uzyskanie efektów uczenia się dla przedmiotu: The course provides the student with universal linguistic knowledge: vocabulary, phrases, and structures as well as intercultural knowledge necessary for establishing and maintaining communication with target language users according to level A of the Common European Framework of Reference for Languages (CEFR). The student develops the four basic language skills - listening, speaking, reading, and writing, and learns the basic grammar (declensions, conjugations, basic parts of speech, present, past, and future tenses) required at level A according to the CEFR, and acquires the skills of searching, using and selecting information from various sources - including the use of online dictionaries and translators as well as language learning applications.

Efekty	y u	czenia się dla przedmiotu - po zakończonym cyklu studiów	Odniesie nie do kierunko wych efektów uczenia się	Formy realizacj i (W, C, L, P, S)	Formy weryfika cji efektów uczenia się
Wiedza	1	A student knows and understands foreign language theory and terminology enough to use a foreign language at the B2 level of the Common European Framework of Reference for Languages	ME_K1_ W05	L	CEFP
	2				
Umiejęt –	1	A student has self-study skills	ME_K1_ U02	L	CEFP
	2	A student is able to use a foreign language at the B2 level of the Common European Framework of Reference for Languages.	ME_K1_ U03	L	CEFP
Kompet 1 encje		A student is aware of the need to improve their knowledge throughout life and is able to select the appropriate learning methods for themselves and others	ME_K1_ K01	L	Р
społeczn– e	2	A student understands the importance of teamwork and is able to take responsibility for the results of joint activities	ME_K1_ K04	L	Р
Formy wery	fika	cji efektów uczenia się:			

A-egzamin pisemny, B-egzamin ustny, C-zaliczenie pisemne, D-zaliczenie ustne, E-na podstawie ocen cząstkowych z odpowiedzi ustnych, F-na podstawie ocen cząstkowych z odpowiedzi pisemnych, G-praca kontrolna, H-ocena ze sprawozdań, I-ocena z przebiegu ćwiczeń, J-ocena z przygotowania do ćwiczeń, K-ocena z przebiegu realizacji projektu, Locena pisemnej realizacji projektu, M-ocena z obrony projektu, N-ocena formy prezentacji, O-ocena treści prezentacji, Pobserwacja aktywności na zajęciach, R-obserwacja systematyczności.

	Godziny w planie studiów						
Forma zajęć Liczba godzin zajęć w semestrze		Opiekun (koordynator) przedmiotu (tytuł/stopień naukowy/ tytuł zawodowy, imię i nazwisko)					
Wykład	0						
Ćwiczenia	0						
Laboratorium	30	dr Świerczewska Beata					
Projekt	0						
Seminarium	0						
Nakład pracy studenta							
Rodzaje zajęć	studenta*	Średnia liczba godzin* przeznaczonych na zrealizowane aktywności					
Wykład		0					
Ćwiczenia		0					
Laboratorium		30					
Projekt		0					
Seminarium		0					
Przygotowanie	e do zajęć	10					
Przygotowanie projektu/preze	e sprawozdania/referatu/ entacji	0					
Samodzielne	studiowanie tematyki zajęć	10					
Egzamin lub k	olokwium zaliczeniowe	0					
Dodatkowe go	odziny kontaktowe	0					
Łączny nakłac	l pracy studenta	50					
Liczba godzin	kontaktowych (z planu studiów)	30					
* and zina (lakevina) aznacza 45 minut							

\* godzina (lekcyjna) oznacza 45 minut

**dr Świerczewska Beata** Kierownik jednostki organizacyjnej/bezpośredni przełożony (pieczęć/podpis) dr inż. Wydrych Jacek Dziekan Wydziału (pieczęć/podpis)

Politechnika Opolska

Wydział Mechaniczny

Karta Opisu Przedmiotu

Kierunek studiów	Mechanical Engineering
Profil kształcenia	Ogólnoakademicki

Poziom studióv	N	Studia	Studia pierwszego stopnia					
Specjalność								
Forma studiów		Studia	Studia stacjonarne					
Semestr studio	ów	Czwart	Czwarty					
Nazwa przedm	iotu	Foreigr	Foreign language					
Subject Title		Język o	bcy					
Liczba punktó	w ECTS	2		Typ przedmiotu			W	
Język wykła	dowy	polski	Tryb za	liczenia przedmiotu	(E/2	Z)	Zaliczenie na ocenę	
Kod przedmiotu		4	I.W.2	Przedmiot powiąza z badaniami naukowymi/ prakt. przygot. zawodowym (T/N	laniami owymi/ przygot.		0	
Oczekiwania	Wiedza	edza						
wstępne w	Umiejęt	moćci			1			
zakresie	Unneję	liosci			2			
przedmiotu	Komnet	mpetencje społeczne			1			
	Kompe							
and listening)	as well a	as commu	unicative skill	basic language skills s and competencies ages (CEFR).				
European Framework of Reference for Languages (CEFR). Treści programowe zapewniające uzyskanie efektów uczenia się dla przedmiotu: The course provides the student with universal linguistic knowledge: vocabulary, phrases, and structures as well as intercultural knowledge necessary for establishing and maintaining communication with target language users according to level A of the Common European Framework of Reference for Languages (CEFR). The student develops the four basic language skills - listening, speaking, reading, and writing, and learns the basic grammar (declensions, conjugations, basic parts of speech, present, past, and future tenses) required at level A according to the CEFR, and acquires the skills of searching, using and selecting information from various sources - including the use of online dictionaries and translators as								

well as language learning applications.

Efekty	/ u	czenia się dla przedmiotu - po zakończonym cyklu studiów	Odniesie nie do kierunko wych efektów uczenia się	Formy realizacj i (W, C, L, P, S)	Formy weryfika cji efektów uczenia się
Wiedza	1	A student knows and understands foreign language theory and terminology enough to use a foreign language at the B2 level of the Common European Framework of Reference for Languages	ME_K1_ W15	L	CEFP
	2				
Umiejęt –	1	A student has self-study skills	ME_K1_ U02	L	CEFP
	2	A student is able to use a foreign language at the B2 level of the Common European Framework of Reference for Languages.		L	СЕГР
Kompet 1 encje		A student is aware of the need to improve their knowledge throughout life and is able to select the appropriate learning methods for themselves and others		L	Р
społeczn- e	2	A student understands the importance of teamwork and is able to take responsibility for the results of joint activities	ME_K1_ K04	L	Р
		cji efektów uczenia się: mny, B-egzamin ustny, C-zaliczenie pisemne, D-zaliczenie ustne, F-na p	odstawie oce	n cząstkowy	ch z

A-egzamin pisemny, B-egzamin ustny, C-zaliczenie pisemne, D-zaliczenie ustne, E-na podstawie ocen cząstkowych z odpowiedzi ustnych, F-na podstawie ocen cząstkowych z odpowiedzi pisemnych, G-praca kontrolna, H-ocena ze sprawozdań, I-ocena z przebiegu ćwiczeń, J-ocena z przygotowania do ćwiczeń, K-ocena z przebiegu realizacji projektu, Locena pisemnej realizacji projektu, M-ocena z obrony projektu, N-ocena formy prezentacji, O-ocena treści prezentacji, Pobserwacja aktywności na zajęciach, R-obserwacja systematyczności.

Godziny w planie studiów							
Forma zajęć	Liczba godzin zajęć w semestrze	Opiekun (koordynator) przedmiotu (tytuł/stopień naukowy/ tytuł zawodowy, imię i nazwisko)					
Wykład 0							
Ćwiczenia	0						
Laboratorium	30	dr Świerczewska Beata					
Projekt	0						
Seminarium	0						
	Nakład pra	cy studenta					
Rodzaje zajęć	studenta*	Średnia liczba godzin* przeznaczonych na zrealizowane aktywności					
Wykład		0					
Ćwiczenia		0					
Laboratorium		30					
Projekt		0					

Seminarium	0
Przygotowanie do zajęć	10
Przygotowanie sprawozdania/referatu/ projektu/prezentacji	0
Samodzielne studiowanie tematyki zajęć	10
Egzamin lub kolokwium zaliczeniowe	0
Dodatkowe godziny kontaktowe	0
Łączny nakład pracy studenta	50
Liczba godzin kontaktowych (z planu studiów)	30

\* godzina (lekcyjna) oznacza 45 minut

**dr Świerczewska Beata** Kierownik jednostki organizacyjnej/bezpośredni przełożony (pieczęć/podpis) dr inż. Wydrych Jacek Dziekan Wydziału (pieczęć/podpis)

## Opole University of Technology Faculty of Mechanical Engineering

Course Description Card								
Field of study	Mechai	Mechanical Engineering						
Profile of Education	Genera	I Academic						
Level of study	First Cy	cle Studies/						
Specialization								
Form of Study	Full-Tin	ne Studies						
Semester	Third	Third						
Course Title	Foreigr	Foreign language						
Nazwa przedmiotu	Język o	Język obcy						
ECTS points	2		Subject type	W				
Language of lecture	angielsk i	Mode o	of completing the course		Course credit			
Course code	3.W.2		Subject related to scientific research/pract. profess. prepar. (Y/N)		N			

		Knowledge	1	The student must have grammar and lexical knowledge at B2 level as defined by the Common European Framework of Reference for Languages.						
			2							
Prelimin requirem of the cou	ent	Skille	1	nmunication skills in the s defined by the Common ence for Languages.						
			2							
		Social Competence	1	The student can collaborate w different roles.	ith the gr	roup takir	ıg			
		Competence	2	The student understands the	need for s	self-study	•			
relevant t	o th	ne field of study, in	acc	age skills in the fields of scienc ordance with the requirement eference for Languages.			•			
Programme content In the course students acquire technical vocabulary in the area of Mechanical Engineering as well as the language of work environment (conducting meetings, concluding contracts, negotiations and conversations with partners and clients, giving presentations, solving problems and conflicts, arguing, presenting offers, analyzing job offers, preparing job applications – curriculum vitae, cover letter) . As part of the module, the student acquires real-world knowledge, develops four basic language skills - listening, speaking, reading and writing, and extends the ability to seek, use and select tinformation from different sources .The course is focused on active implementing technical and academic vocabulary with the view of students' future business and scientific careers.										
Learning outcomes for the course - after completing the training course learning (W, C, L, outcome P, S)						Methods of verificati on of learning outcome s				
Knowled ge	Ilanguage at Clevel of the Common European   W15						СЕГР			
	2									
	1	The student has se	f-st	udy skills.	ME_K1_ U02	L	CEFP			
Skills	2 e		t is able to use a foreign language at C Common European Framework of or Languages.			L	CEFP			

The student is aware of the need to improve their knowledge throughout life and is able to select the

appropriate learning methods for themselves and

The student understands the importance of 2 teamwork and is able to take responsibility for the ME\_K1\_

K01

ME\_K1\_

к<u>0</u>4

Ρ

Ρ

L

L

Methods of verification of learning outcomes:

results of joint activities

others

1

Social

ence

Compet

A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan						
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course title/academic degree/professional title, name and surname			
Lecture (W)	0					
Calculation class (C)	0					
Laboratory class (L)	30	mgr Kowal	czyk Bogusława			
Project (P)	0					
Seminar (S)	0					
Student workload						
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			0			
Calculation class (C)			0			
Laboratory class (L)			30			
Project (P)			0			
Seminar (S)			0			
Preparation for class	es		12			
Preparation of a report project/presentation			6			
Independent study o	f the course top	pics	12			
Examination or final	colloquium		0			
Additional contact he	ours		0			
Total student worklo	ad		60			
Number of contact h	ours (from the	study plan)	30			

\* hour (class) means 45 minutes

dr Świerczewska Beata Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Politechnika Opolska Wydział Mechaniczny Karta Opisu Przedmiotu Kierunek studiów Mechanical Engineering Profil kształcenia Ogólnoakademicki

Poziom studióv	N	Studia	Studia pierwszego stopnia					
Specjalność								
Forma studiów		Studia	Studia stacjonarne					
Semestr studió	ów	Piąty	Piąty					
Nazwa przedm	iotu	Foreigr	Foreign language					
Subject Title		Język o	bcy					
Liczba punktó	w ECTS	2		Typ przedmiotu			W	
Język wykła	dowy	polski	Tryb za	liczenia przedmiotu	(E/2	Z)	Zaliczenie na ocenę	
Kod przedmiotu		5.W.1		Przedmiot powiąza z badaniami naukowymi/ prakt. przygot. zawodowym (T/N	badaniami naukowymi/ akt. przygot.		0	
Oczekiwania	Wiedza	edza			1 2			
wstępne w	Umiejęt	ności		1				
zakresie przedmiotu				2				
	Kompet	ompetencje społeczne			1 2			
	as well a	as commu	unicative skills	basic language skills s and competencies ages (CEFR).				
Treści programowe zapewniające uzyskanie efektów uczenia się dla przedmiotu: The course provides the student with universal linguistic knowledge: vocabulary, phrases, and structures as well as intercultural knowledge necessary for establishing and maintaining communication with target language users according to level A of the Common European Framework of Reference for Languages (CEFR). The student develops the four basic language skills - listening, speaking, reading, and writing, and learns the basic grammar (declensions, conjugations, basic parts of speech, present, past, and future tenses) required at level A according to the CEFR, and acquires the skills of searching, using and selecting information from various sources - including the use of online dictionaries and translators as								

well as language learning applications.

Efekty uczenia się dla przedmiotu - po zakończonym cyklu studiów			Odniesie nie do kierunko wych efektów uczenia się	Formy realizacj i (W, C, L, P, S)	Formy weryfika cji efektów uczenia się	
Wiedza	1	A student knows and understands foreign language theory and terminology enough to use a foreign language at the B2 level of the Common European Framework of Reference for Languages	ME_K1_ W15	L	CEFP	
	2					
Umiejęt ności	1	A student has self-study skills	ME_K1_ U02	L	CEFP	
	2	A student is able to use a foreign language at the B2 level of the Common European Framework of Reference for Languages.	ME_K1_ U03	L	СЕГР	
Kompet encje społeczn e	1	A student is aware of the need to improve their knowledge throughout life and is able to select the appropriate learning methods for themselves and others	ME_K1_ K01	L	Р	
	2	A student understands the importance of teamwork and is able to take responsibility for the results of joint activities	ME_K1_ K04	L	Р	
Formy weryfikacji efektów uczenia się: A-egzamin pisemny, B-egzamin ustny, C-zaliczenie pisemne, D-zaliczenie ustne, E-na podstawie ocen czastkowych z						

A-egzamin pisemny, B-egzamin ustny, C-zaliczenie pisemne, D-zaliczenie ustne, E-na podstawie ocen cząstkowych z odpowiedzi ustnych, F-na podstawie ocen cząstkowych z odpowiedzi pisemnych, G-praca kontrolna, H-ocena ze sprawozdań, I-ocena z przebiegu ćwiczeń, J-ocena z przygotowania do ćwiczeń, K-ocena z przebiegu realizacji projektu, Locena pisemnej realizacji projektu, M-ocena z obrony projektu, N-ocena formy prezentacji, O-ocena treści prezentacji, Pobserwacja aktywności na zajęciach, R-obserwacja systematyczności.

Godziny w planie studiów					
Forma zajęć	Liczba godzin zajęć w semestrze	Opiekun (koordynator) przedmiotu (tytuł/stopień naukowy/ tytuł zawodowy, imię i nazwisko)			
Wykład	0	dr Świerczewska Beata			
Ćwiczenia	0				
Laboratorium	30				
Projekt	0				
Seminarium	0				
Nakład pracy studenta					
Rodzaje zajęć	studenta*	Średnia liczba godzin* przeznaczonych na zrealizowane aktywności			
Wykład		0			
Ćwiczenia		0			
Laboratorium		30			
Projekt		0			

Seminarium	0
Przygotowanie do zajęć	10
Przygotowanie sprawozdania/referatu/ projektu/prezentacji	0
Samodzielne studiowanie tematyki zajęć	10
Egzamin lub kolokwium zaliczeniowe	0
Dodatkowe godziny kontaktowe	0
Łączny nakład pracy studenta	50
Liczba godzin kontaktowych (z planu studiów)	30

\* godzina (lekcyjna) oznacza 45 minut

**dr Świerczewska Beata** Kierownik jednostki organizacyjnej/bezpośredni przełożony (pieczęć/podpis) dr inż. Wydrych Jacek Dziekan Wydziału (pieczęć/podpis)

# Opole University of Technology Faculty of Mechanical Engineering

Course Description Card							
Field of study	Mecha	Mechanical Engineering					
Profile of Education	Genera	l Academic					
Level of study	First Cy	cle Studies					
Specialization							
Form of Study	Full-Tir	ne Studies					
Semester	Fourth						
Course Title	Foreigr	Foreign language					
Nazwa przedmiotu	Język o	bcy					
ECTS points	2		Subject type		W		
Language of lecture	angielsk i	ngielsk Mode of completing the course			Course credit		
Course code	4	.W.2	Subject related to scientific research/pract. profess. prepar. (Y/N)		N		

		Knowledge	1	<ul> <li>The student has lexical and grammar knowledge at B2</li> <li>1 level according to the Common European Framework of Reference for Languages (CEFR).</li> </ul>					
			2						
Prelimir requirem of the co	nent			The student can use the Engl according to the Common Eu Reference for Languages (CE					
			2	The student understands the	nood for	colf ctudy	,		
		Social		The student can cooperate in					
		Competence	2	roles.	a group (	accepting	Various		
studied fa	acul	lty in accordance wi	th r	skills in the field of science ar equirements specified for C le for Languages (CEFR)					
concludin presentat offers, pre student a speaking, from diffe	ng c tion epa icqu , rea erer	ontracts, negotiatio s, solving problems ring job applications uires real-world know ading and writing, a at sources .The cour	ns a and s – c wlec nd c se i	he language of work environm and conversations with partne d conflicts, arguing, presenting curriculum vitae, cover letter) dge, develops four basic langu extends the ability to seek, us s focused on active implemen of students' future business a	rs and clie g offers, a . As part lage skills e and sele ting teche	ents, givii nalyzing of the mo - listenin ect tinfori nical and	ng job odule, the g, mation		
						Methods			
Learning	out			after completing the training	referenc e to the learning outcome	course (W, C, L,	of verificati on of learning outcome s		
Learning Knowled ge	1	cy The student underst and terminology we	cle anc Il er of t	Is foreign language theory hough to use the foreign he Common European	referenc e to the learning outcome	course (W, C, L,	of verificati on of learning outcome		
Knowled	1	cy The student underst and terminology we anguage at C level	cle anc Il er of t	Is foreign language theory hough to use the foreign he Common European	referenc e to the learning outcome s ME_K1_ W15	course (W, C, L, P, S)	of verificati on of learning outcome s		
Knowled	1	cy The student underst and terminology we anguage at C level	cle canc ll er of t ence	ls foreign language theory hough to use the foreign he Common European e for Languages	referenc e to the learning outcome s ME_K1_	course (W, C, L, P, S)	of verificati on of learning outcome s		
Knowled	1                   	cy The student underst and terminology we anguage at C level Framework of Refer The student has self The student is able	cle canco ll er of ti enco f-stu	Is foreign language theory hough to use the foreign he Common European e for Languages udy skills. se a foreign language at C uropean Framework of	referenc e to the learning outcome s ME_K1_ W15 ME_K1_	course (W, C, L, P, S)	of verificati on of learning outcome s C E F P		
Knowled ge	1   2   1 <sup>-</sup> 2   1   1	Cy The student underst and terminology we anguage at C level Framework of Refer The student has self level of the Common Reference for Langu The student is awar knowledge through	f-stu f-stu n Eu age e of but l	Is foreign language theory hough to use the foreign he Common European e for Languages udy skills. se a foreign language at C uropean Framework of	referenc e to the learning outcome s ME_K1_ W15 ME_K1_ U02 ME_K1_	course (W, C, L, P, S)	of verificati on of learning outcome s C E F P C E F P		

A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

	ŀ	lours in the	study plan		
The course format	Hours/sem. (h)	(h) Tutor (coordinator) of the course (h) (title/academic degree/professional title, name and surname			
Lecture (W)	0				
Calculation class (C)	0				
Laboratory class (L)	30	mgr Kowal	czyk Bogusława		
Project (P)	0				
Seminar (S)	0				
		Student v	vorkload		
Types of student activities*			Average number of hours* allocated on completed activities		
Lecture (W)			0		
Calculation class (C)			0		
Laboratory class (L)			30		
Project (P)			0		
Seminar (S)			0		
Preparation for class	es		12		
Preparation of a report project/presentation			6		
Independent study o	f the course top	pics	12		
Examination or final	colloquium		0		
Additional contact hours			0		
Total student workload			60		
Number of contact h	ours (from the	study plan)	30		

\* hour (class) means 45 minutes

dr Świerczewska Beata Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Politechnika Opolska Wydział Mechaniczny Karta Opisu Przedmiotu Kierunek studiów Mechanical Engineering Profil kształcenia Ogólnoakademicki

Poziom studióv	N	Studia pierwszego stopnia							
Specjalność									
Forma studiów Studia stacjonarne									
Semestr studió	ów	Szósty							
Nazwa przedm	iotu	Foreigr	n language						
Subject Title		Język o	bcy						
Liczba punktó	w ECTS	2		Typ przedmiotu			W		
Język wykła	dowy	polski	Tryb za	liczenia przedmiotu	(E/2	<u>Z)</u>	Egzamin		
Kod przedmiotu		6	5.W.1	Przedmiot powiąza z badaniami naukowymi/ prakt. przygot. zawodowym (T/N	_		N		
Oczekiwania	Wiedza				1 2				
wstępne w zakresie	Umiejęt	ności	ności encje społeczne						
przedmiotu									
	Kompet	encje spo							
and listening)	Cele przedmiotu: Development of the four basic language skills (speaking, reading, writing, and listening) as well as communicative skills and competencies at level A of the Common European Framework of Reference for Languages (CEFR).								
Treści programowe zapewniające uzyskanie efektów uczenia się dla przedmiotu: The course provides the student with universal linguistic knowledge: vocabulary, phrases, and structures as well as intercultural knowledge necessary for establishing and maintaining communication with target language users according to level A of the Common European Framework of Reference for Languages (CEFR). The student develops the four basic language skills - listening, speaking, reading, and writing, and learns the basic grammar (declensions, conjugations, basic parts of speech, present, past, and future tenses) required at level A according to the CEFR, and acquires the skills of searching, using and selecting information from various sources - including the use of online dictionaries and translators as well as language learning applications.									

Efekty	/ u	czenia się dla przedmiotu - po zakończonym cyklu studiów	Odniesie nie do kierunko wych efektów uczenia się	Formy realizacj i (W, C, L, P, S)	Formy weryfika cji efektów uczenia się
Wiedza	1	A student knows and understands foreign language theory and terminology enough to use a foreign language at the B2 level of the Common European Framework of Reference for Languages	ME_K1_ W15	L	A B C E F O P
	2				
Umiciat	1	A student has self-study skills	ME_K1_ U02	L	A  B  C  E F  O  P
Umiejęt ności	2	A student is able to use a foreign language at the B2 level of the Common European Framework of Reference for Languages.	ME_K1_ U03	L	A  B  C  E F  O  P
Kompet encje	1	A student is aware of the need to improve their knowledge throughout life and is able to select the appropriate learning methods for themselves and others	ME_K1_ K01	L	Р
e	społeczn A student understands the importance of teamwo		ME_K1_ K04	L	Р
		cji efektów uczenia się: mny Bregzamin ustny Crzaliczenie nisemne. Drzaliczenie ustne. Erna n	odstawia aca	n czastkowy	ch z

A-egzamin pisemny, B-egzamin ustny, C-zaliczenie pisemne, D-zaliczenie ustne, E-na podstawie ocen cząstkowych z odpowiedzi ustnych, F-na podstawie ocen cząstkowych z odpowiedzi pisemnych, G-praca kontrolna, H-ocena ze sprawozdań, I-ocena z przebiegu ćwiczeń, J-ocena z przygotowania do ćwiczeń, K-ocena z przebiegu realizacji projektu, Locena pisemnej realizacji projektu, M-ocena z obrony projektu, N-ocena formy prezentacji, O-ocena treści prezentacji, Pobserwacja aktywności na zajęciach, R-obserwacja systematyczności.

	Godziny w p	lanie studiów			
Forma zajęć	Liczba godzin zajęć w semestrze	Opiekun (koordynator) przedmiotu (tytuł/stopień naukowy/ tytuł zawodowy, imię i nazwisko)			
Wykład	0				
Ćwiczenia	0				
Laboratorium	30	dr Świerczewska Beata			
Projekt	0				
Seminarium	0				
	Nakład pra	cy studenta			
Rodzaje zajęć	studenta*	Średnia liczba godzin* przeznaczonych na zrealizowane aktywności			
Wykład		0			
Ćwiczenia		0			
Laboratorium		30			
Projekt		0			

0
8
2
8
2
0
50
30

\* godzina (lekcyjna) oznacza 45 minut

**dr Świerczewska Beata** Kierownik jednostki organizacyjnej/bezpośredni przełożony (pieczęć/podpis) dr inż. Wydrych Jacek Dziekan Wydziału (pieczęć/podpis)

# Opole University of Technology Faculty of Mechanical Engineering

Course Description Card							
Field of study	Mechai	Mechanical Engineering					
Profile of Education	Genera	I Academic					
Level of study	First Cy	cle Studies/					
Specialization							
Form of Study	Full-Tin	ne Studies					
Semester	Fifth						
Course Title	Foreigr	Foreign language					
Nazwa przedmiotu	Język o	bcy					
ECTS points	2		Subject type		W		
Language of lecture	angielsk i	gielsk Mode of completing the course			Course credit		
Course code	5	.W.1	Subject related to scientific research/pract. profess. prepar. (Y/N)		Ν		

	Knowledge		The student has lexical and grammar knowledge at B2 level according to the the Common European Framework of Reference for Languages (CEFR)
		2	
Preliminary requirements of the course	Skills		The student can use the English language at B2 level according to the Common European Framework of Reference for Languages (CEFR)
		2	
	Social Competence	1	The student understands the need for self-study.
		2	The student can collaborate with a group accepting various roles.
Course Coolo	<b>T</b> = = = =		ability in the field of existing and discriptions relation to

Course Goals To acquire language skills in the field of science and disciplines relevant to studied faculty in accordance with requirements specified for C level of the Common European Framework of Reference for Languages (CEFR)

Programme content In the course students acquire technical vocabulary in the area of Mechanical Engineering as well as the language of work environment (conducting meetings, concluding contracts, negotiations and conversations with partners and clients, giving presentations, solving problems and conflicts, arguing, presenting offers, analyzing job offers, preparing job applications – curriculum vitae, cover letter). As part of the module, the student acquires real-world knowledge, develops four basic language skills - listening, speaking, reading and writing, and extends the ability to seek, use and select tinformation from different sources .The course is focused on active implementing technical and academic vocabulary with the view of students' future business and scientific careers.

Learning outcomes for the course - after completing the training cycle				Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s
Knowled ge	1	The student understands foreign language theory and terminology well enough to use the foreign language at C level of the Common European Framework of Reference for Languages		L	CEFP
	2				
	1	.The student has self-study skills	ME_K1_ U02	L	CEFP
Skills	2	The student is able to use a foreign language at C level of the Common European Framework of Reference for Languages.	ME_K1_ U03	L	СЕГР
Social Compet ence	1	A student is aware of the need to improve their knowledge throughout life and is able to select the appropriate learning methods for themselves and others The student is aware of the need to improve their knowledge throughout life and is able to select the appropriate learning methods for themselves and others	ME_K1_ K01	L	Ρ
	2	The student understands the importance of teamwork and is able to take responsibility for the results of joint activities	ME_K1_ K04	L	Р

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	0					
Calculation class (C)	0					
Laboratory class (L)	30	mgr Kowald	zyk Bogusława			
Project (P)	0					
Seminar (S)	0					
		Student w	vorkload			
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			0			
Calculation class (C)			0			

Laboratory class (L)	30
Project (P)	0
Seminar (S)	0
Preparation for classes	12
Preparation of a report/paper/ project/presentation	6
Independent study of the course topics	12
Examination or final colloquium	0
Additional contact hours	0
Total student workload	60
Number of contact hours (from the study plan)	30

dr Świerczewska Beata Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering Course Description Card									
Field of study	1	Mechanical Engineering							
Profile of Education	Genera	al Academic	0						
Level of study	First Cy	cle Studies							
Specialization									
Form of Study	Full-Tir	ne Studies							
Semester	Sixth								
Course Title	Foreigr	n language							
Nazwa przedmiotu	Język o	bcy							
ECTS points	2		Subject type		W				
Language of lecture	angielsk i	Mode c	e of completing the course		amination				
Course code	6	5.W.1	Subject related to scientific research/pract. profess. prepar. (Y/N)	ľ	J				

	Knowledge	1		ne student has lexical and grammar knowledge at E vel according to European Language Level scale (C f foreign languages.			
		2					
Preliminary requirements of the course			communicative manner at B2	dent can use a foreign language in a nicative manner at B2 level according to an Language Level scale (CEFR)Językowego.			
		2					
	Social	1	The studend understands the		-		
	Competence	2	The student can cooperate in roles.	a group a	iccepting	various	
studied faculty	/ in accordance w	ith I	e skills in the field of science an requirements specified for C le vstemu Opisu Kształcenia Języł	evel of Eur			
Programme content In the course students acquire technical vocabulary in the area of Mechanical Engineering as well as the language of work environment (conducting meetings, concluding contracts, negotiations and conversations with partners and clients, giving presentations, solving problems and conflicts, arguing, presenting offers, analyzing job offers, preparing job applications – curriculum vitae, cover letter) . As part of the module, the student acquires real-world knowledge, develops four basic language skills - listening, speaking, reading and writing, and extends the ability to seek, use and select tinformation from different sources .The course is focused on active implementing technical and academic vocabulary with the view of students' future business and scientific careers.							
	sources .The cou				nical and	nation	

			outcome s	P, S)	outcome s
Knowled ge	1	The student understands foreign language theory and terminology well enough to use the foreign language at C level of the Common European Framework of Reference for Languages	ME_K1_ W15	L	A B C E F P
	2				
	1	The student has self-study skills	ME_K1_ U02	L	A B C E F P
Skills	2	A student is able to use a foreign language at C level of the Common European Framework of Reference for Languages.	ME_K1_ U03	L	A B C E F P
Social Compet	1	The student is aware of the need to improve their knowledge throughout life and is able to select the appropriate learning methods for themselves and others	ME_K1_ K01	L	Р
ence		The student understands the importance of teamwork and is able to take responsibility for the results of joint activities	ME_K1_ K04	L	Р
Methods of v	veri	fication of learning outcomes:			

A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan						
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course le/academic degree/professional title, name and surname			
Lecture (W)	0					
Calculation class (C)	0					
Laboratory class (L)	30	mgr Kowal	czyk Bogusława			
Project (P)	0					
Seminar (S)	0					
		Student v	vorkload			
Types of student activities*			Average number of hours* allocated on completed activities			
Lecture (W)			0			
Calculation class (C)			0			
Laboratory class (L)			30			
Project (P)			0			
Seminar (S)			0			
Preparation for class	es		10			
Preparation of a repo project/presentation			6			
Independent study o	of the course top	pics	12			
Examination or final	colloquium		2			
Additional contact hours			0			
Total student workload			60			
Number of contact h	ours (from the	study plan)	30			

\* hour (class) means 45 minutes

dr Świerczewska Beata Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology

Faculty of Mechanical Engineering

Course Description Card

Field of study	Mechanical Engineering
Profile of Education	General Academic

Level of study		First Cy	icla St	udies			
Specialization				uuics			
Form of Study Full-Time				Idies			
Semester		First		luics			
Course Title			nonta		ectrical engineering		
Nazwa przedm	iotu			ektrotec			
ECTS poir		3	wy eie	KIIOLEU	Subject type		К
	115	ر ر			Subject type		ĸ
Language of	lecture	angielsk i		Mode o	of completing the cours	e	Course credit
Course code		]	1.K.6		Subject related to scientific research/pract. profess. prepar. (Y/N)		Ν
	Knowledge		1	The student knows the fundamental laws of physics electricity and magnetism.			laws of physics
Preliminary			2				
requirements of the course	Skills		1	The student can solve systems of linear equations.			ear equations.
of the course			2				
	Social (	Competen	ce 1	Able to work and cooperate in a group			
			-	<u> </u>			
Course Goals To familiarize the student with the structure, principles of operation, and proper operation of electrical devices. Familiarization with the basic laws of physics related to electricity and methods of measuring selected electrical quantities.							
Programme content As part of the course, students learn the basic laws of electrical engineering and how to use them to select electrical components. Methods of calculating the flow of currents and voltages in electrical circuits will be discussed. They learn the structure, materials, and principles of operation of selected electrical devices.							

Learning	οι	itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s
	1	Knows the basics of electrical engineering	ME_K1_ W06	WL	СНР
Knowled 2 ge	2	Knows development trends in the field of electrical systems and devices	ME_K1_ W06	WL	СН
	3	Knows the use of basic laws of physics and electrical engineering in the construction of machines and devices	ME_K1_ W02	WL	CHPR
1		Can identify and formulate specifications for simple engineering tasks in the field of electrical engineering	ME_K1_ U05	L	ΗP
Skills –	2	Can assess the usefulness of routine methods and tools used to solve a simple task engineering for electrical issues	ME_K1_ U01	L	ΗP
Social Compet	1	Understands the need for lifelong learning; can inspire and organize the learning process of other people	ME_K1_ K01	WL	СН
ence	2	Able to cooperate and work in a group, taking on various roles	ME_K1_ K04	L	ΗP

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	15					
Calculation class (C)	0					
Laboratory class (L)	15	nż. Graba Mariusz				
Project (P)	0					
Seminar (S)	0					
		Student workload				
Types of student act	ivities*	Average number of hours* allocated on completed activities				
Lecture (W)		15				
Calculation class (C)		0				
Laboratory class (L)		15				

0
0
15
20
15
0
0
80
) 30

dr hab. inż. Augustynowicz Andrzej Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

# Opole University of Technology

Faculty of Mechanical Engineering								
Course Description Card								
Field of study	eld of study Mechanical Engineering							
Profile of Education	Genera	I Academic						
Level of study	First Cy	cle Studies/						
Specialization								
Form of Study	Full-Tin	Full-Time Studies						
Semester	Fourth							
Course Title	Fundar	nentals of ma	achine design					
Nazwa przedmiotu	Podsta	wy konstrukc	ji maszyn					
ECTS points	3		Subject type	K				
Language of lecture	angielsk i	Mode c	of completing the cours	e Examination				
Course code	2	I.K.3	Subject related to scientific research/pract. profess. prepar. (Y/N)	T				

	Preliminary	Knowledge	1	The student must have basi calculations of simple mech		•	ength		
			2	The student must have basic knowledge of developing drawing documentation.					
requirements of the course		1	The student must be able to identify burdens.						
	Juis		2						
		Social	1	Understands the need for lif	elong lea	rning.			
		Competence	2						
	Course Goals The aim of the course is to familiarize students with basic knowledge of the design of machines and mechanical devices.								
		content Knowledge on elements	on t	he design of mechanical cor	nections	and the s	election		
Learning outcomes for the course - after completing the training cycle						Methods of verificati on of learning outcome s			
Knowled		5/he has specialist kn designing basic elem		edge in the field of s of machine construction	ME_K1_ W05	W	A B		
ge	2								
Skills	1								
	2								
Social		5/he is aware of respo designs	/he is aware of responsibility for the elements he esigns				A B		
Compet 2		5/he correctly resolve profession	/he correctly resolves dilemmas related to the rofession			W	A B		
A-written ex on partial m	am, l arks	of written answers, G-term J	ssme bape	nt, D-oral assessment, E-based on par r, H-assessment from reports, I-assess	sment from r	ealization of	exercises, J-		

assessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	45					
Calculation class (C)	0					
Laboratory class (L)	0	dr hab. inż. Kluger Krzysztof				
Project (P)	0					
Seminar (S)	0					
Student workload						

Types of student activities*	Average number of hours* allocated on completed activities
Lecture (W)	45
Calculation class (C)	0
Laboratory class (L)	0
Project (P)	0
Seminar (S)	0
Preparation for classes	8
Preparation of a report/paper/ project/presentation	0
Independent study of the course topics	20
Examination or final colloquium	2
Additional contact hours	0
Total student workload	75
Number of contact hours (from the study plan)	45

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card							
Field of study	Mechai	Mechanical Engineering					
Profile of Education	Genera	l Academic					
Level of study	First Cy	cle Studies/					
Specialization							
Form of Study	Full-Tin	ne Studies					
Semester	Fifth	Fifth					
Course Title	Fundar	Fundamentals of machine design in practice					
Nazwa przedmiotu	Podsta	wy konstrukc	ji maszyn w praktyce				
ECTS points	2		Subject type		К		
Language of lecture	angielsk i	ngielsk Mode of completing the course Cou					
Course code	Ę	5.K.1	Subject related to scientific research/pract. profess. prepar. (Y/N)		Т		

KnowledgeIKnowledge of transferring loads of basic types of connections and their principles of operation
2
Preliminary requirements skills Skills Ability to use source materials, such as standards and catalogs, to search for necessary information in the design process
of the course 2 Is able to describe the basic parameters of phenomen occurring during the operation of machine elements
Social 1 Ability to work in a group
Competence 2
Course Goals The aim of the course is to familiarize the student with the practical design process using laboratory experiments
Programme content Conducting experiments on the operation of machine elements and structures and designing machine elements and systems using knowledge from experimental research
Learning outcomes for the course - after completing the training cycle c
Knowled1S/he has knowledge of methods of strength calculation of machine elements and connectionsME_K1_ W05LE F H
ge 2 S/he knows how to test inseparable and detachable ME_K1_ L E F H
1     S/he his able to determine the basic mechanical parameters of machines     ME_K1_U05_L     L     E F H
SkillsS/he is able to describe the basic parameters of phenomena occurring during the operation of machinesME_K1_ U05LE F H
Social Compet and work in a preparing reports, taking on various roles in the group. L E F H
2
Methods of verification of learning outcomes: A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-base

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				

Lecture (W)	0					
Calculation class (C)	0	dr hab. inż. Kluger Krzysztof				
Laboratory class (L)	30					
Project (P)	0					
Seminar (S)	0					
		Student v	vorkload			
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			0			
Calculation class (C)			0			
Laboratory class (L)			30			
Project (P)			0			
Seminar (S)			0			
Preparation for class	es		5			
Preparation of a report project/presentation	ort/paper/		10			
Independent study o	f the course to	pics	5			
Examination or final	colloquium		0			
Additional contact ho	ours		0			
Total student worklo	ad		50			
Number of contact h	ours (from the	study plan)	30			

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card

eeurse bescription eur	ŭ						
Field of study	Mecha	nical Engineering					
Profile of Education	Genera	General Academic					
Level of study	First Cy	First Cycle Studies					
Specialization							
Form of Study	Full-Tir	Full-Time Studies					
Semester	First						
Course Title	Fundar	Fundamentals of materials science					
Nazwa przedmiotu	Podsta	Podstawy nauki o materiałach					
ECTS points	3	3 Subject type K					

Langua	ge	of lecture	angielsk i	Мс	de	of completing the cou	rse	Course	e credit
Cour	Course code 1.K.5			Subject related to scientific research/pract. profess. prepar. (Y/N	т				
		Knowle	edge		1	Basic knowledge of p	hysics an	d chemis	try.
Prelimir		у	5		2	Can obtain informatio	on from lit	erature	
requirem					2				
	, ur		Competen	ICE	1	Understands the nee	d to learn	•	
					2				
		ls To acq nisms of m			n ma	aterials engineering te	echnologi	es, types	of wear
		content in the field				learning regularities a	nd syster	natizing	
Learning outcomes for the course - after completing the training cycle					mpleting the training	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s	
Knowled ge	nowled 1 well as the mechanisms of material wear and						ME_K1_ W10	W	А
	2								
Skills	1	S/hecan use various sources of information about the consumption of materials and material $ME_K1_U01$ W A engineering technologies						А	
	2								
Social Compet	1	S/he unde education	/he understands the necessity of constantME_K1_ K01WA						А
ence	2								
Methods of v	/eri	fication of lea	rning outcom	es:					

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				

Lecture (W)	30					
Calculation class (C)	0	dr hab. inż. Małecka Joanna				
Laboratory class (L)	0					
Project (P)	0					
Seminar (S)	0					
		Student v	vorkload			
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			30			
Calculation class (C)			0			
Laboratory class (L)			0			
Project (P)			0			
Seminar (S)			0			
Preparation for class	es		20			
Preparation of a report project/presentation	ort/paper/		0			
Independent study o	f the course to	pics	23			
Examination or final	colloquium		2			
Additional contact ho	ours		0			
Total student worklo	ad		75			
Number of contact h	ours (from the	study plan)	30			

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card

course bescription cu	u						
Field of study	Mecha	Mechanical Engineering					
Profile of Education	Genera	General Academic					
Level of study	First C	First Cycle Studies					
Specialization							
Form of Study	Full-Tir	Full-Time Studies					
Semester	Second						
Course Title	Genera	General science of mechanics					
Nazwa przedmiotu	Maszyr	Maszynoznawstwo ogólne					
ECTS points	3	3 Subject type K					

Language of lecture angielsk			Mode of completing the course			Course credit		
Course code		2.K	.3	Subject related to scientific research/pract. profess. prepar. (Y/N)		N		
			1	He/She ha	s knowledge of high so	chool in	mathematics.	
	Knowledge		2		He/She has knowledge of high school in physics and chemistry.			
			1	He/She can read and listen with understanding.				
Preliminary	Skills	2	He/She can acquire knowledge from literature and other sources.					
requirements			3	He/She can present and analyze the known issues.				
of the course	of the course Social Competen		1	He/She understands the need to learn and accumulate knowledge and skills.				
					He/She understands the importance of the importance of the technical world in human life.			
				He/She understands the importance and responsibility of the role of an engineer in contemporary society.				
Course Goals An introduction to the issues related to the construction and operation of machines, their role in energy conversion and the application of the concept of simple machines functioning in modern structures.								
Programme co	Programme content Lecture in the auditorium with the use of audio-video means and the							

Programme content Lecture in the auditorium with the use of audio-video means and the blackboard. Introduction to the subject of machine science, general machine science, specialized topics, thematic scope, evolution of machines, evolution of manufacturing processes, machine, device, apparatus, equipment, accessories, tool, energy, types of energy, methods of energy conversion, sources of electricity generation in the Polish economy, standardization, simple machines, gears as simple machines - introduction to mechanical drives, press as a simple machine - introduction to hydrostatic hydraulic drives, elements of rotational motion in machine construction, elements that determine the position of moving parts in machine construction, summary and presentation of knowledge by students in the form written.

Learning	οι	itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s
Knowled 1		. He/She knows the attitudes of machine building.		W	С
ge	2	He/She understands the essence of the operation of machines in the process of energy conversion.	ME_K1_ W02	W	С
Skills	1	He/She can gather and work out knowledge from the literature on the subject	ME_K1_ U01	W	С
JKIIIS	2	P He/She has the ability to self-educate		W	С
Social	1	He/She is aware of completing knowledge throughout life.		W	С
Compet – ence	2	He/She understands the impact of engineering activities on the human environment.	ME_K1_ K02	W	С

Hours in the study plan						
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname			
Lecture (W)	30					
Calculation class (C)	0					
Laboratory class (L)	0	dr inż. Rosi	ak Mariusz			
Project (P)	0					
Seminar (S)	0					
	Student workload					
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			30			
Calculation class (C)			0			
Laboratory class (L)			0			
Project (P)			0			
Seminar (S)			0			
Preparation for class	ses		18			
Preparation of a report project/presentation			0			
Independent study o	of the course top	pics	25			

Examination or final colloquium	2
Additional contact hours	0
Total student workload	75
Number of contact hours (from the study plan)	30

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

## Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Course Descrip		Course Description Card							
Field of study	Mechan	Mechanical Engineering							
Profile of Educ	Genera	General Academic							
Level of study	First Cy	First Cycle Studies							
Specialization									
Form of Study Full-Tin				ıdies					
Semester		First							
Course Title		Humani	stic a	nd soci	al subject I				
Nazwa przedm	iotu	Przedm	iot hu	ımanist	yczno-społeczny l				
ECTS poir	nts	2			Subject type		W-HS		
Language of	angielsk i	Mode of completing the course			Course credit				
Course co	1.⊦	HSW.1 scientific research/prac		Subject related to scientific research/pract. profess. prepar. (Y/N)		Ν			
	Knowle	dao	1	No requirements.					
	KIIOWIE	uye	2						
Preliminary	Skills		1	Ability	to analyze the topics of	discusse	ed		
requirements	SKIIIS	5							
of the course	Social Competence		ce 1	Openness to expanding and deepening your knowledge and skills					
Course Goals The aim of the course is for the student to acquire knowledge of selected humanities or social issues.									
					ected humanities or soc faculty or university da		es A humanities		

Learning	OL	Itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s
Knowled 1		S/he has knowledge of selected humanities or social issues	ME_K1_ W12	W	C D
ge	2	S/he knows the business operation	ME_K1_ W13	W	C D
Skills	1				
	2				
Social Compet ence	1	S/he becomes a person competent to communicate to his social environment the existence of new, revolutionary changes in the understanding of the universe and the position of man in universe.	ME_K1_ K02	W	C D
	2				
		faction of loorning outcomes.			

Hours in the study plan						
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course le/academic degree/professional title, name and surname			
Lecture (W)	30					
Calculation class (C)	0					
Laboratory class (L)	0	dr inż. Ows	iński Robert			
Project (P)	0					
Seminar (S)	0					
Student workload						
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			30			
Calculation class (C)			0			
Laboratory class (L)			0			
Project (P)			0			
Seminar (S)			0			
Preparation for class	es		5			
Preparation of a repo project/presentation			0			
Independent study o	f the course top	pics	15			

Examination or final colloquium	0
Additional contact hours	0
Total student workload	50
Number of contact hours (from the study plan)	30

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

### Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Course Description Card							
Field of study	Mechan	Mechanical Engineering					
Profile of Educ	General	General Academic					
Level of study First C			cle St	udies			
Specialization							
Form of Study Full-Time				idies			
Semester		Second					
Course Title		Humani	stic a	nd soci	al subject II		
Nazwa przedm	niotu	Przedmi	ot hu	ımanist	yczno-społeczny II		
ECTS poir	nts	3			Subject type		W-HS
Language of	angielsk i	Mode of completing the course			Course credit		
Course code		2.H	2.HSW.1		Subject related to scientific research/pract. profess. prepar. (Y/N)		Ν
	Knowle	dge	1	No rec	luirements		
Preliminary	Skills	Skills		S/he h	S/he has ability to analyze the topics discussed		
requirements of the course	Social Competence		e 1	2       1     Openness to expanding and deepening your knowledge and skills			
2       Course Goals     The aim of the course is for the student to acquire knowledge of selected humanities or social issues							
					ected humanities or soc aculty or university dat		es A humanities

Learning	OL	utcomes for the course - after completing the training cycle		course (W, C, L,	Methods of verificati on of learning outcome s
Knowled	1	S/he has knowledge of selected humanities or social issues	ME_K1_ W12	W	C D
ge	2				
Skills	1				
JKIIIS	2				
Social Compet ence	1	S/he becomes a person competent to communicate to his social environment the existence of new, revolutionary changes in the understanding of the universe and the position of man in universe.	ME_K1_ K02	W	C D
	2				

Hours in the study plan						
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course tle/academic degree/professional title, name and surname			
Lecture (W)	30					
Calculation class (C)	0					
Laboratory class (L)	0	dr inż. Ows	siński Robert			
Project (P)	0					
Seminar (S)	0					
		Student v	workload			
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			30			
Calculation class (C)			0			
Laboratory class (L)			0			
Project (P)			0			
Seminar (S)			0			
Preparation for class	es		5			
Preparation of a report project/presentation			0			
Independent study o	f the course top	pics	40			
Examination or final	colloquium		0			

Additional contact hours	0
Total student workload	75
Number of contact hours (from the study plan)	30

Opole University of Technology

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Faculty of Mecl Course Descrip		•	ng					
Field of study Mechanic				al Engineering				
-			General Academic					
Level of study	First Cy	First Cycle Studies						
Specialization								
Form of Study		Full-Tir	ne Stu	udies				
Semester		Sixth						
Course Title	Individ	ual re	port - si	mulation work				
Nazwa przedm	niotu	Praca p	orzejśo	ciowa s	ymulacyjna			
ECTS poir	nts	3			Subject type		K	
Language of	angielsk i		Mode of completing the course C			Course credit		
Course co	ode	6	6.K.5 brofess. prepar. (Y/N)			Т		
			1	Static	s, kinematics, dynamic	s of flui	d.	
	Knowle	dge	2	Proble	ems of heat transfer.			
Preliminary			3	Mecha	anical and strength issu	les of e	quipment parts.	
requirements	Skills		1	Practi	cal use of flow and ther	modyn	amic issues.	
of the course			2		Practical use of strength issues.			
	Social	Competen		Aware	eness of the importance	e of eng	ineering activities.	
			2					
					ne possibilities of creati	•	•	

Course Goals To familiarize students with the possibilities of creating computer simulations describing thermal and flow issues, taking into account the strength issues of machine elements.

Programme content Program content related to creating computer simulations describing thermal and flow issues. These issues are complemented by mechanical and strength issues of machine elements and flow equipment.

Knowled geS/he has knowledge in the field of material strength supplemented with thermal-flow issues occurring in complex flow systems.ME_K1 W05-PK L P R22222Skills1S/he has ability to create computer models of strength issues supplemented with thermal and flow issues.ME_K1 U05-PK L P R222222Social1S/he is aware of the need to constantly improveME_K1 UD5-PK L P R	Learning	OL	itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s
Skills       I       S/he has ability to create computer models of strength issues supplemented with thermal and flow issues.       ME_K1_UO5_       P       K L P R         2       2       2       2       2       2         Social       1       S/he is aware of the need to constantly improve       ME_K1_U       P       K L P R		1	supplemented with thermal-flow issues occurring in		Р	KLPR
Skills       1 strength issues supplemented with thermal and flow issues.       ME_K1_U05_P       K L P R         2       2       2       2         Social       1 S/he is aware of the need to constantly improve       ME_K1_P       P       K L P R		2				
Social 1 S/he is aware of the need to constantly improve ME_K1_ P K L P B	Skills	1	strength issues supplemented with thermal and flow		Р	KLPR
		2				
Compet Competences. K01			S/he is aware of the need to constantly improve competences.	ME_K1_ K01	Р	KLPR
ence 2	ence	2				

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	0					
Calculation class (C)	0					
Laboratory class (L)	0	dr inż. Wydrych Jacek				
Project (P)	45					
Seminar (S)	0					
		Student workload				
Types of student act	ivities*	Average number of hours* allocated on completed activities				
Lecture (W)		0				
Calculation class (C)		0				
Laboratory class (L)		0				
Project (P)		45				
Seminar (S)		0				
Preparation for class	es	5				
Preparation of a report project/presentation	ort/paper/	20				
Independent study o	f the course top	pics 5				

Examination or final colloquium	0
Additional contact hours	0
Total student workload	75
Number of contact hours (from the study plan)	45

dr hab. inż. Kłosok-Bazan Iwona Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

### Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Profile of Education       General Academic         Level of study       First Cycle Studies         Specialization	Course Description Card									
Level of study       First Cycle Studies         Specialization       Full-Time Studies         Form of Study       Full-Time Studies         Semester       First         Course Title       Information technology in engineering         Nazwa przedmiotu       Technologie informacyjne w inżynierii         ECTS points       4         Subject type       K         Language of lecture       angielsk i         Node of completing the course       Course credit         Course code       1.K.1         Subject related to scientific research/pract. profess. prepar. (Y/N)       N         Preliminary requirements of the course       1       Basic computer skills         Skills       Skills       1       Teamwork and communication skills         Scial Competence       1       not required       1         2       4       1       Interquired       1         Social Competence       1       1       not required       1         2       1       1       not required       2	-					ring				
Specialization       Image: special sp	Profile of Educa	ation	Genera	General Academic						
Form of Study       Full-Time Studies         Semester       First         Course Title       Information technology in engineering         Nazwa przedmiotu       Technologie informacyjne w inżynierii         ECTS points       4       Subject type         Language of lecture       angielsk i       Mode of completing the course       Course credit         Course code       1.K.1       Subject related to scientific research/pract. profess. prepar. (Y/N)       N         Preliminary requirements of the course       Knowledge       1       Basic computer skills       N         Skills       Skills       1       Teamwork and communication skills       2       Attention to detail         Social Competence       1       not required       1       not required	Level of study	First Cy	/cle Studi	ies						
Semester       First         Course Title       Information technology in engineering         Nazwa przedmiotu       Technologie informacyjne w inżynierii         ECTS points       4       Subject type         Language of lecture angielsk i       Mode of completing the course in the course is scientific in the course is scientifi	Specialization									
Course Title       Information technology in engineering         Nazwa przedmiotu       Technologie informacyjne w inżynierii         ECTS points       4       Subject type       K         Language of lecture       angielsk i       Mode of completing the course       Course credit         Course code       1.K.1       Subject related to scientific research/pract. profess. prepar. (Y/N)       N         Preliminary requirements of the course       Knowledge       1       Basic computer skills       N         Skills       2       Familiarity with text editing software       3       Understanding of graphic editing software         Skills       2       Attention to detail       3       Analytical thinking         1       not required       1       N       1	Form of Study		Full-Tir	ne Studie	es					
Nazwa przedmiotu       Technologie informacyjne w inżynierii         ECTS points       4       Subject type       K         Language of lecture angielsk i       Mode of completing the course       Course credit         Course code       1.K.1       Subject related to scientific research/pract. profess. prepar. (Y/N)       N         Preliminary requirements of the course       Knowledge       1       Basic computer skills       N         Skills       2       Familiarity with text editing software       3       Understanding of graphic editing software         Skills       2       Attention to detail       3       Analytical thinking         Social Competence       1       not required       2       Attention to detail	Semester		First							
ECTS points       4       Subject type       K         Language of lecture angielsk i       Mode of completing the course       Course credit         Course code       1.K.1       Subject related to scientific research/pract. profess. prepar. (Y/N)       N         Preliminary requirements of the course       Knowledge       1       Basic computer skills       N         Skills       2       Familiarity with text editing software       3       Understanding of graphic editing software         Social Competence       1       not required       1       not required	Course Title		Inform	ation tech	nnol	ogy in engineering				
Language of lecture       angielsk       Mode of completing the course       Course credit         Course code       1.K.1       Subject related to scientific research/pract. profess. prepar. (Y/N)       N         Preliminary requirements of the course       Knowledge       1       Basic computer skills       N         Skills       1       Teamwork and communication skills       2       Familiarity with text editing software         Skills       2       Attention to detail       3       Analytical thinking         3       1       N       1       1         1       1       1       1       1         1       1       1       1       1         1       1       1       1       1         1       1       1       1       1         1       1       1       1       1         1       1       1       1       1         1       1       1       1       1         2       1       1       1       1         2       1       1       1       1         2       1       1       1       1         3       1       1       1	Nazwa przedm	iotu	Techno	logie info	orma	acyjne w inżynierii				
i       i         Course code       1.K.1       Subject related to scientific research/pract. profess. prepar. (Y/N)         Preliminary requirements of the course       Knowledge       1       Basic computer skills         2       Familiarity with text editing software         3       Understanding of graphic editing software         3       Understanding of graphic editing software         3       Analytical thinking         3       Analytical thinking         3       Nalytical thinking         3       Nalytical thinking         4       Nalytical thinking         3       Nalytical thinking         4       Nalytical thinking         50cial Competence       1         1       Nalytical thinking	ECTS poir	nts	4	_		Subject type		К		
Course code       1.K.1       scientific research/pract. profess. prepar. (Y/N)       N         Preliminary requirements of the course       I       Basic computer skills       Image: Skills scientific research/pract. profess. prepar. (Y/N)         Skills       I       Basic computer skills       Image: Scientific research/pract. profess. prepar. (Y/N)         Image: Skills       Image: Scientific research/pract. profess. prepar. (Y/N)       Image: Scientific research/pract. profess. prepar. (Y/N)         Image: Skills       Image: Scientific research/pract. profess. prepar. (Y/N)       Image: Scientific research/pract. profess. prepar. (Y/N)         Image: Skills       Image: Scientific research/pract. profess. prepar. (Y/N)       Image: Scientific research/pract. profess. prepar. (Y/N)         Image: Skills       Image: Scientific research/pract. profess. prepar. (Y/N)       Image: Scientific research/pract. profess. prepar. (Y/N)         Image: Skills       Image: Scientific research/pract. profess. prepar. (Y/N)       Image: Scientific research/pract. profess. prepar. (Y/N)         Image: Skills       Image: Scientific research/pract. profess. prepar. (Y/N)       Image: Scientific research/pract. profess. prepar. (Y/N)         Image: Skills       Image: Scientific research/pract. profess. prepar. (Y/N)       Image: Scientific research/pract. profess. prepar. (Y/N)         Image: Skills       Image: Scientific research/pract. profess. profess. prepar. (Y/N)       Image: Scientific research/pract. profe	Language of	angielsk i	Mode of completing the course			Course credit				
Preliminary requirements of the courseKnowledge2Familiarity with text editing software3Understanding of graphic editing software3ITeamwork and communication skills2Attention to detail3Analytical thinking3I3Not required22	Course code 1.K.:			L.K.1		scientific research/pract.		Ν		
Preliminary       3       Understanding of graphic editing software         Preliminary       1       Teamwork and communication skills         of the course       2       Attention to detail         Skills       2       Attention to detail         3       Analytical thinking         1       not required         2       2					1	Basic computer skills				
Preliminary requirements of the course       1       Teamwork and communication skills         2       Attention to detail         3       Analytical thinking         1       not required         2       2		Knowle	dge		2	Familiarity with text ed	amiliarity with text editing software			
requirements of the course       Skills       1       Teanwork and communication skills         2       Attention to detail         3       Analytical thinking         1       not required         2       2					3	Understanding of graph	nic edit	ing software		
of the course     Skills     2     Attention to detail       3     Analytical thinking       Social Competence     1     not required       2					1	Teamwork and communication skills				
3     Analytical thinking       Social Competence     1     not required       2     2		Skills	S		2	Attention to detail				
Social Competence 2					3	Analytical thinking				
2		Social	omnatan		1	not required				
Course Goals Prenaring students for using information technology			Joinperen		2					
course cours in repairing statements for asing mornation technology	Course Goals	Prepari	ng studer	nts for usi	ing i	nformation technology				

Programme content Introduction to IT Fundamentals: Understanding the basic concepts and principles of Information Technology, including hardware, software, networks, and cybersecurity. Computer Systems and Software Applications: Learning about computer systems architecture, operating systems, and common software applications used in various fields. Data Management and Analysis: Exploring techniques for data organization, storage, retrieval, and analysis using databases and spreadsheet software.

Learning	οι	itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s				
Knowled ge	1	He/she is familiar with the principles of operation of control systems in mechanical devices and possesses knowledge of basic installations in machine construction.	ME_K1_ W16	WL	CEG				
	2								
Skills		He/she is able to use information and communication techniques appropriate for tasks related to the design, manufacturing, and operation of machines.	ME_K1_ U04	L	CEG				
	2								
Social Compet	1	He/she is aware of the need for lifelong learning and can choose appropriate learning methods for oneself and others.	ME_K1_ K01	WL	CEG				
ence	2								

Methods of verification of learning outcomes:

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	30					
Calculation class (C)	0					
Laboratory class (L)	30	nż. Pochwała Sławomir				
Project (P)	0					
Seminar (S)	0					
		Student workload				
Types of student act	ivities*	Average number of hours* allocated on completed activities				
Lecture (W)		30				
Calculation class (C)		0				

Laboratory class (L)	30
Project (P)	0
Seminar (S)	0
Preparation for classes	9
Preparation of a report/paper/ project/presentation	20
Independent study of the course topics	10
Examination or final colloquium	1
Additional contact hours	0
Total student workload	100
Number of contact hours (from the study plan)	60

dr hab. inż. Kłosok-Bazan Iwona Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering								
Course Description Card								
Field of study	Mecha	nical Enginee	ring					
Profile of Education	Genera	al Academic						
Level of study	First Cy	cle Studies						
Specialization								
Form of Study	Full-Tir	Full-Time Studies						
Semester	Fourth	Fourth						
Course Title	Machin	Machinery damage						
Nazwa przedmiotu	Uszkod	Uszkodzenia maszyn						
ECTS points	2		K					
Language of lecture	angielsk i	Mode c	of completing the course	e Course credit				
Course code	2	4.K.8	Subject related to scientific research/pract. profess. prepar. (Y/N)	T				

		Know	lodgo	1							
		Know	leuge	2							
Preliminary requirements of the course				1	Has practical skills in makir	ng use of	computer	·			
		Skills		Т	methods and programs.						
				2							
				1	Knows how to comprehens	ively anal	yze and e	efficiently			
		Socia	Competence		fulfill the given tasks.						
				2							
Course G	ioals	Introc	luction to eval	ua	tion and analysis of failures.						
degree o	n the	basis	of operational	ра	effects of acting load and ver rameters. Teaching methods tance learning methods and	s: laborate	ory classe				
Learning outcomes for the course - after completing the training e to the							Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s			
Knowled 1 Has basic knowledge conc					-	ME_K1_ W08	L	I			
ge	2										
Skills			ability to critic ne elements.	all	y evaluate the functioning	ME_K1_ U08	L	ні			
	2										
Social Compet	1  in				y the obtained knowledge priate way of reaching the	ME_K1_ K01	L	ні			
ence	2										
Methods of verification of learning outcomes: A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, J- assessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.											
				Нс	ours in the study plan						
The cour	se foi	rmat	Hours/sem. (h		Tutor (coordinato (title/academic degre name and	e/profess		<u>,</u>			
Lecture (	W)		0								
Calculati	on cla	ass (C)	0	1							

dr inż. Blacha Łukasz

Student workload

Laboratory class (L)

Project (P)

Seminar (S)

30

0

0

Average number of hours* allocated on completed activities
0
0
30
0
0
15
0
5
0
0
50
30

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card							
Field of study	Mecha	Mechanical Engineering					
Profile of Education	Genera	l Academic					
Level of study	First Cy	cle Studies/					
Specialization							
Form of Study	Full-Tir	ne Studies					
Semester	Second	Second					
Course Title	Materia	Material Engineering					
Nazwa przedmiotu	Inżynie	Inżynieria materiałowa					
ECTS points	3	Subject type			К		
Language of lecture	angielsk i	Mode of completing the course		e	Examination		
Course code	2	2.K.6	Subject related to scientific research/pract. profess. prepar. (Y/N)		т		

		Knowlodgo	1	S/he has basic knowledge of	of physics	and cher	nistry.			
		Knowledge	2							
Preliminary requirements of the course				S/he can obtain information from literature.						
			2							
	ur.		1	Understands the need to le	earn.					
		Social Competer	ice 2							
Course Goals To acquaint students with materials engineering technologies, types of wear and mechanisms of metal destruction										
				e of understood materials er sting their properties.	ngineering	g. Constru	iction of			
Learning	οι		rse - at ycle	fter completing the training	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s			
Knowled ge	1	of metals using me	thods iisms c	of regulating the properties of materials engineering as of material wear and ear						
	2									
Skills	1	S/he can use variou the consumption of engineering techno	mate		ME_K1_ U01	WL	A C			
	2									
Social Compet1S/he understands the necessity of constantME_K1 K01						WL	С			
ence	2									
A-written ex on partial m assessment	am, arks fror	of written answers, G-ter preparations for exercise	sessmer m paper es, K-ass	nt, D-oral assessment, E-based on par , H-assessment from reports, I-assess ressment from the project implement refense of project, N-assessment of for	sment from r ation, L-asse	ealization of ssment of th	exercises, J- le written			

assessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	15					
Calculation class (C)	0					
Laboratory class (L)	30	dr hab. inż. Małecka Joanna				
Project (P)	0					
Seminar (S)	0					
Student workload						

Types of student activities*	Average number of hours* allocated on completed activities			
Lecture (W)	15			
Calculation class (C)	0			
Laboratory class (L)	30			
Project (P)	0			
Seminar (S)	0			
Preparation for classes	10			
Preparation of a report/paper/ project/presentation	10			
Independent study of the course topics	8			
Examination or final colloquium	2			
Additional contact hours	0			
Total student workload	75			
Number of contact hours (from the study plan)	45			

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card						
Field of study	Mechai	Mechanical Engineering				
Profile of Education	Genera	General Academic				
Level of study	First Cy	First Cycle Studies				
Specialization						
Form of Study	Full-Tin	Full-Time Studies				
Semester	First	First				
Course Title	Mathematics I					
Nazwa przedmiotu	Matem	Matematyka I				
ECTS points	4		Subject type		Р	
Language of lecture	angielsk i	Mode c	of completing the cours	e	Examination	
Course code	1.P.1		Subject related to scientific research/pract. profess. prepar. (Y/N)		Ν	

Preliminary requirements of the course	Knowledge	1	Students have knowledge of mathematics at the secondary school level.	
		2		
	Skills	1	Students are able to apply basic mathematical tools and techniques.	
		2	Students are prepared to acquire knowledge on their own.	
	Social Competence	1	Students have ability to use modern tools (calculators, computers, multimedia) and information sources (textbooks, encyclopedias, online resources).	
		2		
Course Goals The aim of the course is to familiarize students with the basic concepts of algebra, analytical geometry and mathematical analysis, necessary for further studies.				
Programme content Complex numbers, matrix calculus, determinants, systems of linear equations, vector calculus in R3, fundamental one variable functions, with particular emphasis on trigonometric functions, differential calculus of one, two and three variables				

emphasis on trigonometric functions, differential calculus of one, two and three variables functions and its applications will be discussed during the classes.

		itcomes for the course - after completing the training cycle	referenc e to the learning outcome s	Form of course (W, C, L, P, S)	of verificati on of learning outcome s
-	1	Students are familiar with the concept of a complex numbers.	ME_K1_ W01	С	А
		Students know the concepts of matrix calculus and basic methods for solving systems of linear equations.	ME_K1_ W01	С	А
Knowled ge	3	Students know the operations performed on vectors in R3.	ME_K1_ W01	С	А
2	4	Students know graphs and properties of elementary functions, the concept of derivative and differential of one variable functions.	ME_K1_ W01	С	А
	5	Students know the concepts of partial derivative and total differential.	ME_K1_ W01	С	А
-	1	Students are able to perform operations on complex numbers.	ME_K1_ U05	С	СЕР
	2	Students are able to perform operations on matrices, calculate determinants and solve systems of linear equations.	ME_K1_ U05	С	СЕР
Skills	3	Students can perform operations on vectors and use them to solve geometric problems.	ME_K1_ U05	С	СЕР
4	4	Students can calculate derivatives of functions of one variable and use them to solve geometric, optimization and approximate calculation problems.	ME_K1_ U05	С	СЕР
5		Students are able to calculate first- and second- order partial derivatives and use them to solve optimization problems.		С	СЕР
Social Compet ence		Students know the limits of their own knowledge and are aware of the need for systematic work and further education.	ME_K1_ K01	С	P R
	2				

Methods of verification of learning outcomes:

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				

Lecture (W)	0		
Calculation class (C)	60		
Laboratory class (L)	0	dr inż. Ścię	gosz Hanna
Project (P)	0		
Seminar (S)	0		
		Student v	vorkload
Types of student act	ivities*		Average number of hours* allocated on completed activities
Lecture (W)			0
Calculation class (C)			60
Laboratory class (L)			0
Project (P)			0
Seminar (S)			0
Preparation for class	es		30
Preparation of a report project/presentation	ort/paper/		0
Independent study o	f the course to	pics	8
Examination or final	colloquium		2
Additional contact ho	ours		0
Total student worklo	ad		100
Number of contact h	ours (from the	study plan)	60
* hour (class) moons			

dr Koziarska Anna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

## Opole University of Technology Faculty of Mechanical Engineering

Course Description Card

eedree Beschiption ed								
Field of study	Mecha	Mechanical Engineering						
Profile of Education	Genera	General Academic						
Level of study	First C	First Cycle Studies						
Specialization								
Form of Study	Full-Tir	Full-Time Studies						
Semester	Second							
Course Title	Mathematics II							
Nazwa przedmiotu	Matem	Matematyka II						
ECTS points	3	Subject type P						

Language of lecture		angielsk i		Mode of completing the course		Examination	
Course code		2.P.1		.1	Subject related to scientific research/pract. profess. prepar. (Y/N)		N
			1	Students l	know the basic concept	ts of co	mplex numbers.
			2		know matrix and vector e on systems of linear of		-
	Knowle	vledge		Students know fundamental functions and their properties.			
Preliminary			4	Students know the differential calculus of one and multivariables functions.			
requirements of the course			1	The ability to abstractional and logical thinking.			
	Skills		2	The ability	The ability to perform basic algebraic calculations.		
			3	The ablility to use differential calculus of one and multivariable functions.			
			1	The ability	to co-work in a group.		
	Social Compe	tence	2	Understan	iding of need for self-e	ducatio	n.
	compe	cence	3	3 Student's responsibility for his own work.			Κ.
Course Goals Introduction of mathematical foundations necessary to study technical subjects.						y technical	
	cation t				methods of their calcu oblems, and improper i		

Learning	οι	utcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	• • • •	Methods of verificati on of learning outcome s
	1	Students have knowledge on indefinite integrals of one variable functions.	ME_K1_ W01	С	А
Knowled ge	2	Students have knowledge on definite integrals of one variable functions.	ME_K1_ W01	С	А
	3	Students know application of definite integrals.	ME_K1_ W01	С	А
	1	Students are able to calculate indefinite integrals of one variable functions.	ME_K1_ U05	С	CEFP
Skills	2	Students are able to calculate definite integrals and improper integrals of one variable functions.	ME_K1_ U05	С	CEFP
	3	Students are able to apply definite integrals to solve geometric problems.	ME_K1_ U05	С	CEFP
Social Compet ence	1	Students understand to an even greater extent the need for continuous education, especially in the field of modern mathematics methods used in technology.	ME_K1_ K01	С	A
	2				
Methods of v	veri	fication of learning outcomes:			

	Hours in the study plan					
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	0					
Calculation class (C)	30					
Laboratory class (L)	0	dr inż. Ścięgosz Hanna				
Project (P)	0					
Seminar (S)	0					
		Student workload				
Types of student act	ivities*	Average number of hours* allocated on completed activities				
Lecture (W)		0				
Calculation class (C)		30				
Laboratory class (L)		0				
Project (P)		0				

Seminar (S)	0
Preparation for classes	35
Preparation of a report/paper/ project/presentation	0
Independent study of the course topics	8
Examination or final colloquium	2
Additional contact hours	0
Total student workload	75
Number of contact hours (from the study plan)	30

dr Koziarska Anna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

# Opole University of Technology Faculty of Mechanical Engineering

Course Descrip	tion Car	rd J	5					
Field of study	Mechai	nical	Enginee	ring				
Profile of Educa	Genera	General Academic						
Level of study		First Cy	First Cycle Studies					
Specialization			-					
Form of Study		Full-Tin	ne St	udies				
Semester		First						
Course Title		Mechai	nical	Enginee	ring Introduction			
Nazwa przedm	iotu	Wprow	adze	nie do ir	nżynierii mechanicznej			
ECTS poir	nts	3			Subject type		K	
Language of	Language of lecture			Mode of completing the course		Course credit		
Course co	Course code		L.K.3		Subject related to scientific research/pract. profess. prepar. (Y/N)		т	
	Kasula	al ei a	1	. He/Sh	e has basic knowledge	of math	nematics	
	Knowle	age	2	2				
Preliminary	Skills		1	. He/Sh	He/She is able to analyze the presented issues.			
requirements	SKIIIS		2	2				
of the course	Social (	Competen	ompetence 1 He/Sh knowl		e understands the need edge.	d to lea	rn and accumulate	
			2	2				

Course Goals Familiarize students with tools and techniques used in various branches of mechanical engineering.

Programme content The content provided deals with fundamental issues in mechanical engineering. The program includes basic information related to methods, tools, and techniques to support design and manufacturing used by engineers.

ou	tcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s
1	He/She knows mathematics, including the knowledge necessary to model and simulate the kinematics of mechanical systems	ME_K1_ W01	WL	CHPR
2	He/She knows the principles of control systems in mechanical equipment and knows the operation of mechanical systems.	ME_K1_ W16	WL	СНР
1	He/She can obtain information from the literature, use the information received, interpret it, and draw conclusions.	ME_K1_ U01	WL	СНР
/		ME_K1_ U05	L	Н
3	According to a given specification, one can design a simple virtual device or process, typical of the design and operation process of machinery, using appropriate methods and tools.	ME_K1_ U09	L	HPR
1	He/She knows the need to supplement knowledge throughout life and can select appropriate methods of acquiring knowledge.	ME_K1_ K01	WL	CPR
2	He/She demonstrates entrepreneurship and ingenuity in action related to solving problematic professional issues.	ME_K1_ K06	WL	CHPR
	1 2 2 3 3	<ul> <li>He/She knows mathematics, including the</li> <li>knowledge necessary to model and simulate the kinematics of mechanical systems</li> <li>He/She knows the principles of control systems in</li> <li>mechanical equipment and knows the operation of mechanical systems.</li> <li>He/She can obtain information from the literature, 1 use the information received, interpret it, and draw conclusions.</li> <li>He/She can use analytical and simulation methods to formulate and solve engineering tasks.</li> <li>According to a given specification, one can design a simple virtual device or process, typical of the design and operation process of machinery, using appropriate methods and tools.</li> <li>He/She knows the need to supplement knowledge 1 throughout life and can select appropriate methods of acquiring knowledge.</li> <li>He/She demonstrates entrepreneurship and 2 ingenuity in action related to solving problematic</li> </ul>	butcomes for the course - after completing the training cyclee to the learning outcome s1He/She knows mathematics, including the knowledge necessary to model and simulate the kinematics of mechanical systemsME_K1_W012He/She knows the principles of control systems in mechanical equipment and knows the operation of mechanical systems.ME_K1_W161He/She can obtain information from the literature, use the information received, interpret it, and draw conclusions.ME_K1_U012He/She can use analytical and simulation methods to formulate and solve engineering tasks.ME_K1_U053According to a given specification, one can design a simple virtual device or process, typical of the design and operation process of machinery, using appropriate methods and tools.ME_K1_K014He/She knows the need to supplement knowledge throughout life and can select appropriate methods of acquiring knowledge.ME_K1_K014He/She demonstrates entrepreneurship and ingenuity in action related to solving problematic professional issues.ME_K1_K06	butcomes for the course - after completing the training cyclee to the learning outcomecourse learning outcome1He/She knows mathematics, including the knowledge necessary to model and simulate the kinematics of mechanical systemsME_K1_ W LW L2He/She knows the principles of control systems in mechanical equipment and knows the operation of mechanical systems.ME_K1_ U01W L1He/She can obtain information from the literature, use the information received, interpret it, and draw conclusions.ME_K1_ U05L2He/She can use analytical and simulation methods to formulate and solve engineering tasks.ME_K1_ U09L3According to a given specification, one can design a simple virtual device or process of machinery, using appropriate methods and tools.ME_K1_ U09L4He/She knows the need to supplement knowledge throughout life and can select appropriate methods of acquiring knowledge.ME_K1_ K01W L2He/She demonstrates entrepreneurship and ingenuity in action related to solving problematic professional issues.ME_K1_ K06W L

Methods of verification of learning outcomes:

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				

Lecture (W)	15				
Calculation class (C)	0				
Laboratory class (L)	15	dr inż. Ows	iński Robert		
Project (P)	0				
Seminar (S)	0				
		Student v	vorkload		
Types of student act	ivities*		Average number of hours* allocated on completed activities		
Lecture (W)			15		
Calculation class (C)			0		
Laboratory class (L)			15		
Project (P)			0		
Seminar (S)			0		
Preparation for class	es		15		
Preparation of a report project/presentation	ort/paper/		5		
Independent study o	f the course to	pics	25		
Examination or final	colloquium		0		
Additional contact ho	ours		0		
Total student worklo	ad		75		
Number of contact h	ours (from the	study plan)	30		
*					

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card

	-						
Field of study	Mecha	Mechanical Engineering					
Profile of Education	Genera	General Academic					
Level of study	First Cy	First Cycle Studies					
Specialization							
Form of Study	Full-Tir	Full-Time Studies					
Semester	First	First					
Course Title	Mecha	Mechanics I					
Nazwa przedmiotu	Mecha	Mechanika ogólna I					
ECTS points	3	Subject type P					

Langua	ge	of lecture	e angielsk Mode of completing the course				irse	Exami	nation
Cour	i Subject related to scientific T I.P.2 Tresearch/pract. profess. prepar. (Y/N)								
		Knowle	dge	1	vector	ent knows the fundar analysis		f mathem	atics and
Prelimir	۱ar	,		-		nentals of Physics			
requirem	nen	ts Skills		1	A stude	ent can apply knowle	age of ma	athematic	S
of the co	ours	Social		1		ent recognizes the ne in life-long learning	ed for, ar	nd an abil	ity to
		Compe	tence	2		ent is able to think in	dependen	itly.	
Course G problems		s The sul	oject aims	to ap	oply the	principles of mechar	nics to pra	actical en	gineering
Programr	ne	content l	Problems of	of sta	tics				
Learning	Learning outcomes for the course - after completing the training outcome for the course - after completing the training outcome (W, C, L, outcome S) (W, C,						verificati		
Knowled ge	Knowled 1 The student is able to define basic concepts in ME_K1_ W C A C								
	2								
Skills	Ţ	The student is able to solve typical engineering structures under static loads.ME_K1 U05W CA C							
	2								
Social Compet	T		ent is able to independently search for ME_K1_ on and analyze it critically. W C P						Р
ence	2								
			ning outcome C-written ass		nt, D-oral	assessment, E-based on pa	rtial marks of	f oral answer	s, F-based

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				

Lecture (W)	15					
Calculation class (C)	15					
Laboratory class (L)	0	dr inż. Mar	ciniak Zbigniew			
Project (P)	0					
Seminar (S)	0	]				
		Student v	vorkload			
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			15			
Calculation class (C)			15			
Laboratory class (L)			0			
Project (P)			0			
Seminar (S)			0			
Preparation for class	es		15			
Preparation of a report project/presentation	ort/paper/		0			
Independent study o	f the course to	pics	26			
Examination or final	colloquium		4			
Additional contact ho	ours		0			
Total student worklo	ad		75			
Number of contact h	ours (from the	study plan)	30			

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card

eedibe beechpelen ea							
Field of study	Mecha	Mechanical Engineering					
Profile of Education	Genera	General Academic					
Level of study	First C	First Cycle Studies					
Specialization							
Form of Study	Full-Tir	Full-Time Studies					
Semester	Second	Second					
Course Title	Mecha	Mechanics II					
Nazwa przedmiotu	Mecha	Mechanika ogólna II					
ECTS points	4	Subject type P					

Langua	ge	of lecture	re angielsk Mode of completing the cou				irse	Examination	
Cour	Course code2.P.2Subject related to scientificTCourse code2.P.2research/pract. profess. prepar. (Y/N)T								
		Knowle	dae	1		nt knows math.			
				2		nt knows statics.		- <b>f</b> th	
Prelimir	nar	v		1		nt is able to apply kr g multivariable calcı		of mathei	natics
requirem of the co	nen	ts Skills		2		nt is able to apply kr		of differe	ntial
		Social Compe	tence	1	A stude life.	nt understands the r	leed to lea	arn throug	ghout
		Compe	lence	2	A stude	nt is able to think inc	dependent	tly.	
Course Goals Knowledge of analytical methods in the application of the principles of kinematics and classical dynamics for typical mechanical systems. Solving technical problems of structures and mechanical systems under dynamic loads.									
Program	ne	content	roblems c	T KI	nematics	and dynamics			
Learning outcomes for the course - after completing the training e to the course					Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s			
	1	A student is able to define basic concepts in the dynamics of mechanical systems					ME_K1_ W01	W C	A C
Knowled ge	2	A student dynamics	knows the	con	cepts of	kinematics and	ME_K1_ W02	W C	A C
	3		student Knows the principles of dynamics. Knows ME_K1 W C A C equations of motion dynamics						A C
	1		student is able to calculate velocities and ME_K1_ W C A C celerations. Is able to create equations of motion U05					A C	
Skills	2		is able to apply the principle of ion of energy to calculate dynamic ME_K1WC A C						A C
Social	1	A student is able to search for information and is able to critically analyze it W C						Р	
Compet ence	2	A student society	is able to	obey	/ the cus	toms and rules of	ME_K1_ K05	W C	Р
Methods of v	verif	ication of lear	ning outcome	s:					•

Methods of verification of learning outcomes: A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based

on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan						
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course tle/academic degree/professional title, name and surname			
Lecture (W)	30					
Calculation class (C)	30					
Laboratory class (L)	0	dr inż. Mar	ciniak Zbigniew			
Project (P)	0					
Seminar (S)	0					
Student workload						
Types of student activities*			Average number of hours* allocated on completed activities			
Lecture (W)			30			
Calculation class (C)			30			
Laboratory class (L)			0			
Project (P)			0			
Seminar (S)			0			
Preparation for class	es		20			
Preparation of a report project/presentation	ort/paper/		0			
Independent study o	f the course top	oics	16			
Examination or final	colloquium		4			
Additional contact he	ours		0			
Total student worklo	ad		100			
Number of contact h	ours (from the s	study plan)	60			
hour (class) means 15 minutes						

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

### Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Field of study	Mechanical Engineering						
Profile of Education	General Academic						
Level of study	First Cycle Studies						
Specialization							
Form of Study	Full-Time Studies						
Semester	Fourth						

Course Title Physical e				cation			
Nazwa przedmiotu Wychowa			wanie	fizyczn	е		
ECTS poin	ts	0			Subject type		W
Language of lecture angielsk			Mode of completing the course		Credit unrated		
Course code		4	4.W.1		Subject related to scientific research/pract. profess. prepar. (Y/N)		Ν
			1	Studer	nt has knowledge of inc	dividual	and team sports.
	Knowledge		2		dent has knowledge about recreational forms of sical activity.		
Preliminary requirements of the course			1	Student can perform basic elements of the technique of a selected sport.			
			2				
	Social		1	Student is capable to co-work in an exercising group			exercising group
	Compet	tence	2				

Course Goals Taking care of health, consolidating active attitudes towards physical culture as well as educating and improving physical skills in the field of a selected sport discipline or various forms of physical recreation.

Programme content The curriculum content includes the concepts of physical activity and sport as well as selected issues in the field of methodology of teaching technical elements in selected team and individual disciplines. They also include the rules of participation in sports disciplines and recreational physical activity, as well as the basics of refereeing.

Learning	οι	utcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s			
Knowled ge								
	2							
Skills	1	S/he has the ability to understand and analyze interpersonal relationships, including the causes and effects of conflict situations in the workplace, and is able to propose preventive actions.	ME_K1_ U10	С	R			
	2							
Social Compet	1	S/he understands the need for lifelong learning, broadening knowledge, and knows the possibilities of further education.	ME_K1_ K01	С	R			
		S/he is ready to interact and cooperate in a group, taking on different roles in it.	ME_K1_ K04	С	R			
Methods of verification of learning outcomes:								

	Hours in the study plan						
The course format	Hours/sem. (h)		Tutor (coordinator) of the course e/academic degree/professional title, name and surname				
Lecture (W)	0						
Calculation class (C)	30						
Laboratory class (L)	0	dr inż. Tatar	inż. Tataruch Magdalena				
Project (P)	0	-					
Seminar (S)	0						
	·	Student wo	orkload				
Types of student act	ivities*		Average number of hours* allocated on completed activities				
Lecture (W)			0				
Calculation class (C)			30				
Laboratory class (L)			0				
Project (P)			0				
Seminar (S)			0				

0
0
0
0
0
30
30

**dr Woś Barbara** Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology

Faculty of Mechanical Engineering

Course Descrip	escription Card						
Field of study		Mechai	Mechanical Engineering				
Profile of Education	ation	Genera	l Aca				
Level of study		First Cy	cle S	tudies			
Specialization							
Form of Study		Full-Tin	ne St	udies			
Semester		Third					
Course Title		Physica	al edu	ication			
Nazwa przedm	iotu	Wycho	wanie	e fizyczn	e		
ECTS poir	nts	0			Subject type		W
Language of	Language of lecture angielsk			Mode of completing the course		Credit unrated	
Course co	Course code 3.W		.W.1		Subject related to scientific research/pract. profess. prepar. (Y/N)		Ν
			1	Studer	Student has knowledge of individual and team sports.		
Knowledge			2	Student has knowledge about recreational forms of physical activity.			
Preliminary requirements of the course			1	Student can perform basic elements of the techni			of the technique
			2				
	Social		1	Studer	nt is capable to co-work	c in an e	exercising group
	Compe	tence	2				

Course Goals Taking care of health, consolidating active attitudes towards physical culture as well as educating and improving physical skills in the field of a selected sport discipline or various forms of physical recreation.

Programme content The curriculum content includes the concepts of physical activity and sport as well as selected issues in the field of methodology of teaching technical elements in selected team and individual disciplines. They also include the rules of participation in sports disciplines and recreational physical activity, as well as the basics of refereeing.

Learning	Learning outcomes for the course - after completing the training cycle				Methods of verificati on of learning outcome s
Knowled ge		S/he has the knowledge of professional ethics, necessary to make moral decisions, respecting human rights, taking into account the categories of justice in everyday life, sport and physical recreation.	ME_K1_ W12	С	R
	2				
Skills	1	S/he has the ability to understand and analyze interpersonal relationships, including the causes and effects of conflict situations in the workplace, and is able to propose preventive actions.	ME_K1_ U10	С	R
	2				
Social Compet	1	S/he understands the need for lifelong learning, broadening knowledge, and knows the possibilities of further education.	ME_K1_ K01	С	R
ence	2	S/he is ready to interact and cooperate in a group, taking on different roles in it.	ME_K1_ K04	С	R

Methods of verification of learning outcomes:

	Hours in the study plan						
The course format Hours/sem. (h)		Tutor (coordinator) of the course (title/academic degree/professional title, name and surname					
Lecture (W)	0						
Calculation class (C)	30						
Laboratory class (L)	0	dr inż. Tataruch Magdalena					
Project (P)	0						
Seminar (S)	0						
	Student workload						

Types of student activities*	Average number of hours* allocated on completed activities
Lecture (W)	0
Calculation class (C)	30
Laboratory class (L)	0
Project (P)	0
Seminar (S)	0
Preparation for classes	0
Preparation of a report/paper/ project/presentation	0
Independent study of the course topics	0
Examination or final colloquium	0
Additional contact hours	0
Total student workload	30
Number of contact hours (from the study plan)	30

**dr Woś Barbara** Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card						
Field of study Mechanical Enginee			ring			
Profile of Education	Genera	al Academic				
Level of study	First Cy	cle Studies				
Specialization						
Form of Study	Full-Tir	ne Studies				
Semester	Fifth					
Course Title Pro		Professional practice				
Nazwa przedmiotu Prz		Praktyka zawodowa				
ECTS points	6		Subject type		W-PR	
Language of lecture	angielsk i	Mode c	of completing the cours	e	Course credit	
Course code 5.		5.W.2	Subject related to scientific research/pract. profess. prepar. (Y/N)		Ν	

	Knowledge		
Preliminary requirements of the course			
	Skille	1	
	SKIIS	2	
	Social Competence	1	
		2	

Course Goals The aim of this practice is to get acquainted with the way of functioning and the activity profile of the enterprise (institution) in the field of solving technical problems in the field of designing and manufacturing mechanical devices. The scope of practice includes familiarization with design and construction issues as well as operating conditions of machines and devices in connection with the problems of designing technological systems.

Programme content

Learning outcomes for the course - after completing the training cycle				Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s
Knowled	1	S/he has knowledge of the construction and operation of machines and devices.	ME_K1_ W07	Р	HR
ge	2	S/he knows how devices and machines function.	ME_K1_ W11	Р	HR
Skille	1 S/he can take into account the economic aspect in the design of mechanical systems.		ME_K1_ U07	Р	HR
Skills	2	S/he uses various communication techniques.	ME_K1_ U10	Р	HR
Social	1	S/he strives for continuous development and improvement of qualifications.	ME_K1_ K01	Р	HR
Compet ence	2	S/he is creative in engineering.	ME_K1_ K06	Р	HR

Methods of verification of learning outcomes:

	Hours in the study plan						
The course format Hours/sem. (h)		Tutor (coordinator) of the course (title/academic degree/professional title, name and surname					
Lecture (W)	0						
Calculation class (C)	0						
Laboratory class (L)	0	dr inż. Blacha Łukasz					
Project (P) 160							
Seminar (S)	0						

Student workload					
Types of student activities*	Average number of hours* allocated on completed activities				
Lecture (W)	0				
Calculation class (C)	0				
Laboratory class (L)	0				
Project (P)	160				
Seminar (S)	0				
Preparation for classes	0				
Preparation of a report/paper/ project/presentation	0				
Independent study of the course topics	0				
Examination or final colloquium	0				
Additional contact hours	0				
Total student workload	160				
Number of contact hours (from the study plan)	160				

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

# Opole University of Technology

Faculty of Mechanical Engineering

Course Description Cord						
Course Description Card						
Field of study	Mecha	Mechanical Engineering				
Profile of Education	Genera	al Academic				
Level of study	First Cy	cle Studies				
Specialization						
Form of Study	Full-Tir	ne Studies				
Semester	First	First				
Course Title	Protect	Protection of invention property				
Nazwa przedmiotu Ocł		Ochrona własności intelektualnej				
ECTS points	1		Subject type		К	
Language of lecture	angielsk i	Mode c	of completing the course		Course credit	
Course code	]	L.K.8	Subject related to scientific research/pract. profess. prepar. (Y/N)		Ν	

		Knowledge	1	none				
		-	2					
	Preliminary requirements		1	1 Willingness and ability to study literature				
of the co			2					
		-	1	Communication skills, teamwork.				
		Social Competence	2					
rights and	d in he u	<ul> <li>Providing students with se dustrial property law. Moreovuse of patent information and operty.</li> </ul>	/er,	the aim of the cours	e is for st	udents to	acquire	
intellectu student a property.	Programme content The subject provides knowledge on issues related to the protection of intellectual property, both in the field of copyright and industrial property protection. The student acquires knowledge regarding selected elements of the law protecting intellectual property. Is able to use legal acts and information from the Patent Office regarding the registration of items covered by intellectual property protection.							
Learning outcomes for the course - after completing the training cycle Cycle Learning Cycle Learning Learning Cycle Cycl				Methods of verificati on of learning outcome s				
Knowled ge	ed 1 Student knows and understands the concepts and principles of industrial property and copyright protection and is able to use patent information resources			and copyright	ME_K1_ W14	W	C P R	
	2							
Skills	1							
	2							
Social Compet ence	1 ( 	udent is aware of the importance of professional ME_K1_ nduct and compliance with the principles of K05 W CPR ofessional ethics.					CPR	
	2							
		cation of learning outcomes: B-oral exam, C-written assessment, D-	oral a	assessment, E-based on par	tial marks of	foral answer	s, F-based	

Hours in the study plan					
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname			

Lecture (W)	15				
Calculation class (C)	0				
Laboratory class (L)	0	dr Kuczuk /	Anna		
Project (P)	0				
Seminar (S)	0				
		Student v	vorkload		
Types of student act	ivities*		Average number of hours* allocated on completed activities		
Lecture (W)			15		
Calculation class (C)			0		
Laboratory class (L)			0		
Project (P)			0		
Seminar (S)			0		
Preparation for class	es		4		
Preparation of a report project/presentation	ort/paper/		0		
Independent study o	f the course to	pics	5		
Examination or final	colloquium		1		
Additional contact ho	ours		0		
Total student worklo	ad		25		
Number of contact h	ours (from the	study plan)	15		

dr hab. inż. Kłosok-Bazan Iwona Head of the organizational unit (stamp/signature)

dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course	Descri	ption	Card
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Field of study	Mecha	Mechanical Engineering				
Profile of Education	Genera	General Academic				
Level of study	First C	ycle Studies				
Specialization						
Form of Study	Full-Tir	Full-Time Studies				
Semester	Third	Third				
Course Title	Remov	Removal processes I				
Nazwa przedmiotu	Obróbł	Obróbka ubytkowa I				
ECTS points	5	Subject type K				

Language of	lecture	angielsk i		Mode of completing the course	le of completing the course			
Course code 3		3.K.4	Subject related to scientific research/pract. profess. prepar. (Y/N)		Т			
	Knowlo	dao	1	He/She has knowledge of the ba	isics of	machine design.		
	Knowle	uge	2	He/She has knowledge of the basics of metallurgy.				
Preliminary	Preliminary Skills		1 He/She can analyze the functioning of machines a their components.			machines and		
requirements			2	He/She can obtain information fi	She can obtain information from the literature.			
of the course	Social		1	He/She is aware of the responsibility associated with the decisions made.				
	Competence		2	2 He/She is able to analyze the tasks assigned for implementation.				
Course Goals Familiarize students with the problems of wide-ranging cavity machining (chip machining - turning, drilling) and machining methods and methods, kinematics of machining processes, machining conditions, technological machines, tools and materials used in the manufacture of cutting tools, machining effects.								
				ing characteristics of technologic				

assemblies and mechanisms of technological machines. Machines for machining (lathes, drills). Drives of conventional machines and with computer control (CNC). Laboratory exercises: construction of machine tools, operations performed on lathes.

Learning	οι	itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s
	1	He/She has an expanded knowledge of the classification of technological machines, their construction, manufacture and purpose.	ME_K1_ W07	WL	AHIJ
Knowled ge	2	He/She has knowledge of the life cycle and proper operation of process machinery.	ME_K1_ W11	WL	AHIJ
	3	He/She has a structured knowledge of the manufacture and operation of machinery and mechanical equipment.	ME_K1_ W08	WL	AHIJ
	1	He/She is able to use professional literature, and knows how to analyze, associate and interpret technical information thus acquired.	ME_K1_ U01	WL	A H I J R
Skills	2	He/She is able to evaluate the correct functioning of technological machines and determine the conditions for their safe operation.	ME_K1_ U08	WL	A H I J R
	3	He/She is able to critically analyze how things work and evaluate existing technical solutions, equipment, facilities, systems, processes and services in the construction, manufacture and operation of machinery.	ME_K1_ U08	WL	АНІЈ
Social	1	He/She is aware that knowledge is constantly changing and that a lifetime of knowledge needs to be supplemented.	ME_K1_ K01	WL	AHIJ
ence He/She is aware of t 2 consequences of his		He/She is aware of the importance and consequences of his decisions, and how they affect the safety of the operator and the machine.	ME_K1_ K03	WL	AHIJ

Methods of verification of learning outcomes:

	Hours in the study plan					
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	30					
Calculation class (C)	0					
Laboratory class (L)	30	dr inż. Chudy Roman				
Project (P)	0					
Seminar (S)	0					
Student workload						

Types of student activities*	Average number of hours* allocated on completed activities
Lecture (W)	30
Calculation class (C)	0
Laboratory class (L)	30
Project (P)	0
Seminar (S)	0
Preparation for classes	18
Preparation of a report/paper/ project/presentation	20
Independent study of the course topics	25
Examination or final colloquium	2
Additional contact hours	0
Total student workload	125
Number of contact hours (from the study plan)	60

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card						
Field of study	Mecha	nical Enginee	ring			
Profile of Education	Genera	al Academic				
Level of study	First Cy	cle Studies				
Specialization						
Form of Study	Full-Tir	ne Studies				
Semester	Fourth					
Course Title	Remov	Removal processes II				
Nazwa przedmiotu	Obróbk	Obróbka ubytkowa II				
ECTS points	4		Subject type		К	
Language of lecture	angielsk i	Mode c	of completing the cours	e	Examination	
Course code	2	4.K.6	Subject related to scientific research/pract. profess. prepar. (Y/N)		Т	

	Knowledge	1	S/he has knowledge of the basics of machine design
		2	S/he has knowledge of the basics of metallurgy
Preliminary requirements	Skills	1	S/he can analyze the functioning of machines and their components
of the course		2	S/he is able to obtain information from the literature
	Social		S/he is aware of the responsibility associated with the decisions taken
	Competence	2	S/he knows how to analyze the tasks assigned

Course Goals Familiarize students with the problems of wide-ranging cavity machining (chip machining - milling, grinding) and machining methods and methods, kinematics of machining processes, machining conditions, technological machines, tools and materials used in the manufacture of cutting tools, machining effects.

Programme content Lecture covering characteristics of technological machines, Structural assemblies and mechanisms of technological machines. Machines for machining (milling machines, grinders). Drives of conventional machines and with computer control (CNC). Laboratory exercises: construction of machine tools, operations performed on milling machines.

Learning	οι	itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s
Knowled	1	S/he has knowledge of metrology in mechanical engineering	ME_K1_ W09	WL	ΑH
ge	2	S/he has a structured knowledge of the manufacture and operation of machinery and mechanical equipment	ME_K1_ W08	WL	ΑH
	1	S/he is able to obtain information from literature, databases and other sources, is able to integrate obtained information, interpret it, and draw conclusions and formulate and justify opinions	ME_K1_ U01	L	н
Skills	Skills 2	S/he ie able to critically analyze how things work and evaluate existing technical solutions, equipment, facilities, systems, processes and services in the construction, manufacture and operation of machinery	ME_K1_ U08	WL	АН
	3	S/he has the ability to self-educate	ME_K1_ U02	WL	AH
	1	S/he is aware of the need to supplement knowledge throughout life and is able to choose appropriate methods of teaching for himself and others	ME_K1_ K01	WL	AH
Social 2 Compet	S/he is aware of the responsibility associated with decisions, made in the framework of engineering activities, especially in terms of safety of his own and other people and protection of the environment	ME_K1_ K03	L	н	
ence 3		S/he understands the social role of the engineer and participates in the communication of reliable information and opinions to the public on the achievements of technology and other aspects of technology fication of learning outcomes:	ME_K1_ K07	WL	AH

Methods of verification of learning outcomes:

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				

		-			
Lecture (W)	30				
Calculation class (C)	0				
Laboratory class (L)	30	dr inż. Chu	dy Roman		
Project (P)	0				
Seminar (S)	0				
		Student v	vorkload		
Types of student act	ivities*		Average number of hours* allocated on completed activities		
Lecture (W)			30		
Calculation class (C)			0		
Laboratory class (L)			30		
Project (P)			0		
Seminar (S)			0		
Preparation for class	es		13		
Preparation of a report project/presentation	ort/paper/		5		
Independent study o	f the course to	pics	20		
Examination or final	colloquium		2		
Additional contact ho	ours		0		
Total student worklo	ad		100		
Number of contact h	ours (from the	study plan)	60		

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card

Field of study	Mecha	Mechanical Engineering						
Profile of Education	Genera	General Academic						
Level of study	First C	First Cycle Studies						
Specialization								
Form of Study	Full-Tir	Full-Time Studies						
Semester	Third	Third						
Course Title	Selecte	Selected chipless technologies						
Nazwa przedmiotu	Wybra	Wybrane technologie bezwiórowe						
ECTS points	4	4 Subject type K						

Langua	ge of	lecture	angielsk Mode of completing the		f completing the cou	irse	Course	e credit		
Cour	Course code 3.K.		3.K.(	K.6 scientifi research/p		Subject related to scientific research/pract. profess. prepar. (Y/N	1)	Т		
		Knowle	dge		1 They have knowledge of metal structure as well as properties and applications of structural materials.					
Prelimir requirem	-	Skills			2	The st standa	udent is able to use tards.	tables, ch	arts, and	
of the co				_	2	The st	udent is capable of a	nalyzing	tasks assi	igned for
		Social (	Competen	ce	1 2	compl	etion.			
			-				ods of manufacturing on, heat treatment, a		•	
						ndustry	ions of chipless tech . Laboratory classes	involve te	esting the	5
technolog	gical	properti	es of molo	ding	ı ma	ndustry aterials	<ul> <li>Laboratory classes</li> <li>non-destructive test</li> </ul>	involve te sting tech	esting the niques of	2
technolog structura mechanic structure surface la	gical l eler cal ar of co ayer	propertion ments m nd therm ompacts structure	es of molo anufactur al interac before ar e in struct r the cour	ding ed u ition nd a ural	r ma usir ns o fter I ma	ndustry aterials ng cast on the i r plasti aterials	<ul> <li>Laboratory classes</li> <li>non-destructive testing technology, anal</li> <li>material structure, as</li> <li>c deformation, and t</li> </ul>	involve te sting tech ysis of the ssessmen he possib The referenc e to the	esting the niques of e influenc t of the in ility of sha Form of course	e of aternal aping the Methods of verificati
technolog structura mechanic structure surface la	gical l eler cal ar of co ayer	propertion ments m nd therm ompacts structure	es of molo anufactur al interac before ar e in struct r the cour	ding ed u tion nd a ural	r ma usir ns o fter I ma	ndustry aterials ng cast on the i r plasti aterials	v. Laboratory classes s, non-destructive testing technology, anal material structure, as c deformation, and t s.	involve te sting tech ysis of the ssessmen he possib The referenc	esting the niques of e influenc t of the in ility of sha Form of course (W, C, L,	e of iternal aping the Methods of
technolog structura mechanic structure surface la	gical l eler cal ar of co ayer s outc	propertion ments m od therm ompacts structure comes fo ney have emi-finis	es of molo anufactur bal interac before ar e in struct r the cour cy	ding ed u tion d a ural ural rse - ycle ge c	y ma usir ns o fter I ma - aft - aft - aft and	ndustry aterials ng cast on the r r plasti aterials ter con	v. Laboratory classes s, non-destructive testing technology, anal material structure, as c deformation, and t s.	involve te sting tech ysis of the ssessmen he possib The referenc e to the learning outcome	esting the niques of e influenc t of the in ility of sha Form of course (W, C, L,	e of aping the Methods of verificati on of learning outcome
technolog structura mechanic structure surface la Learning Knowled	gical l eler cal ar of co ayer s outc	propertion ments m od therm ompacts structure comes fo ney have emi-finis	es of molo anufactur bal interac before ar e in struct r the cour cy e knowled hed produ	ding ed u tion d a ural ural rse - ycle ge c	y ma usir ns o fter I ma - aft - aft - aft and	ndustry aterials ng cast on the r r plasti aterials ter con	x. Laboratory classes s, non-destructive testing technology, anal material structure, as c deformation, and t s. npleting the training s for manufacturing	involve te sting tech ysis of the ssessmen he possib The referenc e to the learning outcome s ME_K1_ W10	esting the niques of e influenc t of the in ility of sha Form of course (W, C, L, P, S)	e of aping the Methods of verificati on of learning outcome s
technolog structura mechanic structure surface la Learning Knowled	outco outco outco outco outco outco outco outco outco n 1 Th	propertion ments m and therm compacts structure comes for ney have emi-finisl metals an	es of mole anufactur bal interac before ar e in struct r the cour cy e knowled hed produ d their all	ding ed u tion nd a ural se - /cle ge c ucts oys	y ma usir is o fter l ma - aft - aft - aft	ndustry aterials ng cast n the i r plasti aterials ter con	x. Laboratory classes s, non-destructive testing technology, anal material structure, as c deformation, and t s. npleting the training s for manufacturing	involve te sting tech ysis of the ssessmen he possib The referenc e to the learning outcome s ME_K1_	esting the niques of e influenc t of the in ility of sha Form of course (W, C, L, P, S)	e of aping the Methods of verificati on of learning outcome s
technolog structura mechanic structure surface la Learning Knowled ge	outco ayers outco 1 Th 1 se m 2 1 Th 2 1 U	propertion ments m ompacts structure comes fo ney have emi-finish ney can ney can	es of mole anufactur before ar e in struct r the cour cy e knowled hed produ d their all use both l	ding ed u tion nd a ural se - /cle ge c ucts oys.	y ma usir is o fter l ma - aft - aft - aft - aft - aft - aft - aft - aft	ndustry aterials ng cast n the r r plasti aterials ter con nethod d finish	x. Laboratory classes s, non-destructive testing technology, anal material structure, as c deformation, and t s. npleting the training s for manufacturing ned products from	involve te sting tech ysis of the ssessmen he possib The referenc e to the learning outcome s ME_K1_ W10 ME_K1_	esting the niques of e influenc t of the in ility of sha Form of course (W, C, L, P, S) W L	e of iternal aping the Methods of verificati on of learning outcome s C P

A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan						
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course le/academic degree/professional title, name and surname			
Lecture (W)	15					
Calculation class (C)	0					
Laboratory class (L)	30	dr hab. Pra	żmowski Mariusz			
Project (P)	0					
Seminar (S)	0					
		Student v	vorkload			
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			15			
Calculation class (C)			0			
Laboratory class (L)			30			
Project (P)			0			
Seminar (S)			0			
Preparation for class	es		25			
Preparation of a repo project/presentation			15			
Independent study o	of the course top	pics	25			
Examination or final	colloquium		0			
Additional contact he	ours		0			
Total student worklo	ad		110			
Number of contact h	ours (from the s	study plan)	45			

\* hour (class) means 45 minutes

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology

Faculty of Mechanical Engineering

Course Description Card

Field of study	Mechanical Engineering
Profile of Education	General Academic

Level of study		First Cycle Studies						
Specialization								
Form of Study		Full-Tir	ne S	Studies				
Semester		Second						
Course Title		Selecte	Selected measuring techniques and systems					
Nazwa przedm	iotu	Wybra	ne t	echniki i s	systemy pomiarowe			
ECTS poir	nts	4			Subject type		K	
Language of	lecture	angielsk i		Mode o	of completing the cours	e	Examination	
Course co	de	2	і 2.К.7		Subject related to scientific research/pract. profess. prepar. (Y/N)		T	
			1	Mathematics, in algebra, mathematical analysis and probability.				
	Knowle	dge	2	Physics, in terms of optics.				
Preliminary			3	Technical metrology - knowledge of the basic concepts and knowledge of general metrology.				
requirements	Skills		1	The ability to solve mathematical and physical problems.				
of the course	JKIIIS		2	Self-education skills.				
	Social		1	He is aware of the need to supplement knowledge throughout his life.				
Competence		2	He is aware of the importance of professional conduct and adherence to professional ethics.					
Course Goals Familiarize students with selected measurement techniques								
Programme content Auditorium lecture on classification, properties and characteristics of measuring instruments, measuring chains. Practical activities in the laboratory: measurement with a micrometer, caliper, diameter gauge, measurements of angles and cones, measurements of surface roughness, threads, gears.								

Learning	οι	itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s
Knowled	1	S/he has knowledge of the metrology of geometric quantities, knows the principles of tolerance of dimensions, shape and position, and knows and understands the methods of measurement of basic characterizing quantities for mechanical engineering, knows the calculation methods necessary for the analysis of measurement results.	ME_K1_ W09	WL	С
ge	2	S/he has knowledge of physics, including the fundamentals of mechanics, thermodynamics, optics, electricity and magnetism, nuclear physics, solid state physics and elements of quantum physics, needed to understand, describe and use physical phenomena in the design manufacture and operation of measuring instruments and systems.	ME_K1_ W02	W	С
Skills	1	S/he can plan and carry out measurements and interpret the results obtained and draw conclusions.	ME_K1_ U08	WL	С
	2	S/he can obtain information from literature, databases and other sources.	ME_K1_ U01	WL	С
Social Compet	1	S/he is aware of the need to supplement knowledge throughout life.	ME_K1_ K01	W	С
ence	2				

Methods of verification of learning outcomes:

Hours in the study plan						
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course le/academic degree/professional title, name and surname			
Lecture (W)	30	30				
Calculation class (C)	0		inż. Bogdan-Chudy Marta			
Laboratory class (L)	30	dr inż. Bogo				
Project (P)	0					
Seminar (S)	0					
Student workload						
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			30			

Calculation class (C)	0
Laboratory class (L)	30
Project (P)	0
Seminar (S)	0
Preparation for classes	8
Preparation of a report/paper/ project/presentation	10
Independent study of the course topics	20
Examination or final colloquium	2
Additional contact hours	0
Total student workload	100
Number of contact hours (from the study plan)	60

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

## Opole University of Technology Faculty of Mechanical Engineering

Course Description Card

Field of study	Mechanical Engineering							
Profile of Education	Genera	General Academic						
Level of study	First Cy	cle Studies/						
Specialization								
Form of Study	Full-Tin	ne Studies						
Semester	Second							
Course Title	Softwa	Software engineering and data processing						
Nazwa przedmiotu	Inżynie	Inżynieria oprogramowania i przetwarzanie danych						
ECTS points	3		Subject type		К			
Language of lecture	angielsk i	angielsk Mode of completing the course Course cred						
Course code	2	2.K.1	Subject related to scientific research/pract. profess. prepar. (Y/N)		N			

r								
		Knowledge	1	Basic knowledge of the Wir Office (or LibreOffice, Oper	ndows environment and MS nOffice etc.)			
			2	· · · · · ·				
Prelimir			1	Computer skills				
requirem			2	Use of Internet services				
of the co	ours	se	3	Working with a spreadshee	et			
			1	No requirements				
		Social Competenc	e 2					
the challe	eng	es ahead standing. A	cqui	d directions of developmen ring the ability to create sim technical calculations.				
compute From pro	r so ble	ience. Computer pro m to solution: proble	gram m - a	er science? Main directions o ming - paradigms, program lgorithm - program. Spread h as MATLAB or other - e.g.	ming lang sheet pro	guages, to gramming		
Learning outcomes for the course - after completing the training e cycle					The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s	
		Student knows the ty in engineering practi		l applications of computers	ME_K1_ W06	w	СР	
Knowled ge	2	Student knows the basics of computer programming, useful in the preparation of technical documentation.				WL	СР	
	3	Student knows the applications of the softwareME_K1discussed in the course in engineering practice.W01				WL	СР	
	1	Student is able to create simple computer programs. ME_K1_ U09 L C H P						
Skills	Student knows how to make calculations using a					L	СНР	
		Student is able to ch solve an engineering	to choose the most effective tool to ME_K1_ ering task. L C H				СНР	
Social Compet	1	Student understands and enhancing profe		need for further training al competence.	ME_K1_ K01	WL	СР	
ence	2							
Methods of v	verif	ication of learning outcome	;;					

Methods of verification of learning outcomes:

The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course cle/academic degree/professional title, name and surname		
Lecture (W)	15				
Calculation class (C)	0				
Laboratory class (L)	30	dr inż. Spyı	ra Andrzej		
Project (P)	0				
Seminar (S)	0				
		Student v	vorkload		
Types of student activities*			Average number of hours* allocated on completed activities		
Lecture (W)			15		
Calculation class (C)			0		
Laboratory class (L)			30		
Project (P)			0		
Seminar (S)			0		
Preparation for class	es		10		
Preparation of a report/paper/ project/presentation			10		
Independent study o	f the course top	pics	25		
Examination or final	colloquium		0		
Additional contact he	ours		0		
Total student worklo	ad		90		
Number of contact h	ours (from the s	study plan)	45		
* hour (class) moons (E minutes					

dr hab. inż. Kłosok-Bazan Iwona Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Care	d
Field of study	Mechanical Engineering
Profile of Education	General Academic
Level of study	First Cycle Studies
Specialization	
Form of Study	Full-Time Studies
Semester	Third
Course Title	Strength of materials

Nazwa przedmiotu			Vytrzymałość materiałów						
ECTS points		4	Subject type				К		
Language of lecture		angielsk i	Mode of completing the cours			irse	Examination		
Coui	Course code		3.K.2			Subject related to scientific research/pract. profess. prepar. (Y/N	1)	Т	
		Knowle				nowledge of mathematics and physics nowledge of general mechanics			
Preliminar requiremer of the cour				1	Is able to determine reactions in a statically				
				2					
		Social	Social Competence		1 Understands the need to learn				
					2 Can think independently				
Course G	oal	s Prepari	ng studen	ts to	assess t	the strength of struct	tural elem	ients	
		ding. Stres ate of stres		ain st	ate anal	ysis, Mohr's circle. S	trength hy	potheses	
Learning	ou	tcomes fo		se - a ·cle	ifter con	npleting the training	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificat on of learning outcome s
	1		dent knows methods of strength analysis of ements of mechanical systems.					W	A B
Knowled ge	2	The stude	dent is able to discuss various strength cases					W	A B
	3	The student is able to define the centers of gravity and moments of inertia of plane figures					ME_K1_ W05	W	A B
Skills	1 2								
Social Compet ence	1	ls able to problem	s able to discuss the solution to an engineering ME_ problem KC					W	A B
	2	Understar	ME_K1_	W	A B				

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	45					
Calculation class (C)	0					
Laboratory class (L)	0	dr hab. inż.	. Kurek Marta			
Project (P)	0					
Seminar (S)	0	7				
Student workload						
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			45			
Calculation class (C)			0			
Laboratory class (L)			0			
Project (P)			0			
Seminar (S)			0			
Preparation for class	es		25			
Preparation of a report project/presentation	ort/paper/		0			
Independent study o	f the course top	oics	26			
Examination or final	colloquium		4			
Additional contact he	ours		0			
Total student worklo	ad		100			
Number of contact h	ours (from the s	study plan)	45			
* hour (class) means 15 minutes						

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

### Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Field of study	Mechanical Engineering				
Profile of Education	General Academic				
Level of study	First Cycle Studies				
Specialization					
Form of Study	Full-Time Studies				
Semester	Fourth				

Course Title	Strength of materials in practice							
Nazwa przedm	Wytrzymałość materiałów w praktyce							
ECTS points				Subject type			K	
Language of	angielsk i		Mode o	f completing the course		Course credit		
Course co		4.K.2		Subject related to scientific research/pract. profess. prepar. (Y/N)		Т		
	Knowledge		1	The student knows methods of strength analysis of basic elements of mechanical systems.				
			2	The student is able to discuss various strength cases				
			3	The student is able to define the centers of gravity and moments of inertia of plane figures				
Droliminary	Skills		1	The student is able to perform strength calculations in various load states				
Preliminary requirements of the course			2	The student is able to select the dimensions of the element, the mechanical properties of the material or the permissible loads for each case of simple strength (tension, compression, shear, torsion, bending), taking into account safety conditions and the required stiffness.				
			3	The student is able to draw Mohr's circle for various strength cases				
	Social Competence		1	Understands the need to learn				
			2	Can think independently				
Course Goals Preparing students to assess the strength of structural elements								
test, torsion te	st, shea	r test, co	pmp	pression tes	properties of metals: st. Analysis of plastic do and strain gauge measu	eformat	ion in bending	

Learning	OL	Itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s
Knowled	1	Knowledge of planning and implementation experiments related to machine design	ME_K1_ W05	LP	С
ge	2				
	1	The student is able to carry out experiments and laboratory tests	ME_K1_ U05	LP	С
Skills	2	The student is able to measure and analyze the obtained results	ME_K1_ U05	LP	С
	3	The student is able to design a selected structural element	ME_K1_ U09	LP	С
Social Compet	1	The student is aware of the need for education and deepening knowledge	ME_K1_ K01	LP	С
ence	2				

Llours in the study plan							
	۲ ۲	Hours in the study plan					
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname					
Lecture (W)	0						
Calculation class (C)	0						
Laboratory class (L)	30	dr hab. inż. Kurek Marta					
Project (P)	15	]					
Seminar (S)	0						
		Student workload					
Types of student act	ivities*	Average number of hours* allocated on completed activities					
Lecture (W)		0					
Calculation class (C)		0					
Laboratory class (L)		30					
Project (P)		15					
Seminar (S)		0					
Preparation for class	es	10					
Preparation of a repo project/presentation		10					

Independent study of the course topics	15
Examination or final colloquium	2
Additional contact hours	0
Total student workload	82
Number of contact hours (from the study plan)	45

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature)

dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Course Descrip	Course Description Card							
Field of study	Mechar	Mechanical Engineering						
Profile of Education	Genera	General Academic						
Level of study	First Cy	First Cycle Studies						
Specialization								
Form of Study	Full-Tim	Full-Time Studies						
Semester								
Course Title		Technic	al c	Irawing a	nd CAD I			
Nazwa przedm	iotu	Zapis k	ons	trukcji z v	vykorzystaniem CAD I			
ECTS poir	nts	3			Subject type		К	
Language of lecture ai		angielsk i	Mode of completing the course		Course credit			
Course co	Course code		3.K.5		Subject related to scientific research/pract. profess. prepar. (Y/N)		Ν	
	Knowlo	daa	1	Knows modeling geometric objects and simple machine elements.				
	Knowle	uge	2	S/he knows the rules and standards of technical drawing.				
Preliminary requirements Skills			1	S/he can interpret the markings contained in the technical drawing.			ned in the	
of the course			2	S/he can	operate computer eng	gineerin	g software	
			1	S/he can	cooperate in a group.			
	Social Compe <sup>-</sup>	tence	2	S/he cor discusse	rectly formulates quest d issue	tions re	garding the	
			3	S/he can	logically solve a given	proble	m	

Course Goals Preparing students to use primary engineering applications for technical documentation. To familiarize students with work in engineering programs for creating documentation and creating 2D and 3D representations of machine and device elements

Programme content During the classes, students will familiarize themselves with the methodology of designing in a CAD environment. The classes will focus on creating single-body models and assemblies, their editing methods, and engineering tools and methods enabling the realization of spatial models of machine parts and their assemblies.

Learning	οι	itcomes for the course - after completing the training cycle		course (W, C, L,	Methods of verificati on of learning outcome s
Knowled	1	S/he knows the rules of recording the structure using CAD software.	ME_K1_ W04	L	GIPR
ge	2				
Skills	1	S/he can recreate the technical documentation of the structure with the use of tools supporting computer CAD design.	ME_K1_ U04	L	GIPR
	2				
Social Compet	1	The course includes content from selected humanities or social issues.	ME_K1_ K06	L	GIPR
ence	2	S/he is aware of the importance of professional conduct	ME_K1_ K07	L	GIPR
		t Gentlem - Elenando a subsense			

Methods of verification of learning outcomes:

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	0					
Calculation class (C)	0					
Laboratory class (L)	30	dr inż. Owsiński Robert				
Project (P)	0					
Seminar (S)	0					
		Student workload				
Types of student act	ivities*	Average number of hours* allocated on completed activities				
Lecture (W)		0				
Calculation class (C)		0				
Laboratory class (L)		30				

Project (P)	0
Seminar (S)	0
Preparation for classes	15
Preparation of a report/paper/ project/presentation	0
Independent study of the course topics	30
Examination or final colloquium	0
Additional contact hours	0
Total student workload	75
Number of contact hours (from the study plan)	30

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

## Opole University of Technology

Faculty of Mechanical Engineering							
Course Description Card							
Field of study Mechanical Engineering							
Profile of Education	Genera	General Academic					
Level of study	First Cy	cle Studies/					
Specialization							
Form of Study	Full-Tin	ne Studies					
Semester	Fourth						
Course Title	Course Title Technical drawing and CAD II						
Nazwa przedmiotu	Zapis k	Zapis konstrukcji z wykorzystaniem CAD II					
ECTS points	2		Subject type		К		
Language of lecture	angielsk i	Mode o	of completing the course	e	Course credit		
Course code 4.K.5		I.K.5	Subject related to scientific research/pract. profess. prepar. (Y/N)	·	N		

			1							
		Knowledge	1	S/he has knowledge of model simple machine elements.	ing geom	etric obje	cts and			
		Kilowieuge	2	S/he he knows the rules and standards of technical drawing.						
Prelimir			1	S/he can interpret the markings contained in the technical drawing.						
requirements of the course				S/he can operate computer er	ngineering	g software	2.			
		se	3	S/he can identify typical machine components.						
			1	S/he can cooperate in a group	).					
		Social Competence	2	S/he correctly formulates que discussed issue.	stions reg	arding th	е			
			3	S/he can logically solve a give	en probler	n.				
of technie	cal doo	documentation. To	fam	to use basic engineering applic niliarize students with work in e ng 2D and 3D representations	engineerir	ng progra	ms for			
methodo models a the realiz	log nd zati	y of designing in a assemblies, their e on of spatial model	CAD ditir s of	asses, students will familiarize environment. The classes will ng methods, and engineering t machine parts and their assen	focus on ools and r nblies, inc	creating methods e luding sp	complex enabling			
functiona	aliti	es related to sheet	met	al constructions and modeling	of welde	d joints.	-			
		itcomes for the cou		- after completing the training	The referenc e to the	Form of course (W, C, L,	of verificati on of learning			
Learning		itcomes for the cou c	rse · ycle rule	- after completing the training	The referenc e to the learning outcome	Form of course (W, C, L,	of verificati on of learning outcome			
Learning Knowled	ou	tcomes for the cou c Student knows the using CAD software Student knows the	rse - ycle rule e. prir	- after completing the training	The referenc e to the learning outcome s ME_K1_ W04 ME_K1_	Form of course (W, C, L, P, S)	of verificati on of learning outcome s			
Learning Knowled ge	0U 1 2	Itcomes for the cou c Student knows the using CAD software Student knows the advanced tools CAI Student can recrea	rse - ycle rule e. D so te tl	- after completing the training es of recording the structure nciple of operation of	The referenc e to the learning outcome s ME_K1_ W04 ME_K1_ W04	Form of course (W, C, L, P, S) L	of verificati on of learning outcome s G I P R			
Learning Knowled ge	ou 1 2	Student knows the using CAD software Student knows the advanced tools CAI Student can recrea the structure with t computer CAD desi Student can reproc	rse · ycle rule e. D so te tl che u ign.	- after completing the training es of recording the structure nciple of operation of ftware to speed up your work. he technical documentation of	The referenc e to the learning outcome s ME_K1_ W04 ME_K1_ W04	Form of course (W, C, L, P, S) L	of verificati on of learning outcome s G I P R G I P R			
	0U 1 2 2	Student knows the using CAD software Student knows the advanced tools CAI Student can recrea the structure with t computer CAD desi Student can reproc machine part and t CAD environment.	rse · ycle rule e. prir D so te tl che t ign. luce he e ze v e de	- after completing the training es of recording the structure nciple of operation of oftware to speed up your work. he technical documentation of use of tools supporting a spatial model of a single entire machine assembly in a work on a project in	The referenc e to the learning outcome s ME_K1_ W04 ME_K1_ U04 ME_K1_	Form of course (W, C, L, P, S) L L	verificati on of learning outcome s G I P R G I P R			

A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

	Hours in the study plan						
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	0						
Calculation class (C)	0						
Laboratory class (L)	30	dr inż. Ows	iński Robert				
Project (P)	0						
Seminar (S)	0						
		Student v	vorkload				
Types of student act	ivities*		Average number of hours* allocated on completed activities				
Lecture (W)			0				
Calculation class (C)			0				
Laboratory class (L)			30				
Project (P)			0				
Seminar (S)			0				
Preparation for class	es		10				
Preparation of a repo project/presentation			0				
Independent study o	of the course top	pics	10				
Examination or final	colloquium		0				
Additional contact he	ours		0				
Total student worklo	ad		50				
Number of contact h	ours (from the	study plan)	30				

\* hour (class) means 45 minutes

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology

Faculty of Mechanical Engineering

Course Description Card

Field of study	Mechanical Engineering
Profile of Education	General Academic

		L Finat C					
Level of study	First C	ycl	e Studies				
Specialization							
Form of Study		Full-Time Studies					
Semester	Fifth	Fifth					
Course Title	Techn	Technical drawing and CAD III					
Nazwa przedm	Zapis	kon	istrukcji z v	vykorzystaniem CAD III			
ECTS poir	nts	2			Subject type		К
Language of	lecture	angielsk i		Mode o	f completing the cours	e	Course credit
Course code			5.K.3		Subject related to scientific research/pract. profess. prepar. (Y/N)		Ν
		anha		S/he has knowledge of modeling geometric objects and simple machine elements.			
	Knowle			S/he knows the rules and standards of technical drawing.			
		age	3	S/he has basic knowledge of part modeling in a 2D environment and basic knowledge of modeling in a 3 environment			
Preliminary requirements			1 S/he can i drawing.		5/he can interpret the markings contained in the technica drawing.		
of the course	Skills		2	S/he can c	perate computer engi	neering	software.
			3	S/he can i	dentify typical machine	e compo	onents.
			4	S/he can create spatial models of machine parts			
			1	S/he can c	cooperate in a group.		
	Social Compe	tence	2	S/he correctly formulates questions regarding the discussed issue.			arding the
				S/he can logically solve a given problem.			
3         S/he can logically solve a given problem.           Course Goals         Preparing students to use basic engineering applications for the preparation.						the preparation	

Course Goals Preparing students to use basic engineering applications for the preparation of technical documentation. To familiarize students with work in engineering programs for creating documentation and creating 2D and 3D representations of machine and device elements

Programme content During the classes, students will become acquainted with the methodology of designing in a CAD environment. The sessions will focus on utilizing advanced engineering modules in CAD software to conduct design processes for machine parts (shafts, gears), as well as methods for strength verification of parts and creating drawing documentation. Discussion on parametric modeling in CAD will also be covered.

Learning	OL	itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s
	1	S/he knows the rules of recording the structure using CAD software.	ME_K1_ W04	L	GIPR
Knowled ge	2	S/he knows the principle of operation of advanced CAD software tools in order to speed up the work.	ME_K1_ W04	L	GIPR
	3	S/he knows the methodology of creating spatial models in software supporting engineering design.	ME_K1_ W04	L	GIPR
	1	S/he can recreate the technical documentation of the structure with the use of tools supporting computer CAD design.	ME_K1_ U04	L	GIPR
Skills	2	S/he can reproduce a spatial model of a single machine part and the entire machine assembly in a CAD environment.	ME_K1_ U08	L	GIPR
	3	S/he can develop technical documentation in the form of executive and assembly drawings	ME_K1_ U10	L	GIPR
Compet -	1	S/he can organize work on a project in accordance with the design logic and the possibilities of tools.	ME_K1_ K06	L	GIPR
	2	S/he is aware of the importance of professional conduct	ME_K1_ K07	L	GIPR

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	0					
Calculation class (C)	0					
Laboratory class (L)	30	dr inż. Owsiński Robert				
Project (P)	0					
Seminar (S)	0					
		Student workload				
Types of student act	ivities*	Average number of hours* allocated on completed activities				
Lecture (W)		0				
Calculation class (C)		0				
Laboratory class (L)		30				

Project (P)	0
Seminar (S)	0
Preparation for classes	5
Preparation of a report/paper/ project/presentation	0
Independent study of the course topics	15
Examination or final colloquium	0
Additional contact hours	0
Total student workload	50
Number of contact hours (from the study plan)	30

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

## Opole University of Technology

Faculty of Mechanical Engineering								
Course Description Card								
Field of study	f study Mechanical Engineering							
Profile of Education	Genera	l Academic						
Level of study	First Cy	cle Studies/						
Specialization								
Form of Study	Full-Tin	ne Studies						
Semester	nester Second							
Course Title	Techni	cal drawing in	n practice					
Nazwa przedmiotu	Rysune	ek techniczny	w praktyce					
ECTS points	4		Subject type	K				
Language of lecture	angielsk i	Mode o	of completing the cours	e Course c	redit			
Course code	2	2.K.5	Subject related to scientific research/pract. profess. prepar. (Y/N)	N				

			1	S/he has detailed knowledge in the field of projection methods for complex spatial objects.						
		Knowledge	2		S/he has knowledge in constructing projections of spatial objects onto the drawing plane.					
			3	S/he is familiar with methods for determining relationships between spatial objects.						
Prelimir	-		1	S/he has the ability to solve pro	blems in	solid geo	metry.			
requirem of the co			2	Has practical ability to solve pr regarding recording of design f						
			1	Correctly identifies and resolve complex spatial objects.	s relation	ships bet	ween			
		Social Competence	2	Correctly identifies and resolve complex spatial objects.	s relation	ships bet	ween			
			3	Can think and act entrepreneu	rially.					
Course G	oals	Acquainting stu	der	ts with parametric modeling m	ethods us	ing 3D CA	AD			
	" rel			ing documentation. Introducing of creating virtual representation						
solids and assembli	d ass es. U	semblies using "b Itilization of stand	est darc	introduction to using CAD softw practices" and maintaining the lized element libraries in the mo ance with applicable standards.	proper st	ructure o	f -			
Learning	Learning outcomes for the course - after completing the training cycle						Methods of verificati on of learning outcome s			
Knowled	1 g		s tra	ne principles of engineering aditional tools used in cumentation.	ME_K1_ W04	WL	C F G I P R			
ge	2 s	/he is familiar wit tandardization ar ocumentation.		ME_K1_ W04	WL	C F G I P R				
	1   n	nachine element,	me	ple technical drawing of a chanism, or device using the ization and databases.	ME_K1_ U01	L	C F G I P R			
Skills		/he can formulate ngineering tasks.	-	ecifications for practical	ME_K1_ U01	L	C F G I P R			
	3 S	/he can interpret	tec	hnical drawings.	ME_K1_ U10	L	C F G I P R			
		an communicate rofessional enviro		ng graphical techniques in a nent.	ME_K1_ U10	L	C F G I P R			
Social Compet		/he is aware of th n engineer's actions		ME_K1_ K05	WL	C F G I P R				
ICOMPEL		-			•					

A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan							
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course le/academic degree/professional title, name and surname				
Lecture (W)	15						
Calculation class (C)	0						
Laboratory class (L)	30	dr inż. Kow	alski Mateusz				
Project (P)	0						
Seminar (S)	0						
		Student v	vorkload				
Types of student act	ivities*		Average number of hours* allocated on completed activities				
Lecture (W)			15				
Calculation class (C)			0				
Laboratory class (L)			30				
Project (P)			0				
Seminar (S)			0				
Preparation for class	es		25				
Preparation of a report project/presentation			0				
Independent study o	of the course top	pics	28				
Examination or final	colloquium		2				
Additional contact he	ours		0				
Total student worklo	ad		100				
Number of contact h	ours (from the	study plan)	45				

\* hour (class) means 45 minutes

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Field of study Mechanical Engineering

Profile of Education		Genera	General Academic				
Level of study	First Cy	First Cycle Studies					
Specialization							
Form of Study		Full-Tin	ne S	tudies			
Semester		First					
Course Title		Technic	cal r	netrology	1		
Nazwa przedm	niotu	Metrolo	ogia	techniczr	าล		
ECTS poir	nts	3			Subject type		К
Language of	lecture	angielsk i		Mode o	of completing the cours	e	Examination
Course code			K.7	7	Subject related to scientific research/pract. profess. prepar. (Y/N)		Т
	Knowle	dae	1	Mathema probabili	thematics, in algebra, mathematical analysis and bability.		
		uyc	2	-	in terms of optics.		
					ary knowledge in techr		-
	Skills		1	Can obta other so	ain information from lite urces.	erature,	databases and
of the course			2	Has the	ability to self-educate.		
	Social		1		s aware of the need to supplement knowledge hroughout life.		
	Compe	tence	2		o cooperate and act in roles in it.	a group	, assuming
Course Goals Familiarize students with measurement methods							
measurement, measurement	methoo accurac	ls of meas y. Calcula	sure ition	ement, op 1 of tolera	pasic concepts of meas eration of measuring ir nces and fits, analysis ation of measurement	nstrume of meas	ents, evaluation of surement errors

Learning	οι	itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s
	1	S/he has knowledge of technical metrology.	ME_K1_ W09	W C	С
Knowled ge	2	S/he knows the methods of measuring the basic quantities characteristic of mechanical engineering dla budowy maszyn.	ME_K1_ W09	W C	С
	3	S/he knows the computational methods necessary to analyze the measurement results.	ME_K1_ W09	W C	С
Skills	1	S/he is able to apply methods of estimating measurement errors.	ME_K1_ U01	С	С
	2				
Social Compet	1	Is aware of the need to supplement knowledge throughout life.	ME_K1_ K01	W C	С
ence	2				

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	15					
Calculation class (C)	15					
Laboratory class (L)	0	dr inż. Bogdan-Chudy Marta				
Project (P)						
Seminar (S)	0					
		Student workload				
Types of student act	ivities*	Average number of hours* allocated on completed activities				
Lecture (W)		15				
Calculation class (C)		15				
Laboratory class (L)		0				
Project (P)		0				
Seminar (S)		0				
Preparation for class	es	15				
Preparation of a report project/presentation	ort/paper/	0				

Independent study of the course topics	28
Examination or final colloquium	2
Additional contact hours	0
Total student workload	75
Number of contact hours (from the study plan)	30

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Field of study       Mechanical Engineering         Profile of Education       General Academic         Level of study       First Cycle Studies         Specialization       Form of Study         Form of Study       Full-Time Studies         Semester       Sixth         Course Title       Techniques of welding         Nazwa przedmiotu       Techniki spajania materiałów         ECTS points       4         Subject type       K         Language of lecture angielsk i       Mode of completing the course in scientific research/pract. profess. prepar. (Y/N)       Course credit         Course code       6.K.2       Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       1       They have knowledge in the field of properties and applications of metallic structural materials.         Skills       2       They have knowledge of the transformations occurring in steels during heating and cooling treatments.         Skills       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.         2       5       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.         2       5       1       They have knowledge of the transformations occurring in steels during heatin	Course Descrip	Course Description Card							
Level of study       First Cycle Studies         Specialization       Full-Time Studies         Form of Study       Full-Time Studies         Semester       Sixth         Course Title       Techniques of welding         Nazwa przedmiotu       Techniki spajania materiałów         ECTS points       4         Language of lecture       angielsk         i       Mode of completing the course       Course credit         Course code       6.K.2       Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       I       They have knowledge in the field of properties and applications of metallic structural materials.       2         Skills       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.       2         Social Completence       1       They are capable of collaborating and working within a group.	Field of study	Mechar	Mechanical Engineering						
Specialization       Image: specialization         Form of Study       Full-Time Studies         Semester       Sixth         Course Title       Techniques of welding         Nazwa przedmiotu       Techniki spajania materiałów         ECTS points       4         Language of lecture       angielsk i         Mode of completing the course       Course credit         Course code       6.K.2         Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       1         Skills       1         Skills       1         Social competence       1         Social competence       1         They are capable of collaborating and working within a group.	Profile of Education	Genera	General Academic						
Form of Study       Full-Time Studies         Semester       Sixth         Course Title       Techniques of welding         Nazwa przedmiotu       Techniki spajania materiałów         ECTS points       4         Subject type       K         Language of lecture       angielsk i         Mode of completing the course       Course credit         Course code       6.K.2         Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       1         Skills       1         Scial Completing heating and cooling treatments.       1         Social Completing heating and cooling treatments.       1         They have knowledge of the transformations occurring in steels during heating and cooling treatments.       1         They have knowledge of the transformations occurring in steels during heating and cooling treatments.       1         They are capable of collaborating and working within a group.       1	Level of study		First Cy	'cle	Studies				
Semester       Sixth         Course Title       Techniques of welding         Nazwa przedmiotu       Techniki spajania materiałów         ECTS points       4       Subject type       K         Language of lecture angielsk i       Mode of completing the course       Course credit         Course code       6.K.2       Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       Knowledge       1       They have knowledge in the field of properties and applications of metallic structural materials.       2         Skills       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.       1         Social Competence       1       They are capable of collaborating and working within a group.	Specialization								
Course Title       Techniques of welding         Nazwa przedmiotu       Techniki spajania materiałów         ECTS points       4       Subject type       K         Language of lecture angielsk i       Mode of completing the course       Course credit         Course code       6.K.2       Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       Knowledge       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.       2         Scial Course cole       Social Completer complete during heating and cooling treatments.       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.         Preliminary requirements of the course       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.         1       They are capable of collaborating and working within a group.	Form of Study		Full-Tim	ne S	tudies				
Nazwa przedmiotu       Techniki spajania materiałów         ECTS points       4       Subject type       K         Language of lecture angielsk i       Mode of completing the course       Course credit         Course code       6.K.2       Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       Knowledge       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.       T         Skills       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.         Social Competence       1       They are capable of collaborating and working within a group.       1	Semester		Sixth						
ECTS points       4       Subject type       K         Language of lecture angielsk i       Mode of completing the course       Course credit         Course code       6.K.2       Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.       2         Skills       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.       2         Social Completence       1       They are capable of collaborating and working within a group.       1	Course Title		Technic	ques	s of weldi	ng			
Language of lecture       angielsk       Mode of completing the course       Course credit         Course code       6.K.2       Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.       1         Skills       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.       1         Social       1       They are capable of collaborating and working within a group.       1	Nazwa przedm	iotu	Technik	ki sp	ajania ma	ateriałów			
i       Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       1       They have knowledge in the field of properties and applications of metallic structural materials.       1         Skills       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.       1         Skills       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.       1         Skills       1       They are capable of collaborating and working within a group.       1	ECTS poir	nts	4			Subject type		К	
Course code       6.K.2       scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       1       They have knowledge in the field of properties and applications of metallic structural materials.       2       They have knowledge of the transformations occurring in steels during heating and cooling treatments.         Skills       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.         2       They have knowledge of the transformations occurring in steels during heating and cooling treatments.         2       They have knowledge of the transformations occurring in steels during heating and cooling treatments.         2       1         3       1         4       1         4       1         4       1         5       1         5       1         7       1         7       1         7       1         7       1         7       1         7       1         7       1         7       1         7       1         7       1         7       1         7       1         7       1 <tr< td=""><td>Language of</td><td>angielsk i</td><td></td><td colspan="2">Mode of completing the course</td><td colspan="2">Mode of completing the course Course</td><td>Course credit</td></tr<>	Language of	angielsk i		Mode of completing the course		Mode of completing the course Course		Course credit	
Preliminary requirements of the course1applications of metallic structural materials. They have knowledge of the transformations occurring 	Course co	Course code			2	scientific research/pract.		Т	
Preliminary       2       They have knowledge of the transformations occurring in steels during heating and cooling treatments.         Preliminary       Skills       1       They have knowledge of the transformations occurring in steels during heating and cooling treatments.         Skills       2       2         Social       2       2         Social       1       They are capable of collaborating and working within a group.		Knowlo	dao	-					
requirements of the course       Skills       1       Intel nave knowledge of the transformations occurring in steels during heating and cooling treatments.         2       2         Social Competence       1       They are capable of collaborating and working within a group.		KIIUWIE	uye	2				<u> </u>	
2       Social       1       Group.         2	requirements	Skills		1					
Social I group.	of the course			2					
			tonco	1					
		Compe	lence	2					
Course Goals Introducing students to the technologies of bonding inseparable	Course Goals	Introdu	cing stude	ents	to the te	chnologies of bonding	insepar	able	

Programme content As part of the course, students acquire theoretical and practical knowledge about various metal joining techniques, such as MIG/MAG welding, TIG welding, shielded metal arc welding, thermit welding, submerged arc welding, brazing, and soldering. They learn about the structure and properties of welded joints, methods of their evaluation, application areas, as well as safety and standards-related issues. Upon completion of the course, students possess essential knowledge in selecting welding techniques across various industries and manufacturing sectors.

Learning	οι	itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s				
Knowled 1 and alloys throu		They have knowledge in the field of joining metals and alloys through non-destructive methods, as well as testing techniques.	ME_K1_ W08	WL	С				
	2								
Skills		S/he is capable of using standards, professional literature, catalogs of welding materials, and online sources.	ME_K1_ U01	WL	С				
	2								
Social Compet	1	S/he understands the necessity of self-education and knowledge enhancement.	ME_K1_ K01	WL	С				
ence	2								
Makka da af.									

Methods of verification of learning outcomes:

	Hours in the study plan					
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	30					
Calculation class (C)	0					
Laboratory class (L)	30	dr hab. Prażmowski Mariusz				
Project (P)	0	1				
Seminar (S)	0					
		Student workload				
Types of student act	ivities*	Average number of hours* allocated on completed activities				
Lecture (W)		30				
Calculation class (C)		0				
Laboratory class (L)		30				

0
0
20
10
20
0
0
110
60

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

## Opole University of Technology Faculty of Mechanical Engineeri

anical E	Engineerir	ng						
ion Car	d							
	Mechar	nical	al Engineering					
ition	Genera	l Aca	ade	emic				
	First Cy	/cle S	Stu	dies				
	Full-Tin	ne St	tud	ies				
	Fourth							
	Techno	logio	cal	proce	sses design			
otu	Projekt	owai	nie	proce	sów technologicznych			
ts	4				Subject type		К	
ecture	angielsk i		Μ	lode o	f completing the cours	Examination		
Course code 4.K			Ļ		Subject related to scientific research/pract. profess. prepar. (Y/N)		Т	
Knowlo	dao	:	1	Knows	the principles of engir	neering	graphics	
KIIOWIE	uye		2					
			1	Is able to choose the appropriate production method.				
JKIIIS			2					
Social C	Compotor		1	s able	to analyze engineerin	g tasks.	•	
	Joinperen		2					
	ion Car tion otu ts ecture de Knowlee Skills	ion Card Mechar tion Genera First Cy Full-Tin Fourth Techno otu Projekt ts 4 ecture angielsk i de 2 Knowledge	Mechanica tion General Ac First Cycle Full-Time S Fourth Technologi otu Projektowa ts 4 ecture angielsk i de 4.K.4 Knowledge Skills	ion Card          Mechanical En         tion       General Acade         First Cycle Stu         Full-Time Stud         Fourth         Technological         otu       Projektowanie         ts       4         ecture angielsk i       M         de       4.K.4         Skills       2         Skills       2	ion Card           Mechanical Engineer           tion         General Academic           First Cycle Studies           Full-Time Studies           Fourth           Technological proces           otu         Projektowanie proces           otu         Projektowanie proces           otu         Projektowanie proces           otu         A           4         Mode o           de         4.K.4           Knowledge         1           Skills         2           Skills         1           Is able           2           1         Is able	ion Card           Mechanical Engineering           tion         General Academic           First Cycle Studies         First Cycle Studies           Full-Time Studies         Fourth           Technological processes design         Projektowanie procesów technologicznych           ts         4           Subject type           ecture angielsk i         Mode of completing the cours           i         Subject related to scientific research/pract. profess. prepar. (Y/N)           Knowledge         1           Knows the principles of engin           2           5kills         1           1         Is able to choose the approprize of analyze engineerin	ion Card Mechanical Engineering tion General Academic First Cycle Studies Full-Time Studies Fourth Technological processes design otu Projektowanie procesów technologicznych ts 4 Subject type ecture angielsk Mode of completing the course i Mode of completing the course feeture angielsk Mode of completing the course feeture angielsk Mode of completing the course i 1 Knows the principles of engineering Knowledge Skills 1 Is able to choose the appropriate processes Forial Competence 1 Is able to analyze engineering tasks	

Course Goals Preparing students to design machine elements based on typical production processes.

Programme content Structural diagram of the technological process. Types of semi-finished products and their selection. Machining allowances. Input data for designing the technological process. Technological documentation. Technology of construction. Processes of technological parts class shaft, disc, sleeve.

Learning	οι	utcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s
	1	Knows the principles of engineering graphics and tools used in preparing technical documentation	ME_K1_ W04	W	A B
Knowled ge	2	Has knowledge of engineering materials, their research and shaping technologies	ME_K1_ W10	W	A B
	3	Has knowledge of the production and operation of machines and mechanical devices	ME_K1_ W08	W	A B
1	Is able to use information and communication techniques appropriate to carry out tasks in the field of design, production and operation of machines	ME_K1_ U04	Р	к	
Skills	2	Is able - in accordance with a given specification - to design and implement a simple device, object, system or process, typical for the process of designing, manufacturing and operating machines, using appropriate methods, techniques and tools	ME_K1_ U09	W P	ВK
	3	Has the necessary preparation to work in an industrial environment and knows the safety rules related to this work	ME_K1_ U06	Р	к
Social	1	Is aware of the need to supplement knowledge throughout life and is able to select appropriate learning methods for themselves and other people	ME_K1_ K01	W P	АВК
Compet ence 2	2	Is aware of the responsibility related to decisions made as part of engineering activities, especially in terms of own and other people's safety and environmental protection fication of learning outcomes:	ME_K1_ K03	W P	A B

Methods of verification of learning outcomes:

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				

Lecture (W)	30							
Calculation class (C)	0							
Laboratory class (L)	0	dr hab. inż. Niesłony Piotr						
Project (P)	30							
Seminar (S)	0	]						
Student workload								
Types of student act	ivities*		Average number of hours* allocated on completed activities					
Lecture (W)			30					
Calculation class (C)			0					
Laboratory class (L)			0					
Project (P)			30					
Seminar (S)			0					
Preparation for class	es		15					
Preparation of a report/paper/ project/presentation			15					
Independent study o	f the course to	pics	8					
Examination or final	colloquium		2					
Additional contact ho	ours		0					
Total student worklo	ad		100					
Number of contact h	ours (from the	study plan)	60					
* hour (aloca) moone	4							

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card

Field of study	Mecha	Mechanical Engineering						
Profile of Education	Genera	al Academic						
Level of study	First C	ycle Studies						
Specialization								
Form of Study	Full-Tir	Full-Time Studies						
Semester	Second	Second						
Course Title	Techno	Technologies and industrial apparatus						
Nazwa przedmiotu	Techno	Technologie i urządzenia przemysłowe						
ECTS points	3	3 Subject type K						

Langua	ge	of lecture	angielsk Mode of completing the cou i				irse	Course credit			
Course code 2.1			.K.4 Subject related to scientific research/pract. profess. prepar. (Y/N)			1)	т				
		Knowle	dge	1	Mechanics, Fluid mechanics, Strength of materials strength						
Prelimir requirem of the co	nen	ts Skills		1	fluid me	dent has knowledge echanics and strengtl ciples of operation a	n of mate	rials to ur	derstand		
		Social Compe	tence	1		acquires information related to technical		erature ar	id other		
technolog	gy a	and indust	rial equipr	nent	t	epare students for th			students		
to use mo systemic	ode ap	ern techno proach to	logies and design to	indı ensu	ustrial ec ure the re	quipment. The acquir eliability and safety c onsibility for their reli	ed knowle of devices	edge allov impleme	ws for a		
Learning outcomes for the course - after completing the training e to the course - after completing the training (W,					course (W, C, L,	Methods of verificati on of learning outcome s					
Knowled ge	owled 1 A student has extensive knowledge related to selected issues in the construction, maintenance, technical diagnostics, repair technology and safe use of machinery.						ME_K1_ W07	W	C P		
	2										
Skills	1 2										
Social CompetA student is aware of the knowledge throughout appropriate learning module others.Social CompetA student is aware of the conduct, adherence to respecting the diversity					ife and is	able to select the	ME_K1_ K01	W	C P		
					orofessio	nal ethics and	ME_K1_ K05	W	СР		

A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan								
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname					
Lecture (W)	30							
Calculation class (C)	0							
Laboratory class (L)	0	dr hab. inż	. Czernek Krystian					
Project (P)	0							
Seminar (S)	0							
	Student workload							
Types of student activities*			Average number of hours* allocated on completed activities					
Lecture (W)			30					
Calculation class (C)			0					
Laboratory class (L)			0					
Project (P)			0					
Seminar (S)			0					
Preparation for class	es		23					
Preparation of a report/paper/ project/presentation			0					
Independent study of the course topics			20					
Examination or final colloquium			2					
Additional contact hours			0					
Total student worklo	ad		75					
Number of contact h	ours (from the	study plan)	30					

\* hour (class) means 45 minutes

dr hab. inż. Hapanowicz Jerzy Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology

Faculty of Mechanical Engineering

Course Description Card

Field of study	Mechanical Engineering
Profile of Education	General Academic

Level of study		First C	First Cycle Studies					
Specialization								
Form of Study	Full-Tir	Full-Time Studies						
Semester		Third						
Course Title		Vehicle	e an	d machine	e propulsion			
Nazwa przedm	niotu	Napędy	у рс	ojazdów i r	naszyn			
ECTS poir	nts	5			Subject type		К	
Language of	lecture	angielsk i		Mode o	f completing the cours	e	Examination	
Course code		Ę	3.K.3		Subject related to scientific research/pract. profess. prepar. (Y/N)		Ν	
	dge	1		l-established and extended knowledge related to d issues in the field of operation and construction les				
Preliminary requirements Skills			critically 1 technica		Ily analyzes and evaluates the functioning of cal solutions of vehicle drive systems in the field of ecialty pursued			
of the course			2					
	Social Competence		1	understands the non-technical aspects of the activity of a mechanical engineer and manager, including its social consequences and impact on the environment				
			2					
Course Goals of general mad			nts t	to achieve	theoretical and praction	cal knov	vledge in the field	
Programme co	ntent -	The subje	ct is	s intended	to enable students to	acquire	knowledge of	

modern drive systems of vehicles and machines as well as skills in their operation. An important issue is that students learn to work in a team during service activities.

Learning	OL	Itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s
Knowled	1	S/he has knowledge related to the structure and operation of drive systems	ME_K1_ W08	WL	A B E H P
ge	2				
Skills	1	S/he is able to critically analyze functioning selected elements of machine drives	ME_K1_ U08	WL	ВІЈР
	2				
Social Compet ence	1	S/he understands the non-technical aspects of a mechanical engineer's activity, in particular the impact on the environment various aspects of the operation of machine drives	ME_K1_ K02	WL	BIJP
	2				
Martha da a Ca	!	fication of learning outcomes			

Hours in the study plan						
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	30					
Calculation class (C)	0					
Laboratory class (L)	30	prof. dr hab. inż. Mamala Jarosław				
Project (P)	0					
Seminar (S)	0					
	Student workload					
Types of student act	ivities*	Average number of hours* allocated on completed activities				
Lecture (W)		30				
Calculation class (C)		0				
Laboratory class (L)		30				
Project (P)		0				
Seminar (S)		0				
Preparation for class	es	23				
Preparation of a report project/presentation		0				
Independent study o	f the course top	pics 40				

Examination or final colloquium	2
Additional contact hours	0
Total student workload	125
Number of contact hours (from the study plan)	60

dr hab. inż. Augustynowicz Andrzej
Head of the organizational unit
(stamp/signature)

dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

## Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Profile of Education       General Academic         Level of study       First Cycle Studies         Specialization       Machine Design         Form of Study       Full-Time Studies         Semester       Fifth         Course Title       CAD machine design         Nazwa przedmiotu       Projektowanie maszyn CAD         ECTS points       2         Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Course code       5.WK.3         She has knowledge of material strength and calculations for simple mechanical systems.       T         Preliminary requirements of the course       Skills       1       S/he has knowledge in modeling and developing drawing documentation using CAD software.         Social Competence       2       She understands the need for lifelong learning.       2	Course Besenp							
Level of study       First Cycle Studies         Specialization       Machine Design         Form of Study       Full-Time Studies         Semester       Fifth         Course Title       CAD machine design         Nazwa przedmiotu       Projektowanie maszyn CAD         ECTS points       2         Subject type       W-K         Language of lecture       angielsk i         Node of completing the course       Course credit         Course code       5.WK.3         Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       S/he has knowledge of material strength and calculations for simple mechanical systems.         Skills       1       S/he has knowledge in modeling and developing drawing documentation using CAD software.         2       Has the ability to identify loads.       assemblies using CAD software.         2       Has the ability to identify loads.       2         Social Competence       1       S/he understands the need for lifelong learning.	Field of study		Mechan	ical	Enginee	ring		
Specialization       Machine Design         Form of Study       Full-Time Studies         Semester       Fifth         Course Title       CAD machine design         Nazwa przedmiotu       Projektowanie maszyn CAD         ECTS points       2         Language of lecture angielsk i       Mode of completing the course iscientific research/pract. profess. prepar. (Y/N)       Course credit         Course code       5.WK.3       Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       1       S/he has knowledge in modeling and developing drawing documentation using CAD software.       2         Skills       1       S/he has the ability to model individual parts as well as assemblies using CAD software.       2         Social Competence       1       S/he understands the need for lifelong learning.	Profile of Educ	ation	Genera	General Academic				
Form of Study       Full-Time Studies         Semester       Fifth         Course Title       CAD machine design         Nazwa przedmiotu       Projektowanie maszyn CAD         ECTS points       2         Subject type       W-K         Language of lecture       angielsk i         Knowledge       5.WK.3         Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       1         Skills       S/he has knowledge in modeling and developing drawing documentation using CAD software.       2         Skills       1         She has the ability to identify loads.       3         Social Competence       1         She understands the need for lifelong learning.	Level of study		First Cy	cle	Studies			
Semester       Fifth         Course Title       CAD machine design         Nazwa przedmiotu       Projektowanie maszyn CAD         ECTS points       2       Subject type       W-K         Language of lecture angielsk i       Mode of completing the course       Course credit         Course code       5.WK.3       Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       S/he has knowledge of material strength and calculations for simple mechanical systems.       2       S/he has knowledge in modeling and developing drawing documentation using CAD software.         Social       1       S/he has the ability to identify loads.       2         Social       1       S/he understands the need for lifelong learning.         2       Jas the ability to identify loads.       2	Specialization		Machine	e De	esign			
Course Title       CAD machine design         Nazwa przedmiotu       Projektowanie maszyn CAD         ECTS points       2       Subject type       W-K         Language of lecture in angielsk i       Mode of completing the course       Course credit         Course code       5.WK.3       Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       Knowledge       1       S/he has knowledge of material strength and calculations for simple mechanical systems.       2         Skills       1       S/he has the ability to model individual parts as well as assemblies using CAD software.       1       S/he understands the need for lifelong learning.         Social Competence       1       S/he understands the need for lifelong learning.       2	Form of Study		Full-Tim	ne S	tudies			
Nazwa przedmiotu       Projektowanie maszyn CAD         ECTS points       2       Subject type       W-K         Language of lecture       angielsk       Mode of completing the course       Course credit         Course code       5.WK.3       Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       S/he has knowledge of material strength and calculations for simple mechanical systems.       2       S/he has knowledge in modeling and developing drawing documentation using CAD software.         Skills       1       S/he has the ability to model individual parts as well as assemblies using CAD software.       2         Social Competence       1       S/he understands the need for lifelong learning.	Semester		Fifth					
ECTS points       2       Subject type       W-K         Language of lecture angielsk i       Mode of completing the course       Course credit         Course code       5.WK.3       Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       S/he has knowledge of material strength and calculations for simple mechanical systems.       2       S/he has knowledge in modeling and developing drawing documentation using CAD software.         Skills       1       S/he has the ability to identify loads.       2         Social Competence       1       S/he understands the need for lifelong learning.	Course Title		CAD ma	achi	ne desigr	۱		
Language of lecture       angielsk       Mode of completing the course       Course credit         Course code       5.WK.3       Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       1       S/he has knowledge of material strength and calculations for simple mechanical systems.       S/he has knowledge in modeling and developing drawing documentation using CAD software.         Skills       1       S/he has the ability to model individual parts as well as assemblies using CAD software.       S/he understands the need for lifelong learning.         Social Competence       1       S/he understands the need for lifelong learning.       S/he understands the need for lifelong learning.	Nazwa przedm	niotu	Projekto	owa	nie masz	yn CAD		
i       i       Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       5.WK.3       S/he has knowledge of material strength and calculations for simple mechanical systems.       2       S/he has knowledge in modeling and developing drawing documentation using CAD software.       2       S/he has the ability to model individual parts as well as assemblies using CAD software.       2       Has the ability to identify loads.         Social Competence       1       S/he understands the need for lifelong learning.       2	ECTS poir	nts	2			Subject type		W-K
Course code       5.WK.3       scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       Rnowledge       1       S/he has knowledge of material strength and calculations for simple mechanical systems.       2       S/he has knowledge in modeling and developing drawing documentation using CAD software.       1       S/he has the ability to model individual parts as well as assemblies using CAD software.       1       S/he has the ability to identify loads.         Social Competence       1       S/he understands the need for lifelong learning.       1	Language of	lecture	angielsk i				Course credit	
Preliminary requirements of the courseRnowledge1calculations for simple mechanical systems.2S/he has knowledge in modeling and developing drawing documentation using CAD software.3Skills1S/he has the ability to model individual parts as well as assemblies using CAD software.42Has the ability to identify loads.52Has the ability to identify loads.51S/he understands the need for lifelong learning.221	Course co	de	e 5.'		VK.3 scientific research/pra			т
Preliminary requirements of the courseSkills1S/he has knowledge in modeling and developing drawing documentation using CAD software.Skills1S/he has the ability to model individual parts as well as assemblies using CAD software.Skills1S/he has the ability to identify loads.Social Competence1S/he understands the need for lifelong learning.221		Knowlo	dao	1				
requirements of the courseSkills1S/he has the ability to model individual parts as well as assemblies using CAD software.2Has the ability to identify loads.Social Competence1S/he understands the need for lifelong learning.22	Preliminary	Knowledge		2				
Social1S/he understands the need for lifelong learning.Competence2	requirements			1				
Competence 2				2	Has the ability to identify loads.			
				1	S/he understands the need for lifelong learning.			
Course Goals Introducing students to methods of designing basic machine elements using			tence	2				
	Course Goals Introducing students to methods of designing basic machine elements using							

computational tools and CAD software.

Programme content Utilization of CAD software in parametrization of machine systems based on strength criteria. Techniques for supporting modeling and calculations of basic connection groups used in machine constructi

Learning	οι	itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s			
Knowled ge	1	S/he has specialized knowledge in utilizing CAD software for the needs of structural components of machines and mechanical constructions.	ME_K1_ W05	L	I J K L M P R			
	2							
Skills	1	S/he is able to operate software appropriate for tasks related to the design, manufacturing, and operation of machines.	ME_K1_ U04	L	I J K L M P R			
	2							
Social Compet ence	1	S/he is aware of the responsibility associated with decisions made within engineering activities, particularly in terms of personal safety, the safety of others, and environmental protection.	ME_K1_ K03	L	I J K L M P R			
	2							
Methods of verification of learning outcomes:								

Hours in the study plan					
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname			
Lecture (W)	0				
Calculation class (C)	0				
Laboratory class (L)	30	dr inż. Kowalski Mateusz			
Project (P)	0				
Seminar (S)	0				
		Student workload			
Types of student act	ivities*	Average number of hours* allocated on completed activities			
Lecture (W)		0			
Calculation class (C)		0			
Laboratory class (L)		30			
Project (P)		0			
Seminar (S)		0			
Preparation for class	es	10			
Preparation of a report project/presentation		0			

Independent study of the course topics	10
Examination or final colloquium	0
Additional contact hours	0
Total student workload	50
Number of contact hours (from the study plan)	30

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature)

dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Course Description car						
Field of study	Mecha	Mechanical Engineering				
Profile of Education	Genera	al Academic				
Level of study	First Cy	cle Studies				
Specialization	Machin	e Design				
Form of Study	Full-Tir	ne Studies				
Semester	Sixth					
Course Title	CAM pr	CAM process design				
Nazwa przedmiotu	Projekt	Projektowanie procesów CAM				
ECTS points	3		Subject type		W-K	
Language of lecture	angielsk i	Mode c	Mode of completing the course		Examination	
Course code	6.WK.3		Subject related to scientific research/pract. profess. prepar. (Y/N)		Т	

	Knowledge	1	He/She has knowledge of the basics of cavity machining and process machinery.	
		2	He/She has knowledge of integrated manufacturing systems.	
		3	He/She knows the principles of design using CAD programs.	
Droliminary	Skills	1	He/She is able to prepare the technological process of simple machine components	
Preliminary requirements of the course		2	He/She can interpret the markings on the technical drawing.	
		3	He/She can determine the effect of basic manufacturing techniques.	
	Social Competence	1	He/She is aware of supplementing and expanding his knowledge in the field of design.	
		2	He/She is able to analyze the tasks assigned for implementation.	
		3	He/She is aware of the responsibilities and consequences associated with his decisions.	
Course Goals To enable the acquisition of basic knowledge of computer-aided manufacturing systems and prepare students for their practical use.				
Programme content Lecture on process design for CNC machine tools. Introduction to				

programme content Lecture on process design for CNC machine tools. Introduction to computer aided manufacturing (CAM) systems. CAX techniques in manufacturing. Automatic programming using CAM systems. Methodology of programming on the example of a selected CAD/CAM system. Design exercises in the computer lab: development of technology and machining program for CNC machine tool. Programming 2-axis turning and 3-axis milling.

Learning	οι	utcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s
Knowled ge	1	He/She has knowledge of computer-aided manufacturing using CAM computer techniques.	ME_K1_ W01	WL	НIJ
ye	2				
	1	He/She proficiently uses information and communication techniques appropriate for engineering tasks.	ME_K1_ U05	L	AHIJ
Skills	2	He/She appropriately selects manufacturing technology to shape the form, structure and properties of components.	ME_K1_ U01	WL	AHIJ
3 solving a variety of t		He/She develops computer programs to assist in solving a variety of technical issues and uses selected CAM computer programs.	ME_K1_ U03	L	нij
Cocial	1	He/She is aware of the need to supplement specialized knowledge throughout his life and is able to select appropriate sources of knowledge and methods of learning for himself and others.	ME_K1_ K04	WL	АНІЈ
Social Compet ence 2		He/She recognizes the importance of knowledge in solving cognitive problems and practical engineering problems in the field of mechanics and mechanical engineering.	ME_K1_ K01	W	АНІЈ
	3	He/She is ready to consult experts when having difficulty solving a problem on their own.	ME_K1_ K02	L	НIJ

Hours in the study plan					
The course format	Hours/sem. (h)		Tutor (coordinator) of the course e/academic degree/professional title, name and surname		
Lecture (W)	15				
Calculation class (C)	0				
Laboratory class (L)	30	dr inż. Chud	ly Roman		
Project (P)	0	-			
Seminar (S)	0				
Student workload					
Types of student act	ivities*		Average number of hours* allocated on completed activities		

Lecture (W)	15
Calculation class (C)	0
Laboratory class (L)	30
Project (P)	0
Seminar (S)	0
Preparation for classes	8
Preparation of a report/paper/ project/presentation	10
Independent study of the course topics	10
Examination or final colloquium	2
Additional contact hours	0
Total student workload	75
Number of contact hours (from the study plan)	45

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology

Faculty of Mechanical Engineering

Course Description Card

Field of study	Mechai	Mechanical Engineering					
Profile of Education	Genera	l Academic					
Level of study	First Cy	cle Studies					
Specialization	Machin	e Design					
Form of Study	Full-Tin	ne Studies					
Semester	Sixth						
Course Title	Compu	Computational engineering					
Nazwa przedmiotu	Inżynie	Inżynieria obliczeniowa					
ECTS points	3		Subject type	W-K			
Language of lecture	angielsk i	Mode c	of completing the cours	e Course credit			
Course code	6.	WK.2	Subject related to scientific research/pract. profess. prepar. (Y/N)	T			

		Knowledge	1	S/he has a basic knowledge design.	of compu	ter scienc	e and	
			2					
Prelimir	Preliminary Skills		1	S/he is able to operate 3D modelling software and proficient in the use of computer techniques.				
requirem			2					
of the co	ourse	Social Competence	1	S/he is aware of the need to throughout life and is able to of knowledge and methods o and others.	select ap	opropriate	e sources	
			2					
Course G in engine			its f	or the application of modern	computal	tional tec	hniques	
-		ontent Learning at esign process.	out	t computer platforms and too	ls to supp	oort the		
Learning	outc	omes for the cours cyc		after completing the training	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s	
Knowled ge						A B I		
	2							
Skills			•	nd use research results and computer techniques	ME_K1_ U05	WL	ABI	
	2							
Social Compet		S/he is prepared to think and act effectively and lead to constructive conclusions.ME_K1 K03W LA B I						
ence	2							
A-written exa on partial ma assessment implementat	am, B- arks of from p tion of	written answers, G-term reparations for exercises the project, M-assessmer	ssme pape K-as	ent, D-oral assessment, E-based on par er, H-assessment from reports, I-assess ssessment from the project implement defense of project, N-assessment of fo ts' activity, R-observation of the regula	sment from r ation, L-asse rm of presen	ealization of ssment of th	exercises, J- e written	

Hours in the study plan				
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname		

Lecture (W)	15				
Calculation class (C)	0				
Laboratory class (L)	30	prof. dr hal	o. inż. Niesłony Adam		
Project (P)	0				
Seminar (S)	0				
		Student v	vorkload		
Types of student act	ivities*		Average number of hours* allocated on completed activities		
Lecture (W)			15		
Calculation class (C)			0		
Laboratory class (L)			30		
Project (P)			0		
Seminar (S)			0		
Preparation for class	es		20		
Preparation of a report project/presentation	ort/paper/		0		
Independent study o	f the course to	pics	20		
Examination or final	colloquium		0		
Additional contact ho	ours		0		
Total student worklo	ad		85		
Number of contact h	ours (from the	study plan)	45		

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology

Faculty of Mechanical Engineering

Course Description Card

Field of study	Mecha	Mechanical Engineering				
Profile of Education	Genera	al Academic				
Level of study	First Cy	First Cycle Studies				
Specialization	Machin	Machine Design				
Form of Study	Full-Tir	Full-Time Studies				
Semester	Sevent	Seventh				
Course Title	Constr	Construction of vehicles and machines				
Nazwa przedmiotu	Konstru	Konstrukcje pojazdów i maszyn				
ECTS points	4	Subject type W-K				

Langua	ge (	of lecture	angielsk i		Mode c	of completing the cou	irse	Examination		
Cour	se	code	7.WK.1		.1	Subject related to scientific research/pract. profess. prepar. (Y/N	1)	) Т		
		Knowle	dge	1		as elementary knowledge of the principles of ing machine parts and mechanical structures.				
Prelimir requirem of the co	nent	IS SKIIIS		2 1 2		ble to identify and fo ngineering tasks of a ۱.				
of the co	uis	Social Compe	tence		a mecha	lerstands non-technic nical engineer, incluc ences and impact on	ding its so	ocial	-	
	rse Goals Systematization of knowledge in the field of vehicle construction. Discussion esign solutions and technologies used in vehicles.					cussion				
limitation	IS O	f vehicle a	and machi	ne s	structures	nical characteristics a Basic loads and opend and cabin equipment f	erating co	nditions of	of	
Learning	Learning outcomes for the course - after completing the training cycle c					Methods of verificati on of learning outcome s				
Knowled ge	S/he has specialist knowledge in the construction MF K1				СНК					
Skills	2					нік				
Social Compet ence	1	activity of	e understands non-technical aspects of the vity of a mechanical engineer, including its social sequences and impact on the environment.							
Methods of v		cation of lear	ming outcom	es:						

A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan						
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course le/academic degree/professional title, name and surname			
ecture (W) 30						
Calculation class (C)	0					
Laboratory class (L)	15	dr inż. Praż	nowski Krzysztof			
Project (P)	15					
Seminar (S)	0					
		Student v	vorkload			
Types of student activities*			Average number of hours* allocated on completed activities			
Lecture (W)			30			
Calculation class (C)			0			
Laboratory class (L)			15			
Project (P)			15			
Seminar (S)			0			
Preparation for class	es		20			
Preparation of a report project/presentation	ort/paper/		0			
Independent study o	f the course top	oics	18			
Examination or final	colloquium		2			
Additional contact ho	ours		0			
Total student worklo	ad		100			
Number of contact h	ours (from the s	study plan)	60			

\* hour (class) means 45 minutes

dr hab. inż. Augustynowicz Andrzej Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology

Faculty of Mechanical Engineering

Course Description Card

Field of study	Mechanical Engineering
Profile of Education	General Academic

Level of study		First Cycle Studies					
Specialization		Machin	e De	esign			
Form of Study		Full-Tin	Full-Time Studies				
Semester		Fifth	Fifth				
Course Title		Design of molds with the use of CAD					
Nazwa przedm	iotu	Projekt	owa	nie form	z zastosowaniem CAD		
ECTS poir	nts	3			Subject type		W-K
Language of	lecture	angielsk i		Mode c	of completing the cours	e	Course credit
Course co	Course code 5.V			WK.1 Subject related to scientific research/pract. profess. prepar. (Y/N)		Ν	
	Knowledge		1	elements from non-ferrous construction materials			Is for producing
Preliminary requirements	Skills		1	design			
of the course			2	2			
Social Competence		<ul> <li>The student is aware of the importance of</li> <li>professionalism in the work of an engineer and adherence to professional ethics.</li> </ul>					
			2				
	familia	rize stude			struction and operatior knowledge of design ar		
					ntent related to metho nd design principles of		

Learning	OL	itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s		
	1	Knows the use of CAD tools in the design process and manufacturing of structural components	ME_K1_ W04	WL	GIPR		
Knowled ge	2	Knows the principles of designing injection molds using CAD	ME_K1_ W08	WL	GIPR		
	3	Knows the design of tools for manufacturing structural components using CAD tools	ME_K1_ W10	WL	GIPR		
	1	Can create a 3D model of the designed structural ME_K1_ W L G component and create a mold for its manufacturing U04					
Skills	kills 2 Can design using CAD techniques and appropriate ME_K1_ W L G I P F						
	3	Can create, based on the spatial model, the corresponding complete drawing documentation	ME_K1_ U10	WL	GIPR		
Social Compet	1	Is aware of the importance of professional conduct	WL	GIPR			
ence	2						
Methods of y	/eri	fication of learning outcomes:					

	Hours in the study plan				
The course format	Tutor (coordinator) of the courseHours/sem. (h)(title/academic degree/professional title, name and surname				
Lecture (W)	15				
Calculation class (C)	0				
Laboratory class (L)	30	dr inż. Owsiński Robert			
Project (P)	0				
Seminar (S)					
		Student workload			
Types of student act	ivities*	Average number of hours* allocated on completed activities			
Lecture (W)		15			
Calculation class (C)		0			
Laboratory class (L)		30			
Project (P)		0			
Seminar (S)		0			
Preparation for class	es	15			

Preparation of a report/paper/ project/presentation	0
Independent study of the course topics	30
Examination or final colloquium	0
Additional contact hours	0
Total student workload	90
Number of contact hours (from the study plan)	45

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Course Description Card										
Field of study	Mecha	Mechanical Engineering								
Profile of Education	Genera	General Academic								
Level of study	First Cy	First Cycle Studies								
Specialization	Machin	Machine Design								
Form of Study	Full-Tin	Full-Time Studies								
Semester	Sevent	Seventh								
Course Title	Diagno	Diagnostics of machines and devices								
Nazwa przedmiotu	Diagno	Diagnostyka maszyn i urządzeń								
ECTS points	4	Subject type			W-K					
Language of lecture	angielsk i	Mode c	of completing the course		Examination					
Course code	7.	WK.3	Subject related to scientific research/pract. profess. prepar. (Y/N)		Т					

		Knowledge	1	Knows physics, including the basics of mechanics, thermodynamics, electricity, and magnetism, including knowledge needed to understand the description and use of physical phenomena in the operation of mechanical systems					
Preliminary requirements	ts	1	Can use measuring equipment and estimation methods						
of the course		se Skills	2	measurement errors					
		Social Competence	1	Is aware of supplementing knowledge throughout life and can select appropriate learning methods for themselves and other people					
			2						
Course G devices	oal	s To familiarize th	ne st	udent with methods of diagnos	stics of ma	achines a	nd		
Programme content As part of the course, students learn selected methods of diagnostics of machines and devices. They will be introduced to modern systems supporting the diagnostics of selected machines and devices and will learn how to interpret the obtained results of a diagnostic experiment.									
Learning outcomes for the course - after completing the training cycle						Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s		
Knowled - ge	1	Knows metrology a the construction of		ME_K1_ W09	WL	СІР			
	2	Knows related to s machine construct the technical cond	ion,	ME_K1_ W07	WL	СІР			
Chille Can obtain information from literature, databases, and other sources on the construction and diagnosis of devices, can integrate the information obtained, interpret it, draw conclusions, and formulate and justify opinions							ΗΡ		
Skills -	2	Can critically analy existing technical systems, and proc production, operat and devices	solut esse	ME_K1_ U08	L	ΗΡ			
Social Compet ence	ompet devices					W L	АНР		
	2	ication of learning outco							

A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan							
The course format Hours/sem. (h) (ti			Tutor (coordinator) of the course le/academic degree/professional title, name and surname				
Lecture (W)	30						
Calculation class (C)	0						
Laboratory class (L)	30	dr inż. Graba Mariusz					
Project (P)	0						
Seminar (S)	0						
		Student v	vorkload				
Types of student act	ivities*		Average number of hours* allocated on completed activities				
Lecture (W)			30				
Calculation class (C)			0				
Laboratory class (L)			30				
Project (P)			0				
Seminar (S)			0				
Preparation for class	es		10				
Preparation of a report project/presentation			20				
Independent study o	of the course top	pics	15				
Examination or final	colloquium		2				
Additional contact he	ours		0				
Total student worklo	ad		107				
Number of contact h	ours (from the	study plan)	60				

\* hour (class) means 45 minutes

dr hab. inż. Augustynowicz Andrzej Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology

Faculty of Mechanical Engineering

Course Description Card

Field of study	Mechanical Engineering
Profile of Education	General Academic

Loval of study		First Cycle Chydiae						
Level of study			First Cycle Studies					
Specialization		Machine Design						
Form of Study		Full-Tin	Full-Time Studies					
Semester		Sevent	h					
Course Title		Hydrau	lic an	d pneui	matic drives and contro	bl		
Nazwa przedm	iotu	Napędy	/ i ste	rowanie	e hydrauliczne i pneum	atyczne	2	
ECTS poir	nts	5			Subject type		W-K	
Language of	lecture	angielsk i		Mode c	Mode of completing the course		Course credit	
Course code		7.	.WK.4		Subject related to scientific research/pract. profess. prepar. (Y/N)		N	
	Knowle	dae	1	Basic knowledge of the laws of physics and mechanics				
	KIIOWIE	uye	2					
Preliminary			1	Proble	m-solving skills using r	nathem	atical analysis	
requirements of the course	SKIIIS		2					
	Social (	Compoton	1	Aware	Awareness of the significance of engineering actions			
	Social	Competen	2					
Course Goals Understanding the construction, operation, calculation, and design of components of hydraulic and pneumatic systems								
Programme content Construction, operation, experimental research, calculation, and design of components of hydraulic and pneumatic systems considering the techniques of their control and interaction within pneumatic and hydraulic systems								

Learning	οι	utcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	• • • •	Methods of verificati on of learning outcome s
Knowled ge	1	Has expanded knowledge related to selected issues in machine construction, particularly in the construction and operation of hydraulic and pneumatic systems	ME_K1_ W07	W L	СН
	2				
Skills	1	Capable of critically analyzing the operation and evaluating existing technical solutions in the construction and operation of hydraulic and pneumatic systems	ME_K1_ U08	W L	СН
	2	Capable of designing a simple hydraulic or pneumatic system according to a given specification using appropriate methods, techniques, and tools	ME_K1_ U09	Ρ	к
Social Compet ence	1	Aware of the responsibility associated with decisions made in engineering activities, particularly in terms of personal safety, safety of others, and environmental protection related to hydraulic and pneumatic systems	ME_K1_ K03	WLP	СНК
	2				

	Hours in the study plan						
The course format	Hours/sem. (h)	Durs/sem. (h) Tutor (coordinator) of the course (title/academic degree/professional title, name and surname					
Lecture (W)	30						
Calculation class (C)	0						
Laboratory class (L)	30	dr inż. Bier	inż. Bieniek Andrzej				
Project (P)	15						
Seminar (S)	0						
	-	Student v	vorkload				
Types of student act	ivities*		Average number of hours* allocated on completed activities				
Lecture (W)			30				
Calculation class (C)			0				
Laboratory class (L)			30				
Project (P)			15				

Seminar (S)	0
Preparation for classes	10
Preparation of a report/paper/ project/presentation	30
Independent study of the course topics	10
Examination or final colloquium	0
Additional contact hours	0
Total student workload	125
Number of contact hours (from the study plan)	75

dr hab. inż. Augustynowicz Andrzej Head of the organizational unit (stamp/signature)

dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology								
	Faculty of Mechanical Engineering							
Course Description Car	rd							
Field of study	Mecha	nical Enginee	ering					
Profile of Education	Genera	I Academic						
Level of study	First Cy	cle Studies/						
Specialization	Machin	e Design						
Form of Study	Full-Tir	Full-Time Studies						
Semester	Sixth	Sixth						
Course Title	Individ	Individual report - structural work						
Nazwa przedmiotu	Praca p	orzejściowa -	konstrukcyjna					
ECTS points	2		Subject type		W-K			
Language of lecture	angielsk i	Mode of completing the course		e	Course credit			
Course code	6.	WK.1	Subject related to scientific research/pract. profess. prepar. (Y/N)		Т			

Knowledge		1	The student must have knowledge of the basics of constructing machines and devices and developing drawing documentation						
			2						
Prelimir			1	Ability to correctly identify ele calculations and material sele		ds, streng	gth		
requirem			2	Has the ability to use a CAD p	rogram				
	, ar .		3	Is able to independently sear information in available datab		eresting			
		Social	1	Is able to properly determine designer's work	the priori	ties of the	5		
		Competence	2						
			cours	e is to acquire the ability to in	depender	ntly perfo	rm		
		truction projects							
				content concerns the construc th the development of digital					
Learning outcomes for the course - after completing the trainin cycle						Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s		
Knowled	1	Knows how to sear available compone	or and implement ready-made nto the structure	ME_K1_ W07	Р	KLPR			
ge	2	Knows how to desi evaluation criteria	gn u	sing basic construction	ME_K1_ W05	Р	KLPR		
	1	Is able to independ	dentl	y make machine structures	ME_K1_ U09	Р	KLPR		
Skills	2	Is able to obtain information from literature, databases regarding typical elements and design methods U01 P K L P							
	3	Is able to present to understandable wa	present the designer's problems in an ME_K1_ P K L P						
Coole	1	Is aware of the nee	e need for lifelong learning ME_K1_ P K L P						
Social Compet ence	2	Is able to gain kno	wled	vledge from others $ME_K1_{K01} P K L P$					
ence	3	Is aware of the im	oorta	nce of professional conduct	ME_K1_ K05	Р	KLPR		
Methods of verification of learning outcomes:									

The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course itle/academic degree/professional title, name and surname			
Lecture (W)	0					
Calculation class (C)	0					
Laboratory class (L)	0	dr hab. inż.	. Kluger Krzysztof			
Project (P)	30					
Seminar (S)	0					
		Student v	vorkload			
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			0			
Calculation class (C)			0			
Laboratory class (L)			0			
Project (P)			30			
Seminar (S)			0			
Preparation for class	es		2			
Preparation of a report project/presentation	ort/paper/		25			
Independent study o	f the course top	pics	2			
Examination or final	colloquium		1			
Additional contact ho	ours		0			
Total student worklo	ad		60			
Number of contact h	ours (from the s	study plan)	30			
* hour (close) moone (E minutes						

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

2						
Course Description Card						
Field of study	Mechanical Engineering					
Profile of Education	General Academic					
Level of study	First Cycle Studies					
Specialization	Machine Design					
Form of Study	Full-Time Studies					
Semester	Fifth					
Course Title	Machine reliability					

Nazwa pr	zedr	niotu	Niezaw	wodność maszyn					
ECT	S po	ints	2	Subject type				W	'-K
Langua	ge o	f lecture	angielsk i	Mode of completing the cou			irse	Course credit	
Coui	rse c	ode	5.	WK.2	2	Subject related to scientific research/pract. profess. prepar. (Y/N	1)	т	
				1	Student	has basic knowledg	e in statis	tics.	
		Knowle	dge	2		overall knowledge a nents used in industr			between
Prelimir requirem	nents			1	Student objects.	can analyze the wa	y of functi	ioning of t	technical
of the co	ourse	e		2					
		Social Compe	tence	1		can appropriately d ization of one's own			ties for
				2					
Course G reliability		The cou	urse is aim	ned c	on introd	uction to the typical	issues of	technical	
technical	relia	ability. Te	eaching m	etho	ds: audit	s of functional and n ory lectures, laborat methods and technic	ory classe		
Learning outcomes for the course - after completing the training learning outcome for the course - after completing the training learning (W, C, L, outcome S) outcome S					Methods of verificat on of learning outcome s				
Knowled			as basic k bjects and			out the life cycle of stems.	ME_K1_ W11	W	C D
ge	2								
Skills	1 w	ith the a	an formulate and solve reliability analysis opplication of analytical methods and tical apparatus.					CDHIF	
	2								
Social Compet	1 u	nderstan	ding of no	f the importance and ontechnical aspects of the proper $\begin{array}{c} ME_K1\\ K02 \end{array}$ W L C D H I nical objects.					
ence	2								
Methods of v	verifica	ation of lear	ning outcome	es:			I		

Hours in the study plan						
The course format Hours/sem. (h) (ti			Tutor (coordinator) of the course le/academic degree/professional title, name and surname			
Lecture (W)	15					
Calculation class (C)	0					
Laboratory class (L)	15	dr inż. Blac	ha Łukasz			
Project (P)	0					
Seminar (S)	0					
		Student v	vorkload			
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			15			
Calculation class (C)			0			
Laboratory class (L)			15			
Project (P)			0			
Seminar (S)			0			
Preparation for class	es		15			
Preparation of a repo project/presentation	ort/paper/		0			
Independent study o	f the course top	oics	15			
Examination or final	colloquium		0			
Additional contact he	ours		0			
Total student worklo	ad		60			
Number of contact h	ours (from the	study plan)	30			
k hour (class) means 15 minutes						

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

## Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Field of study	Mechanical Engineering				
Profile of Education	General Academic				
Level of study	First Cycle Studies				
Specialization	Machine Design				
Form of Study	Full-Time Studies				
Semester	Seventh				

Course Title Rapid Manufacturing Techniques								
Nazwa przedm	Technik	Techniki szybkiego wytwarzania						
ECTS poir	4	Subject type W-k				W-K		
Language of lecture		angielsk i	Mode of completing the course			Course credit		
Course code		7.\	.WK.2		Subject related to scientific research/pract. profess. prepar. (Y/N)		т	
	Knowle	dao	1	has kno	wledge of CAD design			
	Knowle	uge	2	has knowledge of selected topics in machine design				
Preliminary	Skills		1 is capable of using CAD software in the design process of complex components					
requirements of the course				2 is able to acquire knowledge from literature				
	Social	ton oo	1	1 is able to appropriately determine priorities for accomplishing a task defined by themselves or others				
	Compe	tence	2					
Course Goals The aim of the course is to familiarize students with the rapidly developing branch of industry that is rapid prototyping and additive technologies, and to indicate areas of their application depending on the type of material used.								
Programme content The course focuses on the principles and practical application of rapid manufacturing techniques, including a deep understanding of 3D printing processes such as FDM (Fused Deposition Modeling). Students learn to design and implement projects using modern 3D printing technologies, while also becoming familiar with potential problems and ways to solve them.								

Learning	OL	itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s
Knowled	1	Has knowledge in the field of strength assessment of components manufactured using additive methods	ME_K1_ W05	W P	C P
ge		Has knowledge in the application of additive methods in the manufacturing process of machine parts and devices	ME_K1_ W08	W P	C P
Skills	1	Is able to identify and operate software suitable for a given additive technology in order to manufacture a machine component with its help	ME_K1_ U04	W P	Р
561115	2	Is capable of designing and manufacturing a simple device component in accordance with the received specifications	ME_K1_ U09	Р	ΜP
Social Compet ence	1	Is aware of the importance and understands the non-technical aspects of the safety of technical objects	ME_K1_ K02	W P	C P
	2				
Methods of v	/eri	fication of learning outcomes:			

Hours in the study plan						
The course format	Hours/sem. (h)	<ul> <li>Tutor (coordinator) of the course</li> <li>(h) (title/academic degree/professional title, name and surname</li> </ul>				
Lecture (W)	30					
Calculation class (C)	0					
Laboratory class (L)	0	dr inż. Kurek	nż. Kurek Andrzej			
Project (P)	30					
Seminar (S)	0					
		Student wo	orkload			
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			30			
Calculation class (C)			0			
Laboratory class (L)			0			
Project (P)			30			
Seminar (S)			0			

Preparation for classes	15
Preparation of a report/paper/ project/presentation	0
Independent study of the course topics	25
Examination or final colloquium	0
Additional contact hours	0
Total student workload	100
Number of contact hours (from the study plan)	60

dr hab. inż. Kluger Krzysztof Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology

Faculty of Mechanical Engineering

Course Description Card								
Field of study	Mecha	Mechanical Engineering						
Profile of Education	Genera	al Academic						
Level of study	First Cy	cle Studies						
Specialization	Manufa	acturing Tech	nology					
Form of Study	Full-Tir	ne Studies						
Semester	Sevent	h						
Course Title	Bases	Bases of quality engineering						
Nazwa przedmiotu	Podsta	wy inżynierii	jakości					
ECTS points	4		Subject type		W-K			
Language of lecture	angielsk i	Mode o	of completing the course		Course credit			
Course code	7.WK.T2		Subject related to scientific research/pract. profess. prepar. (Y/N)		Т			

		Knowledge	1	Student has knowledge abo tools required for solving si						
			2							
Preliminary requirements			1	Student is able to obtain information from literature, databases and other sources						
of the co			2							
		Social	1	Student is aware of the nee throughout life	ed to impr	ove know	/ledge			
		Competence	2							
about qu	alit	y systems, auditing, p	rod	uality Engineering concepts uct and process control and Design of Experiments						
technique describe	es ( the	of control and quality r	nan elop	asic concepts and issues reg agement in a manufacturin a control plan for a selected ering problems.	g compan	ıy. Ability	to			
Learning outcomes for the course - after completing the training e cycle						course (W, C, L,	Methods of verificati on of learning outcome s			
Knowled		Student has knowledg mechanical machinery	f the life cycle of	ME_K1_ W11	WLP	CHIK MNOP R				
ge	2	-	eng	bout quality management gineering instruments to ocesses and products	ME_K1_ W12	WLP	C H I J K M N O P R			
Skille		Student is able to asso quality engineering m	the suitability of routine ods and tools	ME_K1_ U07	WLP	C H I J K M N O P R				
Skills 2 Student is able to plan a simulations and measur					ME_K1_ U05	LP	C H I J K M N O P R			
Social1Student is aware of the responsibility for decisions made as part of the engineering activityN						WLP	C H I J K M N O P R			
Compet ence	2	Student is able to coo	pera	ate and act in a group	ME_K1_ K04	LP	C H I J K M N O P R			
Methods of v	verif	ication of learning outcomes:			I	I	<u> </u>			

The course format	Hours/sem. (h)	(h) Tutor (coordinator) of the course (h) (title/academic degree/professional title, name and surname				
Lecture (W)	30					
Calculation class (C)	0					
Laboratory class (L)	15	dr hab. inż.	. Małecka Joanna			
Project (P)	15					
Seminar (S)	0					
Student workload						
Types of student activities*			Average number of hours* allocated on completed activities			
Lecture (W)			30			
Calculation class (C)			0			
Laboratory class (L)			15			
Project (P)			15			
Seminar (S)			0			
Preparation for class	es		10			
Preparation of a report project/presentation	ort/paper/		15			
Independent study o	f the course top	pics	13			
Examination or final	colloquium		2			
Additional contact hours			0			
Total student worklo	ad		100			
Number of contact h	ours (from the s	study plan)	60			

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Course Description Card					
Field of study	Mechanical Engineering				
Profile of Education	General Academic				
Level of study	First Cycle Studies				
Specialization	Manufacturing Technology				
Form of Study	Full-Time Studies				
Semester	Seventh				
Course Title	Design of chipless processes				

nuzwu pizeui	Nazwa przedmiotu Projektowanie procesów bezwiórowych							
ECTS po	ECTS points 3			Subject type			W	-K
Language o	nguage of lecture angielsk			Mode o	of completing the cou	rse	Course	e credit
Course code 7.W			WK.T4 Subject related to scientific research/pract. profess. prepar. (Y/N)		1)	т		
	Knowlo	dao	1		lent possesses knowl technologies.	edge in tł	ne field of	material
	Knowle	uge	2		lent has basic knowle ons of engineering m	-	e propert	ies and
Preliminary requirements of the course			1		lent has the ability to e, integrate the obtai ons.			
			2					
	Social Compe	tence	1		lent is capable of wor individual.	king in a	team as a	an
			2					
Course Goals Preparing the student for designing technological processes in foundry engineering.								
of materials u casting proce knowledge in	ised in ca ss for qu the appl	asting proc ality and e ication of	cess effic star	design, iency. Stu ndards an	n sessions will involv designing casting mo udents will gain theou d technical requirem g processes.	lds, and o retical and	optimizing d practica	the
Learning outcomes for the course - after completing the training cycle						Methods of verificati on of learning outcome s		
The student has knowledge of the possibilities of						CL		
2								
Skills	The student is able to utilize computer software to develop manufacturing technologies for simple machine components.ME_K1 U09W PC L						CL	
2	-							
	The student can independently solve technical ME_K1_ problems. W P							
Compet <mark>†</mark> P ence 2	robiems.					KUI		CL

A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan					
The course format	Tutor (coordinator) of the course le/academic degree/professional title, name and surname				
Lecture (W)	ecture (W) 15				
Calculation class (C)	0				
Laboratory class (L)	0	dr hab. Pra	żmowski Mariusz		
Project (P)	30				
Seminar (S)	0				
		Student v	vorkload		
Types of student act	ivities*		Average number of hours* allocated on completed activities		
Lecture (W)			15		
Calculation class (C)			0		
Laboratory class (L)			0		
Project (P)			30		
Seminar (S)			0		
Preparation for class	es		15		
Preparation of a report project/presentation			15		
Independent study o	of the course top	pics	0		
Examination or final	colloquium		0		
Additional contact he	ours		0		
Total student worklo	ad		75		
Number of contact h	ours (from the	study plan)	45		

\* hour (class) means 45 minutes

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Field of study Mechanical Engineering

Profile of Educ	ation	Genera	al Ad	Profile of Education General Academic				
Level of study			First Cycle Studies					
Specialization		-	Manufacturing Technology					
Form of Study		_		Studies				
Semester		Sevent	:h					
Course Title		Fundar	nen	itals of co	ordinate metrology			
Nazwa przedm	iotu	-			współrzędnościowej			
ECTS poir	nts	3			Subject type		W-K	
Language of	lecture	angielsk i		Mode c	f completing the cours	e	Examination	
Course code 7.			WK.	K.T5 Subject related to scientific research/pract. profess. prepar. (Y/N)		Т		
			1	<ol> <li>Mathematics, in algebra, mathematical analysis and probability.</li> <li>Physics, in terms of optics.</li> </ol>				
	Knowle	dge	2					
Preliminary			3	<sup>3</sup> Technical metrology - knowledge of the basic concepts and knowledge of general metrology.				
requirements	Skills		1	The abilit	y to solve mathematical and physical problems.			
of the course			2	Self-educ	ation skills.			
	Social		1		aware of the need to s ut his life.	supplen	nent knowledge	
Competence 2 He/She is aware of the imp conduct and adherence to				•				
Course Goals Familiarize students with selected measurement techniques.								
Programme content Auditorium lecture covering issues related to the construction and operating principle of coordinate measuring machines including optical measuring machines, heads, tracers, measuring arms. As part of exercises in the computer laboratory, developing measurement strategies and plans based on documentation, creating a measurement								

report. As part of practical classes, making measurements on the coordinate measuring machine, multisensor machine.

Learning	οι	utcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	-	Methods of verificati on of learning outcome s
Knowled	1	He/She has knowledge of the metrology of geometric quantities, knows the principles of tolerance of dimensions, shape and position, and knows and understands the methods of measurement of basic characterizing quantities for mechanical engineering, knows the calculation methods necessary for the analysis of measurement results.	ME_K1_ W09	W L	СНІ
ge	2	He/She has knowledge in physics, including the fundamentals of mechanics, thermodynamics, optics, electricity and magnetism, nuclear physics, solid state physics and elements of quantum physics, needed to understand, describe and use physical phenomena in the design manufacture and operation of measuring instruments and systems.	ME_K1_ W02	WL	СНІ
Skills	1	He/She can plan and carry out measurements and interpret the the obtained results and draw conclusions.	ME_K1_ U08	WL	СНІ
	2	He/She can obtain information from literature, databases and other sources.	ME_K1_ U01	WL	СНІ
Social Compet	1	He/She is aware of the need to supplement knowledge throughout life.	ME_K1_ K01	WL	СНІ
ence	2				

Hours in the study plan							
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname					
Lecture (W)	15						
Calculation class (C)	0						
Laboratory class (L)	30	dr inż. Bogdan-Chudy Marta					
Project (P)	0						
Seminar (S)	0						
Student workload							

Types of student activities*	Average number of hours* allocated on completed activities
Lecture (W)	15
Calculation class (C)	0
Laboratory class (L)	30
Project (P)	0
Seminar (S)	0
Preparation for classes	5
Preparation of a report/paper/ project/presentation	10
Independent study of the course topics	10
Examination or final colloquium	5
Additional contact hours	0
Total student workload	75
Number of contact hours (from the study plan)	45

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology

Faculty of Mechanical Engineering

Course Description Card						
Field of study	Mechai	Mechanical Engineering				
Profile of Education	Genera	l Academic				
Level of study	First Cy	cle Studies/				
Specialization	Manufa	cturing Tech	nology			
Form of Study	Full-Tin	ne Studies				
Semester	Sixth					
Course Title	Fundar	Fundamentals of programming in a CAM system				
Nazwa przedmiotu	Podsta	Podstawy programowania w systemie CAM				
ECTS points	2	Subject type		W-K		
Language of lecture	Language of lecture angielsk		k Mode of completing the course			
Course code	6.\	WK.T2	Subject related to scientific research/pract. profess. prepar. (Y/N)		Т	

			-	1					
			1	S/he has knowledge of the bas process machinery.	ics of cav	ity machii	ning and		
		Knowledge	2	S/he has knowledge of integrat	ed manuf	facturing	systems.		
			f design u	design using CAD					
Drolimir			1	Can prepare the technological components	process o	of simple r	machine		
Prelimir requirem			2	Can interpret the markings on the technical drawing.					
of the co			3	Can determine the effect of ba techniques.	sic manuf	facturing			
			1	S/he is aware of supplementing knowledge in the field of desig		anding hi	S		
		Social Competence	2	S/he is able to analyze the task implementation.	ks assigne	ed for			
			3	S/he is aware of the responsibi associated with his decisions.	lities and	conseque	ences		
			-	isition of basic knowledge of co are students for their practical u	•	ided			
technolog	ју	and machining pro					ng and		
technolog 3-axis mi	l earning outcomes for the course - after completing the training le to the course verification of						Methods of verificati on of		
			cycl		outcome s	(W, C, L, P, S)	learning outcome s		
Knowled	1			owledge of the operation of nics of mechanisms.	ME_K1_ W01	W P	CDLM		
ge	2	-							
1 S/he can use analytical methods to solve ta					ME_K1_ U05	W P	C D L M R		
Skills			S/he can interpret the results obtained and draw conclusions about the kinematics and dynamics of mechanisms.				KLMR		
Social Compet	1	S/he is able to interact and work in a group. ME_K1_ P K L					KLMR		
ence	2								
Methods of v	hods of verification of learning outcomes:								

Hours in the study plan						
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course le/academic degree/professional title, name and surname			
Lecture (W)	15					
Calculation class (C)	0					
Laboratory class (L)	0	dr inż. Chu	dy Roman			
Project (P)	15					
Seminar (S)	0					
		Student v	vorkload			
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			15			
Calculation class (C)			0			
Laboratory class (L)			0			
Project (P)			15			
Seminar (S)			0			
Preparation for class	es		5			
Preparation of a report project/presentation	ort/paper/		5			
Independent study o	f the course top	pics	5			
Examination or final	colloquium		5			
Additional contact he	ours		0			
Total student worklo	ad		50			
Number of contact h	ours (from the s	study plan)	30			
* hour (class) means 15 minutes						

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

## Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Field of study	Mechanical Engineering			
Profile of Education	General Academic			
Level of study	First Cycle Studies			
Specialization	Manufacturing Technology			
Form of Study	Full-Time Studies			
Semester	Fifth			

Course Title	Individ	ndividual report - technological work					
Nazwa przedm	Praca	Praca przejściowa - technologiczna					
ECTS poir	1			Subject type		W-K	
Language of	angielsk i		Mode of completing the course		Course credit		
Course co	5.	.WK.T1		Subject related to scientific research/pract. profess. prepar. (Y/N)		Ν	
			1	S/he knov	vs the basics of proces	s desigr	า.
	Knowledge		2	S/he knows the basic methods of machine manufacturing technology.			
		Skills		S/he can prepare a study of engineering tasks.			
Preliminary requirements	Skills			S/he is able to obtain information from the literature, integrate the information obtained and draw conclusions.			
of the course			3	S/he knows how to analyze engineering tasks.			
	Social	Social Competence		S/he is aware of the need to supplement knowledge throughout life.			
	Compe			S/he is aware of the responsibilities and consequences associated with his decisions.			
	Course Goals Prepare students to design technological processes for CNC machine tools including the selection of machine tools, tools and tooling.						
Programme content The design of the technological process of a selected part in the conditions of mass production. Framework technological process. Selection of semi-finished product, selection of intermediate allowances. Technological documentation including selection of machine tools, tooling, tools and machining parameters. Norming of work time. Machining program for CNC machine tools.							

Learning	οι	Itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s		
Knowled	1	He/She has knowledge of the manufacturing processes of machine and equipment components.	ME_K1_ W08	Р	KLM		
ge	2	He/She has knowledge of tooling and fixture selection and CNC machine tool programming.	ME_K1_ W05	Р	KLM		
Skills	1	He/She is able to develop a technological framework process of selected machine parts and complete technological documentation of machining for CNC machine tools.	ME_K1_ U09	Ρ	KLM		
		He/She can obtain information from professional literature, databases and other sources.	ME_K1_ U01	Р	KL		
Social Compet ence 2		He/She is aware of the need to supplement knowledge throughout his life.	ME_K1_ K01	Р	KLM		
		He/She is aware of the responsibility associated with decisions made in engineering activities, with particular emphasis on the consequences of these decisions.	ME_K1_ K03	Ρ	KLM		
	Methods of verification of learning outcomes: A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based						

	Hours in the study plan						
The course format	Hours/sem. (h)	(titl	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	0						
Calculation class (C)	0						
Laboratory class (L)	0	dr inż. Bogd	inż. Bogdan-Chudy Marta				
Project (P)							
Seminar (S)	0						
		Student w	orkload				
Types of student act	ivities*		Average number of hours* allocated on completed activities				
Lecture (W)			0				
Calculation class (C)			0				
Laboratory class (L)			0				
Project (P)			15				
Seminar (S)			0				

0
5
5
0
0
25
15

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology

Faculty of Mechanical Engineering

Course Description Card						
Field of study		Mechanical Engineering				
Profile of Education		al Academic	9			
Level of study		cle Studies				
Specialization	-	acturing Tech	nology			
Form of Study	Full-Tir	ne Studies				
Semester	Sixth	Sixth				
Course Title	Machin	Machine control techniques				
Nazwa przedmiotu	Techni	Techniki sterowania maszyn				
ECTS points	2		W-K			
Language of lecture	angielsk Mode c i		of completing the course	e Course credit		
Course code	6.'	WK.T3	Subject related to scientific research/pract. profess. prepar. (Y/N)	N		

		Knowledge	1	The student has knowledge engineering, computer scie control theory.				
Prelimir	ar	/	2					
requirem of the co	nen	ts	1	he student has the ability to design technological nachining processes.				
			2					
		Social	1	Creative thinking and actio	n.			
		Competence	2	Ability to work in a group.				
		s To familiarize stude		with control systems of ma uch systems.	chines an	d devices	and the	
Programme content A review of basic issues of automation. Development of control systems. Symbols and markings on diagrams. Control systems for hydraulic, pneumatic, electric, electro-hydraulic and electro-pneumatic drives. Digital control of objects. Programmable controllers in industrial devices. Design of control systems - basics.								
Learning outcomes for the course - after completing the training cycle cycle s					course (W, C, L,	Methods of verificati on of learning outcome s		
Knowled	1	The student has know systems control and t			ME_K1_ W01	W P	АК	
ge	2							
Skills	Ŧ	The student is able to analyze the control system using appropriate tools, consciously using their technical documentation and assess the correctness of the analysis.					A K	
	2							
Social Compet	1	Is aware of the responsibility associated with the ME_K1_K03 W P A K				АК		
ence	ice 2							
A-written ex on partial m assessment	am, arks fror	of written answers, G-term p n preparations for exercises,	smer aper K-ass	it, D-oral assessment, E-based on par H-assessment from reports, I-assess essment from the project implement efense of project, N-assessment of for	sment from r ation, L-asse	ealization of ssment of th	exercises, J- e written	

implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan					
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname			

Lecture (W)	15					
Calculation class (C)	0					
Laboratory class (L)	0	dr hab. inż.	. Bartoszuk Marian			
Project (P)	15					
Seminar (S)	0					
		Student v	vorkload			
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			15			
Calculation class (C)			0			
Laboratory class (L)			0			
Project (P)			15			
Seminar (S)			0			
Preparation for class	es		15			
Preparation of a report/paper/ project/presentation			0			
Independent study o	f the course to	pics	0			
Examination or final	colloquium		15			
Additional contact ho	ours		0			
Total student worklo	ad		60			
Number of contact h	ours (from the	study plan)	30			
	4					

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology

Faculty of Mechanical Engineering

Course Description Card

eourse Beschption eu	Ĩ							
Field of study	Mecha	Mechanical Engineering						
Profile of Education	Genera	General Academic						
Level of study	First C	First Cycle Studies						
Specialization	Manufa	Manufacturing Technology						
Form of Study	Full-Tir	Full-Time Studies						
Semester	Fifth							
Course Title	Programming of cnc machines							
Nazwa przedmiotu	Progra	Programowanie obrabiarek CNC						
ECTS points	3 Subject type W-K							

Language of lecture		angielsk i	Mode of completing the course		Course credit		
Course code		5.V	5.WK.T3		Subject related to scientific research/pract. profess. prepar. (Y/N)	Ν	
	Knowledge		e The student has the knowledge of the basics of technology, machining, cutting tools and construction materials.				
			2				
Preliminary requirements	Preliminary requirements Skills		1	The student has the ability to design technological machining processes.			
of the course			2				
	Social Competence		1	S/he is able to analyze the tasks assigned to be carried out.			ned to be carried
			2	S/he is aware of the responsibility and consequences of decisions made.			consequences of
Course Goals Providing students with knowledge about various methods of programming							

Course Goals Providing students with knowledge about various methods of programming CNC machines.

Programme content History of the development of numerically controlled machine tools. Methods of programming NC/CNC machine tools. Construction of CNC machine tools. Numerical control systems. Operator communication systems with the CNC machine. Structure of a control program, basics of G code and M code. Manual, computer-aided and workshop-oriented programming. SIMENS controller – cycles, subroutines, advanced functions. Possibilities of interactive, advanced machining programming in CAD/CAM systems. Development trends in CNC machine tool programming systems.

Learning	οι	utcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	course (W, C, L,	Methods of verificati on of learning outcome s
Knowled	1	S/he has knowledge of the production of machine parts and mechanical devices.	ME_K1_ W08	W	С
ge	2				
	1	S/he is able to obtain information from professional literature, databases and other sources - information related to CNC machine programming issues.	ME_K1_ U01	L	н
Skills	Skills S/he is able to use information and communication techniques appropriate to carry out tasks in the field of design, production and operation of machine parts.		ME_K1_ U04	L	Н
Social Compet ence	1	S/he is aware of the responsibility associated with decisions made as part of engineering activities, with particular emphasis on the consequences of these decisions.	ME_K1_ K03	L	Ρ
	2				

	Hours in the study plan					
The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname				
Lecture (W)	15					
Calculation class (C)	0					
Laboratory class (L)	30	dr hab. inż. B	artoszuk Marian			
Project (P) 0						
Seminar (S)	minar (S) 0					
		Student wor	rkload			
Types of student act	ivities*		Average number of hours* allocated on completed activities			
Lecture (W)			15			
Calculation class (C)			0			
Laboratory class (L)			30			
Project (P)			0			
Seminar (S)			0			
Preparation for class	es		15			

Preparation of a report/paper/ project/presentation	0
Independent study of the course topics	30
Examination or final colloquium	0
Additional contact hours	0
Total student workload	90
Number of contact hours (from the study plan)	45

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Card							
Field of study	Mechai	Mechanical Engineering					
Profile of Education	Genera	General Academic					
Level of study	First Cy	cle Studies					
Specialization	Manufa	Manufacturing Technology					
Form of Study	Full-Tin	ne Studies					
Semester	Sevent	Seventh					
Course Title	Rapid p	Rapid prototyping techniques					
Nazwa przedmiotu	Techni	Techniki szybkiego prototypowania					
ECTS points	3	Subject type			W-K		
Language of lecture	Language of lecture angielsk		Mode of completing the course				
Course code 7.V		WK.T3	Subject related to scientific research/pract. profess. prepar. (Y/N)	·	Т		

			1	He/She has knowledge of tech geometry.	nical drav	wing and	drafting			
		Knowledge	2	He/She knows the principles o programs.	le/She knows the principles of design using CAD programs.					
Prelimir	nary	/	3	He/She has a structured know modeling.	le/She has a structured knowledge of structural nodeling.					
requirem of the co	nen	ts	1	He/She is able to prepare tech form of manufacturing and as			on in the			
			2							
		Social	1	He/She is aware of the need to throughout life.	o supplen	nent know	vledge			
		Competence	2	He/She is able to analyze the implementation.	le/She is able to analyze the tasks assigned for					
	Course Goals The purpose of the course is to familiarize students with modern rapid prototyping methods for manufacturing machine and equipment components.									
Kinemati	cs a	and principle of ope	rati	e topic of rapid prototyping. In on of devices working with sele ing. Design exercises in the la	ected 3D	printing				
Learning outcomes for the course - after completing the training course learning (W, C, L, on learning outcome P, S)						Methods of verificati on of learning outcome s				
Knowled				dge necessary to understand of engineering activities.	ME_K1_ W12	W P	CL			
ge		He/She has knowled mechanical engined		of management in a g company.	ME_K1_ W13	W P	CL			
Skills	1	He/She can make a preliminary economic analysis of engineering activities in the field of production U07 W P C L organization.								
		He/She has a background in organizational work in ME_K1_ an industrial environment. U06 W P C I					CL			
Social Compet ence	1	He/She is aware of the responsibility associated with lecisions, made in the organization and management of production.								
	2									
Methods of y	/orif	ication of learning outcom	<u> </u>							

A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

Hours in the study plan

The course format	Hours/sem. (h)	Tutor (coordinator) of the course (title/academic degree/professional title, name and surname			
Lecture (W) 15					
Calculation class (C)	0				
Laboratory class (L)	0	dr inż. Chu	dy Roman		
Project (P)	30				
Seminar (S)	0				
		Student v	vorkload		
Types of student act	ivities*		Average number of hours* allocated on completed activities		
Lecture (W)			15		
Calculation class (C)			0		
Laboratory class (L)			0		
Project (P)			30		
Seminar (S)			0		
Preparation for class	es		5		
Preparation of a report project/presentation	ort/paper/		10		
Independent study o	f the course top	pics	10		
Examination or final	colloquium		5		
Additional contact he	ours		0		
Total student worklo	ad		75		
Number of contact h	ours (from the s	study plan)	45		
* hour (class) means (E minutes					

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering Course Description Card

Course Description Card						
Field of study	Mechanical Engineering					
Profile of Education	General Academic					
Level of study	First Cycle Studies					
Specialization	Manufacturing Technology					
Form of Study	Full-Time Studies					
Semester	Sixth					
Course Title	Technological instrumentation					

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ECT	5 p	oints	4			Subject type		VV	-K
Langua	ge	of lecture	angielsk i		Mode o	f completing the cou	irse	Exami	nation
Coui	rse	code	6.\	NK.T	1	Subject related to scientific research/pract. profess. prepar. (Y/N	1)	Т	
		Knowle	dge	1	structu	knows the basic prir ral design.		-	ng
				2		knows the principles		-	
Prelimir requirem	nen	ts Skills		1		knows how to make entation.	construct	ion	
of the co	ours	se		2		knows how to identi	-		
		Social Compe	tence	1	He/She perform	is able to analyze th ned.	e enginee	ering tasks	5
		compe		2					
Course G jigs and f			rize stude	nts v	vith the	principles of operation	on and des	sign of ma	achining
		lies.							
Programr design sc	me blut	content ions of tec	hnologica	l tool	ling used	s related to the const d in machinery. Designing the second	gn of a sp		
Programr design sc Laborato	ne olut ry c	content ions of tec classes: ev	hnologica valuation a	l tool and a	ling used pplicabil		gn of a sp	Form of course (W, C, L,	dle. Methods of verificati on of learning
Programr design sc Laborato	me blut ry c	content ions of teo classes: ev tcomes fo He/She ha	hnologica valuation a r the cour cy	l tool and a se - a cle dge ir	ling used pplicabil after con	d in machinery. Desig ity of technological t	on of a sp ooling. The referenc e to the learning outcome	Form of course (W, C, L,	dle. Of verificati on of learning outcome
Program design so Laborato Learning Knowled	me blut ry c	content ions of teo classes: ev tcomes fo He/She ha constructi	hnologica valuation a r the cour cy	l tool and a se - a cle dge ir	ling used pplicabil after con	d in machinery. Design hity of technological t npleting the training ing the operation,	n of a sp ooling. The referenc e to the learning outcome s ME_K1_	Form of course (W, C, L, P, S)	dle. of verificati on of learning outcome s
Program design so Laborato Learning Knowled	me blut ry c ou	content ions of teo classes: ev tcomes fo He/She ha constructi fixtures.	r the cour rs knowled on and de	l tool and a se - a cle dge ir sign a maa	after con principle	d in machinery. Design hity of technological t npleting the training ing the operation,	n of a sp ooling. The referenc e to the learning outcome s ME_K1_	Form of course (W, C, L, P, S)	dle. of verificati on of learning outcome s
Program design so Laborato Learning Knowled ge	me blut ry c ou	content ions of teo classes: ev tcomes fo He/She ha constructi fixtures. He/She ca	r the cour rs knowled on and de	l tool and a se - a cle dge ir sign a maa	after con principle	d in machinery. Design hity of technological t hpleting the training ing the operation, es of machining	n of a sp ooling. The referenc e to the learning outcome s ME_K1_ W05	Form of course (W, C, L, P, S) W L P	dle. Methods of verificati on of learning outcome s C H K
Program design so Laborato Learning Knowled ge	me blut ry c ou 1 2 1 2	content ions of teo classes: ev tcomes fo He/She ha constructi fixtures. He/She ca manufactu	r the cour r the cour cy s knowled on and de un design a uring proc	l tool and a se - a ccle dge ir sign a mad ess. es ing	after con n analyzi principle chining f	d in machinery. Design hity of technological t hpleting the training ing the operation, es of machining	n of a sp ooling. The referenc e to the learning outcome s ME_K1_ W05	Form of course (W, C, L, P, S) W L P	dle. Methods of verificati on of learning outcome s C H K

Lecture (W)30Calculation class (C)0Laboratory class (L)15Project (P)15Seminar (S)0Student workloadTypes of student activities*Lecture (W)30Calculation class (C)0Laboratory class (L)15Defendencies (C)0Laboratory class (L)15	e,
Laboratory class (L)15dr inż. Chudy RomanProject (P)15Seminar (S)0Student workloadTypes of student activities*Average number of hours* allo on completed activitiesLecture (W)30Calculation class (C)0Laboratory class (L)15	
Project (P)       15         Seminar (S)       0         Student workload         Types of student activities*       Average number of hours* allow on completed activities         Lecture (W)       30         Calculation class (C)       0         Laboratory class (L)       15	
Seminar (S)0Student workloadTypes of student activities*Average number of hours* allow on completed activitiesLecture (W)30Calculation class (C)0Laboratory class (L)15	
Student workloadTypes of student activities*Average number of hours* allo on completed activitiesLecture (W)30Calculation class (C)0Laboratory class (L)15	
Types of student activities*Average number of hours* allow on completed activitiesLecture (W)30Calculation class (C)0Laboratory class (L)15	
Types of student activities*on completed activitiesLecture (W)30Calculation class (C)0Laboratory class (L)15	
Calculation class (C)0Laboratory class (L)15	cated
Laboratory class (L) 15	
Project (P) 15	
Seminar (S) 0	
Preparation for classes 5	
Preparation of a report/paper/ 15 project/presentation	
Independent study of the course topics 15	
Examination or final colloquium 5	
Additional contact hours 0	
Total student workload 100	
Number of contact hours (from the study plan) 60	

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology Faculty of Mechanical Engineering

Course Description Care	d de la constant de l
Field of study	Mechanical Engineering
Profile of Education	General Academic
Level of study	First Cycle Studies
Specialization	Manufacturing Technology
Form of Study	Full-Time Studies
Semester	Seventh
Course Title	Technology machinery and equipment repair

Nazwa pr	zedr	niotu	Techno	logia	a napraw	maszyn i urządzeń								
ECT	S poi	ints	4			Subject type		W	/-K					
Langua	ge of	f lecture	angielsk i		Mode o	of completing the cou	irse	Exami	ination					
Cour	rse c	ode	7.V	VK.T	1	scientific research/pract.	1)	Т						
		Knowle	dge	1			ng materia	als and ne	ew					
				2										
Language of lecture       angielsk       Mode of completing the course       Exa         Course code       7.WK.T1       Subject related to scientific research/pract. profess. prepar. (Y/N)       T         Preliminary requirements of the course       Skills       1       Has knowledge of engineering materials and technologies         Skills       2       1       Is able to identify and formulate specification simple engineering tasks of a practical nature design of machines and devices.       2         Social Competence       1       Understands non-technical aspects of a meet safety.       2         Course Goals       Preparing students to look for new methods of repairing machines safety.       2       1         Course Goals and principles of inspection after repair.       The reference for the course - after completing the training cycle       The reference for the course - after completing the training outcomes for the course - after completing the training outcomes for the course - after completing the training outcome soft the life cycle of machines and methods and principles of the life cycle of machines and methods and principles of the life cycle of machines and methods and principles of the life cycle of machines and methods and principles of the life cycle of machines and methods and principles of the life cycle of machines and methods and principles of the life cycle of machines and methods and principles of the life cycle of machines and methods and principles of the life cycle of machines and methods and principles of the life cycle of machines and methods and principles of the life cycle of machines and principles of the life c														
of the co	ourse			2										
			4       Subject type       W-K         re angielsk       Mode of completing the course       Examination         7.WK.T1       Subject related to scientific research/pract. profess. prepar. (Y/N)       T         vledge       1       Has knowledge of engineering materials and new technologies       T         2       1       Is able to identify and formulate specifications fo simple engineering tasks of a practical nature in design of machines and devices.       2         2       1       Is able to identify and formulate specifications fo a simple engineering tasks of a practical nature in design of machines and devices.       2         all petence       2       Understands non-technical aspects of a mechani engineer's activity, impact on the environment a safety.         2       2       Intelligence to plan and carry out machine renovation oles of inspection after repair.         for the course - after completing the training cycle       The reference form of course i course i course or the field of machine and carry out machine renovation oles of inspection after repair.       ME_K1_WC L         wieldge of the life cycle of machines and ical devices in the field of machine or tra assembly and evaluate existing al solutions in the construction, production ration of machines.       ME_K1_WC L         e of the responsibility associated with is made as nat of engineering activities       ME_K1_WC L											
		•		2										
	oals	Prepari	ng studen	ts to	look for	new methods of rep	nd							
ECTS points         4         Subject type         W-K           Language of lecture         angielsk         Mode of completing the course         Examina           Course code         7.WK.T1         Subject related to scientific research/pract. profess. prepar. (Y/N)         T           Preliminary requirements of the course         Skills         1         Has knowledge of engineering materials and new technologies         T           Scial Course Goals         Skills         1         Is able to identify and formulate specifications for simple engineering tasks of a practical nature in t design of machines and devices.         1           Course Goals         Preparing students to look for new methods of repairing machines and devices.         1         Understands non-technical aspects of a mechanic asafety.           Course Goals         Preparing students to look for new methods of repairing machines and devices.         1         Intelligence to plan and carry out machine renovation to safety.           Programme content         Discussion of the basic characteristics and definitions of mainten and repair work. Using artificial intelligence to plan and carry out machine renovation to we cycle         1           Learning outcomes for the course - after completing the training get         1         The reference source         Form of e to the learning         ME with we have a devices in the field of machines technology,         ME a         KI lo         1														
Learning	outo	comes fo			after cor	npleting the training	referenc e to the learning outcome	course (W, C, L,	of verificati on of learning outcome					
	1 m	nechanica	al devices		-			WCL	СНІ					
	2													
Skills	1 r	hachine c echnical s	or its asser solutions i	nbly n the	and eva e constru	aluate existing		L	I					
	2							se Examiner T T materials and new the specifications for practical nature in es. pects of a mechani the environment a perfinitions of mainter nachine renovation The efference form of earning (W, C, L, putcome P, S) ME_K1_ W14 W C L ME_K1_ W14 L						
Social Compet ence	1 de	ecisions	made as p	oart o	of engine		ME_K1_ K07	С	ΙK					
	2													
Methods of y	verifica	ation of lear	ning outcome	es:			Subject related to scientific research/pract. rofess. prepar. (Y/N)       T         Iedge of engineering materials and new ies       T         identify and formulate specifications for gineering tasks of a practical nature in the machines and devices.       T         identify and formulate specifications for gineering tasks of a practical nature in the machines and devices.       T         identify and formulate specifications for gineering tasks of a practical nature in the machines and devices.       T         identify and formulate specifications for gineering tasks of a practical nature in the machines and devices.       T         ew methods of repairing machines and       T         haracteristics and definitions of maintenance plan and carry out machine renovation works. ir.       Methods of reference et to the learning outcome s       Methods of the preference of the plan and carry out machine renovation works. If the plan and carry out machine renovation works. If the plan and carry out machine renovation works. If the plan and carry out machine renovation works. If the plan and carry out machine renovation works. If the plan and carry out machine renovation works. If the plan and carry out machine renovation works. If the plan and carry out machine renovation works. If the plan and carry out machine renovation works. If the plan and carry out machine renovation works. If the plan and carry out machine renovation works. If the plan and							

A-written exam, B-oral exam, C-written assessment, D-oral assessment, E-based on partial marks of oral answers, F-based on partial marks of written answers, G-term paper, H-assessment from reports, I-assessment from realization of exercises, Jassessment from preparations for exercises, K-assessment from the project implementation, L-assessment of the written implementation of the project, M-assessment of defense of project, N-assessment of form of presentation, O-assessment of content of presentation, P-observation of students' activity, R-observation of the regularity.

	ł	lours in the	study plan
The course format	Hours/sem. (h)	(tit	Tutor (coordinator) of the course le/academic degree/professional title, name and surname
Lecture (W)	30		
Calculation class (C)	15		
Laboratory class (L)	15	dr inż. Praż	nowski Krzysztof
Project (P)	0		
Seminar (S)	0		
		Student v	vorkload
Types of student act	ivities*		Average number of hours* allocated on completed activities
Lecture (W)			30
Calculation class (C)			15
Laboratory class (L)			15
Project (P)			0
Seminar (S)			0
Preparation for class	es		10
Preparation of a report project/presentation	ort/paper/		15
Independent study o	f the course top	pics	15
Examination or final	colloquium		0
Additional contact he	ours		0
Total student worklo	ad		100
Number of contact h	ours (from the s	study plan)	60

\* hour (class) means 45 minutes

dr hab. inż. Augustynowicz Andrzej Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

Opole University of Technology

Faculty of Mechanical Engineering

Course Description Card

Field of study	Mechanical Engineering
Profile of Education	General Academic

Level of study		First Cy	/cle	Studies			
Specialization		Manufa	ictu	ring Tech	nology		
Form of Study		Full-Tin	ne S	Studies			
Semester		Fifth					
Course Title		Tool sy	ster	ms			
Nazwa przedm	niotu	System	iy n	arzędziow	ve		
ECTS poir	nts	3			Subject type		W-K
Language of	lecture	angielsk i		Mode c	of completing the cours	e	Course credit
Course co	ode	5.\	NK.	T2	Subject related to scientific research/pract. profess. prepar. (Y/N)		Т
	Knowle	dge	1		as knowledge of the baing and machine parts.		mechanical
			2	He/She h	as knowledge of the ba	asics of	cavity machining.
Preliminary			1	He/She c	an analyze the functior	ning of	machines.
requirements of the course	Skills		2	He/She c techniqu	an determine the effec es.	t of bas	sic manufacturing
	Social	tonco	1		s aware of the responsi ed with his decisions.	bilities	and consequences
	Compe	lence	2	He/She is	s aware of the observar	nce of p	professional ethics.
Course Goals	Familia	rize stude	ents	with sele	cted tool systems.		
milling, hole m	achinin	g. Tool cla	amp	ing syste	n of cutting tools. Tooli ms. Measurement and pecial tool for hole mak	diagnos	stics of cutting

turning tool. Selection of a tooling system for peeling on a CNC milling machine.

Learning	οι	itcomes for the course - after completing the training cycle	The referenc e to the learning outcome s	Form of course (W, C, L, P, S)	Methods of verificati on of learning outcome s
	1	He/She has knowledge of the metrology of eometric quantities.	ME_K1_ W09	WLP	С
Knowled ge	2	He/She has knowledge in physics, including the fundamentals of mechanics, thermodynamics, optics, electricity and magnetism, nuclear physics, solid state physics and elements of quantum physics, needed to understand, describe and use physical phenomena in the design manufacture and operation of measuring instruments and systems.	ME_K1_ W02	WLP	СK
Skills	1	He/She is able to obtain information from literature, databases and other sources, able to integrate the information obtained.	ME_K1_ U08	WLP	СК
	2	He/She can make a critical analysis of how things work and evaluate existing technical solutions.	ME_K1_ U01	WLP	СК
Social	1	He/She is aware of the need to supplement knowledge throughout life.	ME_K1_ K01	WLP	СК
Compet	2	He/She is aware of the responsibility associated with decisions, made in the framework of engineering activities, especially in terms of safety of his own and other people and protection of the environment.	ME_K1_ K01	WLP	СК

	ł	lours in the	study plan
The course format	Hours/sem. (h)	(titl	Tutor (coordinator) of the course le/academic degree/professional title, name and surname
Lecture (W)	15		
Calculation class (C)	0		
Laboratory class (L)	15	dr inż. Chuc	dy Roman
Project (P)	15		
Seminar (S)	0		
		Student w	vorkload
Types of student act	ivities*		Average number of hours* allocated on completed activities
Lecture (W)			15
Calculation class (C)			0

Laboratory class (L)	15
Project (P)	15
Seminar (S)	0
Preparation for classes	5
Preparation of a report/paper/ project/presentation	10
Independent study of the course topics	10
Examination or final colloquium	5
Additional contact hours	0
Total student workload	75
Number of contact hours (from the study plan)	45

dr hab. inż. Małecka Joanna Head of the organizational unit (stamp/signature) dr inż. Wydrych Jacek Dean of Faculty (stamp/signature)

symbol	Advanced manufacturing techniques	Automatics and robotics	Construction documentation	Differential and integral calculus	Diploma seminar I	Diploma seminar II	Diploma work (Engineering project) Diploma work (Engineering project)	Engineering graphics	Engineering statistics	Ergonomic and industrial safety	Exploitation of industrial apparatus	Exploitation of vehicles and machinery	Finite element method		Fluid thermomechanics II	Foreign language	Foreign language	Foreign language	Foreign language	Foreign language	Foreign language	language	Fundamentals of electrical engineering	Fundamentals of machine design	Fundamentals of machine design in practice	Fundamentals of materials science	General science of mechanics	Humanistic and social subject I	Humanistic and social subject II	Individual report - simulation work			Mathematics I	Mathematics II	Mechanical Engineering Introduction	Mechanics I	Devicinal adjunction	Physical education	Professional practice	Protection of invention property	Removal processes I	Removal processes II	13	g	Software engineering and data processing	Strength of materials in practice	Technical drawing and CAD I	Technical drawing and CAD II	Technical drawing and CAD III	Technical drawing in practice	Technical metrology	Techniques of welding	Technologies and industrial apparatus	Vehicle and machine propulsion	CAD machine design	CAM process design	Computational engineering		Design of molds with the use of CAD Diagnostics of machines and devices	Hydraulic and pneumatic drives and control		eliability	Rapid Manufacturing Techniques
ME_K1_W0	L .			X .	.  .	1.	1.	<del> </del> .	x				<u>х</u> .			1.	1.	1.	<u> </u> .								x		1.	╡.	1.	1.	Х	Х	x x			<u> </u> .	1.	<b> </b> .					( .	╡.	1.			.	.  .		╡.	1.	<u> </u> .	Х	Х		╡.	1.			
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ME_K1_W0	5.	Х		·	.  .			ŀ	ŀ		ŀ	.	.  .	.  ·			<u> </u>		ŀ				Х					.		<u> </u>		<u> </u> .				<u> </u>					ŀ	.  .		. X	( .	<u> </u>				·	.		<u> </u> .		ŀ			.  .	ŀ		ŀ		
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ME_K1_W1	_	ŀ	·	·	·  ·	ŀ	- <u> </u> .	ŀ	ŀ	ŀ	ŀ	·	·	·	· ·			X	×	X	X	X	·				·	·  ·		.  .		ŀ	ŀ	·	· ·	+·	ŀ	ŀ	ŀ	ŀ	ŀ	·	· - ·	·  ·	- <u> </u> .	+·	ŀ	·		·	·  ·	<u> </u>	ŀ	ŀ	ŀ	·	•	·	+·	ŀ	ŀ	·	·
ME_K1_W16	) . 	ŀ	·	·	·	ŀ	ŀ	ŀ	ŀ	ŀ	ŀ	·	·	·	· ·	+·	+·	ŀ	+·	ŀ	•	·	·	•	·	•	·	·  ·	<u>+</u>	<u> </u> *		ŀ	ŀ	·	<u>×  </u> .	ŀ	ŀ	ŀ	ŀ	ŀ	ŀ	·	· - ·	· ·	ŀ	+·	ŀ	·	·	·	·  ·	·  ·	ŀ	ŀ	ŀ	·	•	·  ·	+·	ŀ	ŀ	·	-
		-		$\overline{\mathbf{v}}$			x	+	x		$\vdash$	+	+		/	+	+	+	+	+			v			v	~	+	+	+	+		+		~	+	,	+	+	$\vdash$					+	+	-				<u>,</u>		+	+	┝	v		-		+-		$\vdash$	_
ME_K1_U01		ŀ	·	^ /	^ /	<u>^ /                                   </u>		ŀ	<u>^</u>	ŀ	ŀ	·  ·	· ·	· /′	^ . 			Х	. 	V	Х	v	^	•	·	^	^	·  ·	+	÷	+·	+	ŀ	·	<u>^  </u> .	+	·  ·	ŀ	ŀ	ŀ		<u>^ /</u> X .	<u> </u>	<u>^  </u> .	- <u> </u> .	+·	ŀ	·	·	^	^ /	<u>^  .</u>	ŀ	ŀ	ŀ	^	•	····	+	·	^	·	<u>·</u>
ME_K1_U02	_	ŀ	·	·  ·	·  ·	+	+·	ŀ	ŀ	ŀ	ŀ	•	^ /	<u>^  </u> .		$\frac{1}{2}$		+	+	^ X		^ X	·	·	·	•	·	·  ·	+	÷	+·	+·	ŀ	·	·	÷	+·	+·	ŀ	· 	ŀ	<u>^  </u> .	· ·	<u>+</u>	+	+·	ŀ	·	·	·	·  ·	·  ·	ŀ	ŀ	ŀ	V	•	·  ·	+·	ŀ	ŀ	·	-
ME_K1_U03 ME_K1_U04	_	ŀ	·	·  ·	•	+	ŀ	Y	ŀ	ŀ	ŀ	·	·	·  ·		Ŷ	<u></u>	Ŷ	$\uparrow$	<u>^</u>	^	^	·	•	·	•	·	·  ·	+		,	ŀ	· 	·	·····	+·	+·	ŀ	ŀ	ŀ	ŀ	····			· ·	+·	X	X	Х	·	•		╉	ŀ	У	^	•	· ·	· ·	ŀ	X	·	X
ME_K1_004	_	·	·	·	·  ·	÷	·		ŀ	·	Х	·  ·	· ·	· · ·	+	- <u> </u> .	+·	ŀ	+·	ŀ	•	·	Х	•	Х	•	x	·				+·	X	Х	· · · · · · · · · · · · · · · · · · ·		,	+·	ŀ	· 	ŀ	·  ·			<u> </u>	X		^	^	·	·  ·		+	·		Х	X	. /	<u> </u>	•		· ·	^
ME_K1_U06		ŀ	·	· ·	·  ·	+	+·	+·	ŀ	·		·	• /	<u>^  </u> .	+	+·	+·	ŀ	+·	ŀ	•	·	^	•	^	•	^	· ·	+	<u>`                                    </u>	+	+·		^	$\frac{1}{2}$		<u> </u>	+·	+·	ŀ	ŀ	·  ·			<u> </u>	Ŷ	ŀ	•	·	·	· ·		÷	ŀ	ŀ	^		·  ·	+·	·	ŀ	^	-
ME_K1_U07		.  .	•			+	- X	x	<u> </u>			· ·	· .	· .	<u> </u>	- <u> </u> -	+	<u> </u>	<u> </u> .			•	•	•		•		· ·		+	+	+	<u> </u>	•		+	+	<u> </u> .	Х	· 	·	· · ·	-		<u> </u>	<u> </u> .				·			+		·  -				<u> </u>				
ME_K1_U08		Х	Ë				_	Ť.	†	<u> </u> .	ŀĤ	X		· · ·	x İ.		<u><u></u><u>−</u><u>−</u><u>−</u><u>−</u><u>−</u></u>	†.	<u>†</u> .	.  .	Ľ.	÷		÷	Ĥ		$\frac{1}{2}$			+	- X	<u> </u>	†.	<u> </u>		+	+	†.	Ť.	.  .	X	<u>.</u> Х.		x		<u> </u>	†.	Х	· X	$\frac{1}{2}$			<u><u></u><u>−</u><u>−</u><u>−</u><u>−</u><u>−</u><u>−</u><u>−</u><u>−</u><u>−</u><u>−</u><u>−</u><u>−</u><u></u></u>	Х	<u> </u>	Ë		Х.		Х		<u>⊢</u> †	-
ME_K1_U09			Х	X		Í.	<u><u> </u></u>	Х	Х	.  .	╞			Ť.		Ť.	<u><u> </u></u>	†.	†.			<u> </u>			É.					<u> </u> .	+	<u> </u> .	.  .		X	<u> </u>	╡.	.  .	.  .	.  .	$\left[ \right]$		Ť.		<u>,  </u>	Х	.  .						1	<u>.</u>	.  .	H		.	$\overline{(}$	X	Х		X
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	+		┝┤	Ť	Ť		+	+	+	$\square$		+	Ť	+		+	+	+	+		$\square$			$\square$	$\square$		$\dashv$	+	Ť	+	+	+	+		Ť	+	+	+	+	$\vdash$	⊢┤	-f				+	$\vdash$	$\vdash$		$\dashv$	╡		+	+	┢	$\square$		+	+	+	$\square$	$\vdash$	
ME_K1_K01	<u> </u> .	1.		X .	. †.	X	x	x	x	<b> </b> .	<u> </u>		. )	х I.	X	x x	X	Х	x	Х	Х	х	Х			Х	x		,		x	X	x	х	x )		x	X	X	<b> </b> .	x	x )	x )>	x x	< x	x	1.				x i	x x	X	1.	<u> </u> .	х		.  .	╡.	1.	x	. †	
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ME_K1_K07		+							_							_	_	_	-	+							_					_					_	_	-	-				_	_	_										. 1				- 1			_

Wiedza - efekty nie pokryte: Brak Umiejętności - efekty nie pokryte: Brak Kompetencje - efekty nie pokryte: Brak

symbol	Advanced manufacturing techniques	Automatics and robotics Construction documentation	Differential and integral calculus	Diploma seminar I	Diploma seminar II Diploma work (Engineering project)	Diploma work (Engineering project)	Engineering graphics	Engineering statistics	Exploitation of industrial apparatus	Exploitation of vehicles and machinery	Finite element method	Fluid thermomechanics I	Fluid thermomechanics II	Foreign language	Foreign language	Foreign language	Foreign language	Foreign language	Foreign language	Fundamentals of electrical engineering	Fundamentals of machine design	Fundamentals of machine design in practice	Fundamentals of materials science General science of mechanics	Humanistic and social subject I	Humanistic and social subject II	Individual report - simulation work	Information technology in engineering	Machinery damage	Material Engineering Mathematics I	Mathematics I	Mechanical Engineering Introduction	Mechanics I	Mechanics II Physical education	Physical education	Professional practice	Protection of invention property	Removal processes I	Removal processes II Selected chinless technologies	Selected measuring techniques and systems	Software engineering and data processing	Strength of materials	Strength of materials in practice	Technical drawing and CAD I		Technical drawing in practice	Technical metrology	Techniques of welding	Technological processes design Technologies and industrial apparatus	Vehicle and machine propulsion	Bases of quality engineering	Design of chipless processes	Fundamentals of coordinate metrology	Fundamentals of programming in a CAM system	Individual report - technological work	Machine control techniques Programming of cnc machines	Rapid prototyping techniques	Technological instrumentation	Technology machinery and equipment repair Tool systems	
ME_K1_W01	++	+	X		+	+	,	x	+	+	x		+	+	$\left  \cdot \right $	-	+	+	+	+	$\left  \right $	+		+	┢	$\mathbb{H}$		+		X	X			+	+	$\vdash$	+	+	+	X	$\left  \right $	+	+	+	+		+	+	╀	+		_	x			+	┢╋╋	+	-
ME_K1_W01 ME_K1_W02	<u> ·</u>  ·	+.		• •	+·	ŀ	•	<u>^  .</u>	+·	+		· · · · · · · · · · · · · · · · · · ·	<u>,  </u>	+·	l.	·	·  ·	+	+·	X	ŀ	·  ·		· ·	ŀ	ŀ	·	·  ·	$\uparrow$				$\frac{1}{2}$	+·	+·	ŀ	·  ·	+·	X		╞╴┨	·  ·	+	+	<u> </u> .	·	·  ·	+·	+·	ŀ	ŀ	X	<u>~ .</u>		<u> </u>	+ + +	i-t-	 . X	-
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ME_K1_W04		X	X		+·	l.	Х	·  ·	+·	+	ŀ	·  ·	+·	+·	·	·	·  ·		+·	<u> </u> .	ŀ	·  ·	+·	+	<u> </u> .	ŀ	·	·  ·	+	+	l.	·  ·	+	+	+·	ŀ	·  ·	+·	+·	X	╞╴┨	· ·		· X	X	·	· ·	,	+·	·	ŀ	·	·  ·	· ·	+	<u> </u> ∙	i-t-	÷	-
ME_K1_W04	+			· ·	+·	Х		·  ·		+	l.	·  ·		+	·	·	·  ·	+	+·	<u> </u> .	· X	x I	+·	·	<u> </u> .	Х	ŀ	·  ·	- <u> </u> .	+	l.	·  ·	+	+	+·	ŀ	·  ·	+	<u> </u> .		x	· /		$\uparrow$		·	· /	<u> </u>	+·	ŀ	ŀ	·	· ·	x i	+	<u> </u> ∙	X I	÷	-
ME_K1_W06			ŀ	· ·	+		•	·  ·		+	l.	·  ·	$\uparrow$	+	·	·	·  ·		+·	X		<u>~  </u> .	+·	+.	·		·	·  ·	- ·	- <u> </u> -	·	·  ·	- <u> </u> .	- <u> </u> -	ŀ	ŀ	·  ·	- <u> </u> .	·	Х		<u>~  </u> .	+	<u> </u> .	ŀ	·	·  ·	+	+·	·	ŀ	·	· /	~ .	- <u> </u> -	·	<u>Ê</u>	÷	-
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ME_K1_W08						.  .			- <u> </u> .	1.			<u> </u>						<u> </u> .	1.		x .	-  .		.  .			X .	<u> </u>	-			- <u> </u> .	.  .			x )	( ].		.  .	.		<u> </u>	.  .	.  .		XX		X		X		. )	X .	X	.	i.t.	<u>+</u>	1
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 ME_K1_W10	1. 1.	1.	1.		1.	1. 1			1.	1.	1. 1		1.	1.	1. 1			1.	1.	1.	.	.  >	( ].	1.	<u> </u> .			.  >	κ.	1.	1. 1		1.	1.	1.	<b>.</b>	.  .	x	1.	<u> </u> .	<u>                                     </u>	.  .	1.	1.	1.		. X		<u>†.</u>	1.			.  .		1.	1. 1	<u>г. †</u> .	<u></u>	1
 ME_K1_W11	1. 1.	1.			1.	1.			1.	1.	1. 1		1.	1.	1. 1			1.	╡.	1.	. 1		╡.	1.	<u> </u> .			.  .	╡.	1.	1.		1.	1.	x	. 1	<u>х і</u> .	1.	1.	<u> </u> .	1. 1	.  .	1.	1.	1.		.  .	1.	<u>†.</u>	x			.  .		1.	1. 1	<u>г. †</u> .	<u></u>	1
 ME_K1_W12	1. 1.	1.			1.	X		.  x	( .	1.	1. 1		1.	1.	1. 1			1.	1.	1.	.	.  .	╡.	Х	x	1.		.  .	1.	1.	1.	.  .	X	X	1.	1. 1	.  .	1.	1.	1.	1. 1	.  .	1.	1.	1.		.  .	1.	1.	х	1.		.  .		1.	X	<u>г. †</u> .	<u></u>	1
 ME_K1_W13	1. 1.	1.			1.	1.			1.	1.	1. 1		1.	1.	1. 1			1.	1.	1.	. 1		╡.	X	1.	1. 1		.  .	1.	1.	1.		1.	1.	1.	1. 1		1.	1.	1.	1. 1		1.	1.	1.		.  .	1.	<u>†</u> .	1.	1.				1.	X	. †.	<u></u>	1
 ME_K1_W14	1. 1.			хх	X	1.		.  .	1.	1.	1.		1.	1.	1.			1.	1.	1.			1.	1.	1.			.  .	1.	1.	1.		1.	1.		X		1.	1.	1.	1.		1.	1.	1.			1.	1.						1.	1.	. )	х I.	1
 ME_K1_W15	<u> .                                    </u>	1.			1.	1.		.  .	1.	1.	<u> </u> .			X	X	X	x x	( X	X		.	.  .	1.		1.	[.	.	.  .		1.	1.	.  .	1.	1.	1.	.	.  .	1.	1.	1.	<u> .    </u>			1.	1.		.  .	1.	1.				.  .		1.	1. 1	<u>. t</u> .	1.	1
 ME_K1_W16	<u> .                                    </u>	1.	1.		1.	1.		.  .		1.	[.	.  .		1.	[.		.  .		1.		.	.  .	1.	1.	1.	[.	Х	.  .		1.	X	.  .	1.	1.	1.	.	.  .	1.	1.		<u> .</u>	.  .		1.	1.			1.	1.				.  .		1.	1. 1	. †.	<b>.</b>	1
	$\uparrow \uparrow$				$\top$			$\top$	$\top$		$ \uparrow $	$\top$	╈	$\top$	[ ]	$\neg$	$\uparrow$	╈	$\top$		$ \uparrow $	$\uparrow$	╈	$\uparrow$	$\top$	П	$\square$	╈	$\top$	$\top$				$\uparrow$	$\square$		$\top$	$\top$	$\top$	$\top$	$\square$	$\uparrow$	╈	$\uparrow$	$\square$			$\top$	$\top$					╈		$\uparrow \uparrow$	$\square$	$\top$	1
ME_K1_U01			Х	хх	X	Х	. )	х.		1.	1.	. )	<b>к</b> .	1.	.		.  .			Х	.	. )	X					. )	κ.	1.	X	. )	κ.			.	X )	X	Х		1.				Х	Х	х.		1.			Х	x >	Х.	X	.		. X	1
ME_K1_U02											Х	Х.	X	Х	X	X	хх	( X	Х																		. )	( .																					]
ME_K1_U03											.		X	X	Х	X	хх	( X	X																																					<u>.</u>			]
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ME_K1_U05	Χ.								Х			Х.			ŀ					Х		Х.	Х			Х			Х	X	Х	X >	Κ.							Х		Х.								Х		. 1	Х.						]
ME_K1_U06																																															. X							. Х	( .	Х			
ME_K1_U07						Х	X				·																								Х															Х						Х			
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ME_K1_U09		Х	Х				X	х.			ŀ				ŀ						ŀ										Х					ŀ				Х	ŀ	Х.					. X	ί.			Х		. )	Χ.			Х.		
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ME_K1_K01				Х			Х	Х	Х	Х					Х		Х	Х		Х	Х	Х	Х			Х	Х			Х	X	x )	x )	<	$\langle \rangle$	$\langle \rangle$	$\langle \rangle$	X )	<   X	( )	( .	Х	Х	Х	Х	Х	Х	Х					X	$\langle \rangle$	( )	ί.		Х	Х		Х					i.	X
ME_K1_K02					Х	Х			Х		Х																Х	Х	Х																											X										ŀ	
ME_K1_K03		Х							Х															Х																		Х	Х											X	ζ.		Х				Х	Х	Х	Х		ŀ	
ME_K1_K04									Х			Х					Х	Х		Х	Х	Х	Х		Х													)	$\langle \rangle$	( .																	Х			Х						ŀ	
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ME_K1_K07			Х		Х	Х		Х								Х								Х																			Х						Х	X	XI															Х	

Wiedza - efekty nie pokryte: Brak

Umiejętności - efekty nie pokryte: Brak

Kompetencje - efekty nie pokryte: Brak