



UNIwersytet
Przyrodniczy
we Wrocławiu

Program studiów

Kierunek: horticulture

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Charakterystyka kierunku

Informacje podstawowe

Nazwa kierunku:	horticulture
Poziom studiów:	studia drugiego stopnia (magister inżynier)
Profil studiów:	ogólnoakademicki
Forma studiów:	Stacjonarne
Tytuł zawodowy nadawany absolwentom:	magister inżynier
Czas trwania studiów (liczba semestrów):	4
Liczba punktów ECTS konieczna do ukończenia studiów:	120
Liczba godzin (w tym realizowanych z wykorzystaniem metod i technik kształcenia na odległość):	1165 (30)
Liczba godzin z wychowania fizycznego*:	

*) - dotyczy studiów pierwszego stopnia i jednolitych studiów magisterskich realizowanych w formie stacjonarnej

Przyporządkowanie kierunku do dyscyplin:

Dyscyplina	Udział procentowy	ECTS
Rolnictwo i ogrodnictwo	100%	120

Sylwetka absolwenta

Absolwent studiów II stopnia kierunku Horticulture, posiada rozszerzoną w stosunku do studiów pierwszego stopnia wiedzę z zakresu ogrodnictwa zrównoważonego i kształtowania krajobrazu w Polsce i w Chinach. Jest przygotowany do: wykonywania badań z zakresu analizy instrumentalnej, przetwarzania danych korzystając z technik informatycznych, opracowywania i analizy wyników, prezentowania wiedzy w określonej specjalności ogrodniczej, a także zarządzania i sterowania jakością produkcji oraz kierowania zespołami ludzkimi. Na poziomie specjalistycznym potrafi wykorzystać techniki badawcze i analityczne. Samodzielnie podejmuje decyzje w zakresie prowadzenia działalności ogrodniczej na poziomie zawodowym. Jest w stanie przeprowadzić analizę ekonomiczną podejmowanych działań związanych z produkcją ogrodniczą. Identyfikuje i wszechstronnie analizuje problemy i zagrożenia związane z podejmowaną działalnością ogrodniczą. Absolwent studiów II stopnia jest przygotowany do prowadzenia badań naukowych zarówno w Polsce jak i w światowych laboratoriach w zakresie bardzo szeroko pojętego ogrodnictwa. Absolwenci studiów II stopnia są przygotowani do kontynuacji nauki na studiach trzeciego stopnia kształcenia w szkołach doktorskich na dowolnej uczelni w Polsce, w Chinach i innych światowych jednostkach naukowych w zakresie ogrodnictwa.

Wymiar (liczba godz. i punktów ECTS), zasady i forma odbywania praktyk

Wymiar (liczba godz. i punktów ECTS), zasady i forma odbywania praktyk: 105 godzin, 6pkt ECTS

Wymiar (liczba godz. i punktów ECTS): 105 godzin, 6 pkt. ECTS

W czasie trwania II semestru, równoległe z realizacją przedmiotów studenci odbywają praktykę w ramach realizacji przedmiotu Comprehensive practice of horticultural modernization production. Zapoznają się z metodami zakładania doświadczeń, metodyką prowadzonych badań z zakresu sadownictwa, warzywnictwa oraz roślin ozdobnych. W ramach praktyki uczestniczą w doświadczeniach polowych lub szklarniowych, a także biorą udział w pracy w laboratorium Katedry Ogrodnictwa. Zakres prac obejmuje udział w analizach jakościowych i ilościowych, samodzielne oznaczenia oraz pomiary, które służą do uzyskania wyników badań naukowych. Praktyka dla studentów z Chin ma miejsce w stacjach doświadczalnych Katedry Ogrodnictwa lub w innym miejscu prowadzenia doświadczeń na terenie Polski. Dodatkowo w realizację praktyki włączone są wyjazdy do producentów, co stwarza możliwość pokazania nowoczesnych rozwiązań technologicznych i ich zastosowań w praktyce ogrodniczej. Natomiast studenci z Polski realizują praktykę na terenie Chin, we wskazanych ośrodkach badawczych lub produkcyjnych.

Zasady/organizacja procesu dyplomowania

Egzamin dyplomowy przeprowadzany jest w języku angielskim, w sposób pozwalający studentowi wykazać się właściwą dla danych efektów uczenia się wiedzą. Egzamin odbywa się w obecności członków komisji z Uniwersytetu Przyrodniczego we Wrocławiu oraz z Hunan Agriculture University (HAU) lub w czasie połączenia zdalnego pracowników obu uniwersytetów. Egzamin obejmuje bloki tematyczne z zakresu ogrodnictwa, zagadnienia kierunkowe bazowe oraz specjalistyczne zagadnienia kierunkowe. Zestawy zagadnień obowiązujących na egzaminie przygotowywane są przez nauczycieli akademickich prowadzących zajęcia na kierunku i akceptowane przez Komisję Programową, a następnie z wyprzedzeniem podawane do wiadomości studentów. Po zdanej części z wiedzy student przystępuje do obrony pracy dyplomowej: przedstawia jej główne założenia i tezy, po czym recenzent lub recenzenci pytają go z zakresu jego pracy dyplomowej. Egzamin uznaje się za zdany, gdy średnia ocen z co najmniej czterech pytań osiągnie wartość równą lub większą od 3,0. Przebieg egzaminu dokumentowany jest odpowiednim protokołem i ogłaszany studentom po zakończeniu egzaminu. Recenzentami pracy dyplomowej jest jeden nauczyciel akademicki z UPWr i drugi z HAU. Warunkiem dopuszczenia do egzaminu dyplomowego jest zaliczenie wszystkich przedmiotów i praktyki objętych programem studiów, uzyskanie 120 pkt ECTS na studiach II stopnia polsko-chińskich, a także złożenie w wymaganym terminie pracy dyplomowej. Dyplomant i opiekun pracy pisemnie poświadczają, że praca dyplomowa nie zawiera nieuprawnionych zapożyczeń i jest wykonana samodzielnie. Wszystkie prace na kierunku Horticulture podlegają obowiązkowemu sprawdzeniu w systemie antyplagiatowym. W przypadkach stwierdzenia przekroczenia wskaźników podobieństwa decyzję o dopuszczeniu pracy (po złożeniu stosownego wyjaśnienia) lub o przekazaniu do dalszej procedury antyplagiatowej podejmuje opiekun pracy. Ma on obowiązek zawiadomić dziekana o popełnieniu plagiatu i złożyć wniosek o wstrzymanie procedury dyplomowania, a rektor decyduje o skierowaniu do komisji dyscyplinarnej. Praca dyplomowa oceniana jest przez recenzentów po 1 z UPWr i z HAU, a z treścią recenzji student zapoznaje się przed egzaminem dyplomowym. Wszystkie prace dyplomowe są wprowadzane oraz recenzowane w systemie USOSweb - ADP (Archiwum Prac Dyplomowych). Na egzaminie końcowym studiów II stopnia zgodnie z regulaminem studiów i umową podpisaną między UPWr i HAU w komisji na obronach w Polsce jest 3 przedstawicieli UPWr i 2 z HAU. W przypadku obrony prowadzonej w Chinach odwrotnie. Komisji przewodniczy dziekan. Przewodniczący komisji, zgodnie z obowiązującym regulaminem studiów, na podstawie średniej ważonej ocen z pracy dyplomowej, egzaminu dyplomowego i średniej oceny ze studiów II stopnia wystawia ocenę końcową na dyplom. Absolwent otrzymuje 2 dyplomy ukończenie studiów wyższych II stopnia potwierdzające uzyskanie tytułu zawodowego magistra inżyniera ogrodnictwa.

ECTS

Liczba punktów ECTS, którą student uzyska na zajęciach wymagających bezpośredniego udziału nauczycieli akademickich lub innych osób prowadzących zajęcia i studentów	66,6
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Liczba punktów ECTS, którą student uzyska w ramach zajęć z dziedziny nauk humanistycznych lub nauk społecznych**	8
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Liczba punktów ECTS, którą student uzyska za zajęcia wybieralne	34
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Liczba punktów ECTS przyporządkowana zajęciom związanym z prowadzoną w uczelni działalnością naukową w dyscyplinie lub dyscyplinach, do których przyporządkowany jest kierunek studiów	86
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Liczba punktów ECTS przyporządkowana zajęciom kształtującym umiejętności praktyczne	
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**) - dotyczy kierunków innych niż przypisane do dyscyplin nauk humanistycznych lub nauk społecznych

Dopuszczalny deficyt punktów ECTS po poszczególnych semestrach

Semestr	Deficyt	Komentarz
1	13	
2	13	
3	13	
4	0	

Sekwencje przedmiotów

Semestr	Nazwa przedmiotu realizowanego	Nazwa przedmiotu poprzedzającego
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Efekty uczenia się

Wiedza

Kod	Treść
OG_P7S_WG01	Absolwent zna i rozumie w stopniu pogłębionym w stosunku do studiów pierwszego stopnia, zasady ogrodnictwa zrównoważonego, wykazuje znajomość wpływu specjalistycznych technologii stosowanych w tradycyjnej, integrowanej i ekologicznej produkcji ogrodniczej na środowisko i bezpieczeństwo żywności
OG_P7S_WG02	Absolwent zna i rozumie w stopniu pogłębionym zagadnienia zakresu biologii molekularnej, statystyki matematycznej w tym stosowania podstawowych metod statystycznych w praktyce, dostosowaną do specyfiki prowadzenia doświadczeń z szeroko rozumianego ogrodnictwa
OG_P7S_WG03	Absolwent zna i rozumie w stopniu pogłębionym problematykę na temat współczesnych światowych trendów ogrodnictwie ze szczególnym uwzględnieniem najnowszych osiągnięć naukowych w zakresie ogrodnictwa
OG_P7S_WG04	Absolwent zna i rozumie w stopniu pogłębionym zasady legislacyjne ze szczególnym uwzględnieniem prawnych aspektów ochrony środowiska w Polsce, na świecie w tym w Chinach, umożliwiającą planowanie i wykorzystywanie użytków ekologicznych dla wzmocnienia ekologicznej stabilności biocenozy
OG_P7S_WG05	Absolwent zna i rozumie w stopniu pogłębionym zasady doboru i wykorzystania roślin do kompozycji służących do dekoracji przestrzeni wewnętrznych i zewnętrznych w zależności od światowych trendów w tym zakresie
OG_P7S_WG06	Absolwent zna i rozumie w stopniu pogłębionym wymagania jakościowe dla owoców, roślin warzywnych i ozdobnych w krajach EU i w Chinach, oraz funkcjonowania rynków hurtowych produktów ogrodniczych
OG_P7S_WG07	Absolwent zna i rozumie w stopniu pogłębionym zasady planowania i realizacji produkcji ogrodniczej, w obszarze gatunków i technologii powszechnie nie stosowanych w praktyce, mających charakter perspektywiczny dla ogrodnictwa polskiego i chińskiego
OG_P7S_WK08	Absolwent zna i rozumie w stopniu pogłębionym zagadnienia z zakresu ochrony własności przemysłowej i prawa autorskiego oraz konieczność zarządzania zasobami własności intelektualnej
OG_P7S_WK09	Absolwent zna i rozumie ogólne zasady tworzenia i rozwoju form indywidualnej przedsiębiorczości w zakresie produkcji ogrodniczej
OG_P7S_WK10	Absolwent zna i rozumie zasady zakładania i prowadzenia doświadczeń polowych związanych z produkcją ogrodniczą
OG_P7S_WK11	Absolwent zna i rozumie w stopniu pogłębionym ekonomiczne uwarunkowania umożliwiające zrozumienie zasad funkcjonowania rynku produktów ogrodniczych w Polsce i w Chinach
OG_P7S_WK12	Absolwent zna i rozumie w stopniu pogłębionym precyzuje czynniki środowiskowe i agrotechniczne determinujące jakość produktów ogrodniczych
OG_P7S_WK13	Absolwent zna i rozumie w stopniu pogłębionym nowoczesne niechemiczne w tym biologiczne metody ochrony roślin ogrodniczych
OG_P7S_WK14	Absolwent zna i rozumie dylematy współczesnej cywilizacji i współczesne i historyczne relacje społeczne

Umiejętności

Kod	Treść
OG_P7S_UO11	Absolwent potrafi wykorzystywać umiejętności potrzebne do ochrony potencjału krajobrazu przyrodniczego i kulturowego
OG_P7S_UU12	Absolwent potrafi planować ścieżkę własnego rozwoju zawodowego, rozumie potrzebę uczenia się przez całe życie

Kod	Treść
OG_P7S_UK06	Absolwent potrafi przygotować wystąpienia ustne w celu zaprezentowania przeglądu literatury, uzyskanych wyników oraz wniosków z przeprowadzonych badań w ramach wykonywanej pracy dyplomowej z zakresu ogrodnictwa jak również umie prowadzić dyskusję na ten temat
OG_P7S_UK07	Absolwent potrafi zaprojektować i wykonać aranżacje roślinne wykorzystywane do dekoracji przestrzeni zewnętrznych i wewnętrznych z uwzględnieniem trendów obowiązujących w Polsce i w Chinach
OG_P7S_UK08	Absolwent potrafi posługiwać się językiem obcym na poziomie biegłości B2+ Europejskiego Systemu Opisu Kształcenia Językowego, posiada znajomość zawodowego języka angielskiego pozwalającą na korzystanie z światowej literatury naukowej, opracowań technicznych i zasobów internetowych oraz przygotowanie tekstów dotyczących zagadnień z zakresu ogrodnictwa w tym opracowanie pracy magisterskiej
OG_P7S_UO09	Absolwent potrafi samodzielnie planować, przeprowadzać, analizować i oceniać zadania z zakresu szeroko rozumianego nowoczesnego ogrodnictwa, prawidłowo interpretuje rezultaty i wyciąga wnioski
OG_P7S_UO10	Absolwent potrafi korzystać z narzędzi internetowych, w tym baz danych oraz wyszukiwarek publikacji naukowych z zakresu nauk rolniczych i przyrodniczych
OG_P7S_UW01	Absolwent potrafi wyszukiwać, krytycznie analizować potrzebne informacje pochodzące z różnych źródeł w celu ich twórczego wykorzystywania do sporządzenia wykonawczego i eksploatacyjnego opracowania z zakresu ogrodnictwa zrównoważonego
OG_P7S_UW02	Absolwent potrafi zaprojektować nasadzenie ogrodnicze prowadzone według nowoczesnych zasad integrowanej i ekologicznej produkcji oraz przedstawić projekt w formie werbalnej, pisemnej i graficznej
OG_P7S_UW03	Absolwent potrafi dobrać i modyfikować technologie stosowane w ogrodnictwie oraz je dostosowania do zasobów przyrody w celu poprawy jakości życia człowieka
OG_P7S_UW04	Absolwent potrafi krytycznie ocenić podejmowane działania w rozwiązywaniu zaistniałych problemów przy planowaniu i realizacji produkcji ogrodniczej
OG_P7S_UW05	Absolwent potrafi planować, analizować i oceniać poprawność badań lub pracy projektowej stanowiących podstawę magisterskiej pracy dyplomowej

Kompetencje społeczne

Kod	Treść
OG_P7S_KK01	Absolwent jest gotów do samodoskonalenia w zakresie nowych technologii w ogrodnictwie w celu doskonalenia umiejętności uzyskanych w trakcie studiów, potrafi inspirować i organizować proces uczenia się innych osób
OG_P7S_KK02	Absolwent jest gotów do analizy realizowanego zadania pod kątem określenia właściwych priorytetów z uwzględnieniem roli poszczególnych jego wykonawców
OG_P7S_KO03	Absolwent jest gotów do podjęcia zawodowej i etycznej odpowiedzialności za produkcję owoców i warzyw wysokiej jakości z uwzględnieniem aspektów ochrony środowiska
OG_P7S_KO04	Absolwent jest gotów do oceny skutków społeczne wykonywanej działalności w zakresie szeroko rozumianego ogrodnictwa z uwzględnieniem jego wpływu na dobrostan człowieka i środowiska oraz do przestrzegania etycznych zasad wykonywanego zawodu
OG_P7S_KO05	Absolwent jest gotów do kreatywnej pracy w zespole w charakterze osoby odpowiedzialnej za końcowy wynik pracy oraz tworzenia właściwych relacji w środowisku zawodowym
OG_P7S_KO06	Absolwent jest gotów do podejmowania działań na rzecz środowiska społecznego oraz wypełniania zobowiązań społecznych
OG_P7S_KR07	Absolwent jest gotów do działania w sposób przedsiębiorczy w zakresie planowania i realizacji zadań związanych z produkcją ogrodniczą, podejmowania decyzji w trudnych sytuacjach związanych z tą produkcją

Kod	Treść
OG_P7S_KR08	Absolwent jest gotów do zainicjowania działań na rzecz interesu publicznego w zakresie ochrony środowiska i przyrody
OG_P7S_KR09	Absolwent jest gotów do przestrzegania i rozwijania zasad etyki zawodowej oraz podejmowania działań na rzecz przestrzegania tych zasad

Sylabusy



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Mathematical statistics and research methods Educational subject description sheet

Basic information

Field of study horticulture Speciality - Department The Faculty of Life Sciences and Technology Study level Second-cycle (engineer) programme Study form Full-time Education profile General academic	Education cycle 2021/22 Subject code WPTPHOS.MI1AO.5e5e1df624fc8.21 Lecture languages English Mandatory mandatory Block Przedmioty ogólne prowadzone w językach obcych Subject related to scientific research Yes Subject shaping practical skills No
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Period Semester 1	Examination exam Activities and hours lecture: 15, project classes: 30	Number of ECTS points 4.0
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Goals

C1	Students will learn about science experimental design. Students will learn how to analyse biologically data (including molecular data). Students will be familiar with statistical models and experimental design.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Has knowledge about statistics including practical knowledge about using statistical analysis	OG_P7S_WG02	written exam, active participation, presentation, performing tasks

Skills - Student can:			
U1	Has skills in statistical data analysis using computer software	OG_P7S_UW05	written exam, active participation, performing tasks
Social competences - Student is ready to:			
K1	He works as a team, sharing responsibilities and delegating tasks	OG_P7S_KO05	active participation, performing tasks

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
project classes	30	
exam / credit preparation	30	
presentation/report preparation	20	
lesson preparation	25	
Student workload	Hours 120	ECTS 4.0
Workload involving teacher	Hours 45	ECTS 1.0
Practical workload	Hours 30	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Defining, Measuring and Manipulating of Variables 2. Descriptive Methods 3. Data Organization and Descriptive Statistics 4. Correlational Methods and Statistic 5. Probability and Hypotheses Testing 6. Introduction to Inferential Statistic 7. Quasi Experimental and Single - Case Designs	lecture

2.	<ol style="list-style-type: none"> 1. Introduction to R p. I – Basic operation 2. Introduction to R p. II – Read and write data 3. Introduction to R p. III – Installation packages, using packages 4. Data manipulation p. I 5. Data manipulation p. II 6. t-Test 7. Correlation 8. ANOVA p. I 9. ANOVA p. II 10. Clustering p. I 11. Clustering p. II 12. Analysis biological data 13. Simple script for data analysis p. I 14. Simple script for data analysis p. II 15. Simple script for data analysis p. III 	project classes
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Course advanced

Teaching methods:

teamwork, computer lab/laboratory, lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	presentation	15.00%
project classes	written exam, active participation, performing tasks	85.00%



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Diploma seminar 1 Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI1BO.5e5e1df62e398.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 1	Examination credit	Number of ECTS points 2.0
	Activities and hours project classes: 30	

Goals

C1	The aim of the subject is to present students with the rules of conducting experiments, writing a research paper and with the ways of expanding their knowledge on particular specialties of horticulture
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Student knows the copyright rules Student realises the necessity of intellectual property management	OG_P7S_WK08, OG_P7S_WK10	diploma paper
Skills - Student can:			

U1	Student can collect professional literature, both in Polish and in English, appropriate to the topic and the research range of master's thesis Student can determine the research methodology and, with the help of their tutor, conduct a field or greenhouse experiment and collects data for chemical analyses Student has the ability to speeches in English using a variety of sources	OG_P7S_UK08, OG_P7S_UO10, OG_P7S_UW01, OG_P7S_UW05	diploma paper
Social competences - Student is ready to:			
K1	Student is aware of the importance of continuous skills enhancement Student works effectively with team members Student solves problems regarding the planning of horticulture production and analyzes the course of the task	OG_P7S_KK01, OG_P7S_KK02	participation in discussion

Balance of ECTS points

Activity form	Activity hours*	
project classes	30	
preparation of diploma paper	30	
Student workload	Hours 60	ECTS 2.0
Workload involving teacher	Hours 30	ECTS 1.0
Practical workload	Hours 30	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	<p>Titles of classes:</p> <p>1-2. Rules of writing master's thesis</p> <p>3-4. Discussion of the methodology of student research. Localization, factors, methods of research</p> <p>5-7. Choosing professional periodicals in Polish and in foreign languages; selecting science and popular science groups, selecting Internet sources</p> <p>8-11. Development by students of chapters: Introduction and Bibliography</p> <p>12-15. Presentation of papers about the test plants as well as issues related to the study</p>	project classes

Course advanced

Teaching methods:

case analysis, text analysis, presentation / demonstration, discussion

Activities	Examination methods	Percentage in subject assessment
project classes	participation in discussion, diploma paper	100.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Foreign language 1 (English for Chinese and Polish students) Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI1JO.5e5e1df63bdba.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Języki obce
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills Yes

Period Semester 1	Examination exam	Number of ECTS points 3.0
	Activities and hours foreign language (course): 30	

Goals

C1	The student is made acquainted with educational contents of the English specialist language in horticulture for the purpose of achieving the relevant language competence enabling them to properly function both in the professional and academic environment.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Skills - Student can:			

U1	communicate, participate in discussions, present views and topics related to their fields of study; understand statements and lectures related to his/her academic environment, field of study, films and recordings concerning the academia, specialist as well as general knowledge and information related to the given field of study; read the texts on general and popular science, topics related to his/her field of study, publications related to their field of study. prepare and deliver a presentation related to their field of study; fully command their own utterances, come into communication interactions as well as identify the most common mistakes committed by themselves and correct them.	OG_P7S_ UK08	oral exam, observation of student's work, active participation, presentation, test, performing tasks
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Balance of ECTS points

Activity form	Activity hours*	
foreign language (course)	30	
consultations	4	
lesson preparation	48	
exam participation	2	
exam / credit preparation	6	
Student workload	Hours 90	ECTS 3.0
Workload involving teacher	Hours 36	ECTS 1.0
Practical workload	Hours 30	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>During the course, students have the opportunity to expand their professional vocabulary and acquire linguistic fluency, which in turn can facilitate the undertaking of scientific work in foreign centres. The materials realized during the course include specialistic, lexical and grammatical topics adapted to the B2+ level (CEFR) - regardless of the level of the students' foreign language knowledge.</p> <p>Topics:</p> <p>Vocabulary and structures used in academic and scientific language; mathematical language, charts, tables, statistics; acquiring competences necessary for description of studies, universities and academic life; methods of delivering effective presentations in a foreign language; preparing and giving presentations on topics related to the field of study, specialist texts (reading and analysis).</p>	foreign language (course)
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Course advanced

Teaching methods:

educational film, foreign language (conversation classes), presentation / demonstration, classes

Activities	Examination methods	Percentage in subject assessment
foreign language (course)	oral exam, observation of student's work, active participation, presentation, test, performing tasks	100.00%

Entry requirements

group level B2+ --> min. level required B1, B2



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Marketing of horticultural products Educational subject description sheet

Basic information

Field of study horticulture Speciality - Department The Faculty of Life Sciences and Technology Study level Second-cycle (engineer) programme Study form Full-time Education profile General academic	Education cycle 2021/22 Subject code WPTPHOS.MI1BO.5e5e1df6463fc.21 Lecture languages English Mandatory mandatory Block Przedmioty kierunkowe prowadzone w językach obcych Subject related to scientific research No Subject shaping practical skills No
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Period Semester 1	Examination credit Activities and hours project classes: 15, lecture: 30	Number of ECTS points 4.0
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Goals

C1	The aim of the course is to familiarize students with problems of marketing of horticultural products. Information will be connected with modern marketing methods in horticultural products.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Student has knowledge of selected specific issues regarding contemporary problems and trends in economy in horticultural market.	OG_P7S_WG03, OG_P7S_WG06, OG_P7S_WK09, OG_P7S_WK11	project, observation of student's work, presentation, test
Skills - Student can:			

U1	Student applies a methodical approach in solving a project task by choosing advanced methods.	OG_P7S_ U009, OG_P7S_ UW03	project, observation of student's work, presentation, test
Social competences - Student is ready to:			
K1	Student understand the need to constantly supplement their knowledge and skills in the field of new technologies and solutions used in landscape architecture and related fields	OG_P7S_ KK02, OG_P7S_ _KO06, OG_P7S_ _KR09	project, observation of student's work, presentation, test

Balance of ECTS points

Activity form	Activity hours*	
project classes	15	
lecture	30	
project preparation	20	
literature study	20	
presentation/report preparation	25	
consultations	10	
Student workload	Hours 120	ECTS 4.0
Workload involving teacher	Hours 55	ECTS 2.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>Titles of lectures:</p> <ol style="list-style-type: none"> 1. Introduction to marketing theory. 2. Evolution of marketing. 3. Analysis of the marketing environment 4. Marketing research 5. Product 6. Price policy 7. Place 8. Promotion 9. Marketing in food trade 10. Marketing of regional and traditional products 11. E-marketing 12. Intercultural marketing 13. Marketing place 14. Types of marketing strategies 15. Marketing planning 16. Analysis of selected examples of marketing activities in agriculture, 17. Analysis of selected examples of marketing activities of the food industry and food trade 18. Analysis of selected examples of marketing activities in horticulture 19. Presentation of the marketing strategy of selected products and services by students through subsequent exercises 	lecture
2.	<ol style="list-style-type: none"> 1. Types of marketing strategies 2. Marketing planning 3. Analysis of selected examples of marketing activities in agriculture, 4. Analysis of selected examples of marketing activities in the food industry and food trade 5. Analysis of selected examples of marketing activities in horticulture 6. Presentations of the marketing strategy of selected products and services by students through subsequent exercises 	project classes

Course advanced

Teaching methods:

case analysis, text analysis, brainstorming, problem-solving method, situation-based learning, lecture, classes

Activities	Examination methods	Percentage in subject assessment
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Activities	Examination methods	Percentage in subject assessment
project classes	project, observation of student's work, test	70.00%
lecture	presentation	30.00%

Entry requirements

None



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

New developments in horticultural plant genetics and breeding Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI1BO.5e5e1df650258.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills Yes

Period Semester 1	Examination credit	Number of ECTS points 4.0
	Activities and hours project classes: 30, lecture: 15	

Goals

C1	During the course a student learns the issues related to plant breeding, breeding methods, and seed production of conventional agricultural and horticultural crops. A student gains knowledge connected with the phenomenon of mutations, hybrids, distant hybrids and vegetative propagated plants. The student learns the issues of genetics and the use of modern biotechnological methods/tools in breeding of agricultural and horticultural plants.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
	Knowledge - Student knows and understands:		

W1	A student acquires the theoretical and practical knowledge connected with biology, genetics, plant breeding, organic farming, global agriculture,	OG_P7S_ WG03	oral credit, observation of student's work, active participation, presentation, test, participation in discussion
Skills - Student can:			
U1	A student can acquire the ability to define basic genetic processes occurring in plant cell, organism and population. A student is able to search for literature from different sources (publications, books, proceedings).	OG_P7S_ UW01	oral credit, observation of student's work, active participation, presentation, test, participation in discussion
U2	A student knows methods of selection for improving self-pollinated and open-pollinated crops, methods of hybrid cultivars breeding, mutation breeding, breeding for resistance to diseases and abiotic/biotic stresses, breeding for quality traits, biotechnology in breeding horticultural plants.	OG_P7S_ UK08, OG_P7S_ UO10	oral credit, observation of student's work, active participation, presentation, test, participation in discussion
Social competences - Student is ready to:			
K1	A student can acquire the ability to define basic genetic processes occurring in plant cell, organism and population.	OG_P7S_ KK01	oral credit, observation of student's work, active participation, presentation, test, participation in discussion
K2	A student knows methods of selection for improving self-pollinated and open-pollinated crops, methods of hybrid cultivars breeding, mutation breeding, breeding for resistance to diseases and abiotic/biotic stresses, breeding for quality traits, biotechnology in breeding horticultural plants.	OG_P7S_ KO05, OG_P7S_ KO06	oral credit, observation of student's work, active participation, presentation, test, participation in discussion

Balance of ECTS points

Activity form	Activity hours*
project classes	30
lecture	15
exam participation	20
consultations	10
lesson preparation	15
literature study	10
exam / credit preparation	20
Student workload	Hours 120
	ECTS 4.0

Workload involving teacher	Hours 75	ECTS 3.0
Practical workload	Hours 30	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	<p>Hybridization of plants. Cytological basis of inheritance. Transfer of genetic information in phylogeny-life cycles. Inheritance of Mendelian' traits. Genetic analysis of inheritance of phylogenetic traits. Methods of heritability estimation. Recombination of genes and transgression. Non-allelic interaction of genes, methods of estimation. Gene resources (germplasm) and goals of breeding horticultural and agricultural plants. Choice of parental components for hybridization. Biometrical evaluation of single plants in early segregating generations and methods of selection. Horticultural and agricultural plant reproduction and methods of breeding of new horticultural cultivars. Mutation breeding. Polyploids. Seed material. Reproduction and classes of seed material. Methods of improving seed material. Biotechnological methods used in genetics and breeding of horticultural crops: molecular markers, genetically modified crops. The concept in horticultural plant breeding and genetic gain.</p>	project classes
2.	<p>Basics of traits' heredity, cooperation of non-allelic genes, coupling of genes.</p> <p>Inheritance of quantitative traits, population genetics.</p> <p>Cytological basis of inheritance, cytoplasmic inheritance and its practical usage.</p> <p>Molecular basis of inheritance.</p> <p>Mutations in horticultural plants.</p> <p>Biotechnological methods used in genetics and breeding of horticultural crops: molecular markers, genetically modified plants.</p> <p>In vitro methods used in horticultural crop breeding: tissue culture, cloning, doubled haploids, biosynthesis of secondary metabolites, artificial seeds.</p> <p>The concept of horticultural plant breeding and genetic gain.</p> <p>The use of different genetic systems in a mass crossing of plants.</p> <p>Heterosis and breeding of hybrid varieties.</p> <p>Breeding of self-pollinated, open-pollinated and vegetatively reproduced plants</p> <p>Mutational breeding. Breeding of polyploids.</p> <p>Principles of breeding of crops for disease resistance</p> <p>Goals of horticultural crop breeding.</p> <p>Law regulations regarding variety registration, ownership of varieties and seed reproduction of horticultural crops.</p>	lecture

Course advanced

Teaching methods:

text analysis, brainstorming, educational film, foreign language (conversation classes), presentation / demonstration, discussion, lecture, classes

Activities	Examination methods	Percentage in subject assessment
project classes	oral credit, observation of student's work, presentation, test, participation in discussion	60.00%
lecture	observation of student's work, active participation, presentation, test	40.00%

Entry requirements

Botany, Genetics, Biochemistry, Phytopatology, Entomology, Plant Breeding, Seed Production



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Advanced horticultural cultivation Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI1BO.5e5e1df65cdf2.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 1	Examination credit	Number of ECTS points 4.0
	Activities and hours project classes: 15, lecture: 30	

Goals

C1	Preparing students to conduct and management of horticultural crops carried out in a sustainable system. Subject contains information about systems integrated fruit and vegetable production systems used in gardening sustainable.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	He has knowledge about the basics of sustainable production Vegetable and fruit growing. He knows control capabilities yielding vegetables and fruit plants and the impact of sustainable cultivation on their biological value.	OG_P7S_WG03, OG_P7S_WG04, OG_P7S_WG07	project, active participation, test
Skills - Student can:			
U1	He plans operating mode, the selection of plant protection products for crops grown in the system sustainable. Couple systems signaling threats and appropriate ways to combat diseases and pests	OG_P7S_UK06, OG_P7S_UO09, OG_P7S_UO10, OG_P7S_UW02, OG_P7S_UW03	active participation, test
Social competences - Student is ready to:			
K1	Understands the need for an integrated use of the means of production in the fruit and vegetable crops. He works as a team, sharing responsibilities and delegating tasks	OG_P7S_KK02, OG_P7S_KO03, OG_P7S_KO05	active participation, test

Balance of ECTS points

Activity form	Activity hours*	
project classes	15	
lecture	30	
presentation/report preparation	20	
project preparation	25	
exam / credit preparation	25	
consultations	2	
Student workload	Hours 117	ECTS 4.0
Workload involving teacher	Hours 47	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>Titles of lectures:</p> <p>1-5. Rules for selection of habitat by planting orchards and plantations in the system of sustainable horticulture</p> <p>6-8. Selection of varieties and rootstocks for planting in Integrated Fruit Production and Integrated Vegetable Production</p> <p>9-11. Ways of arranging the environment plantation/ orchard</p> <p>12-15. Work performed before the foundation of the vegetables, plantation and orchard expected to grow to IP</p> <p>16-20. Fertilization and weeding the soil before the foundation of sustainable cultivation of orchard and vegetable production</p> <p>21-25. Protection against diseases in the system of integrated production of fruit and vegetables</p> <p>26-29. Pest control system integrated production of fruit and vegetables</p> <p>30. Legal requirements related to production according to the IP systems.</p>	lecture
2.	<p>Titles of classes:</p> <p>1-2. Planning and selection of cultivars establish the cultivation of fruit growing in line with the principles of IP</p> <p>3-4. The selection of species, varieties, rootstocks, spacing, planting in accordance with the IP</p> <p>5-6. Arranging the environment and landscape around of orchard and plantation</p> <p>7-8. Preparation of fields before planting vegetables, orchard, the choice of methods of weed control</p> <p>9-10. Calculation of doses of fertilizers, fertilizers choice to use before after planting in accordance with the IP fruit and vegetables</p> <p>11-12. Procedures limiting the occurrence of diseases and pests through the foundation of cultivation</p> <p>13-14. Costing the work and materials necessary to establish the orchard /plantation.</p> <p>15. Additional activities carried out before the foundation of the orchard and plantation.</p>	project classes

Course advanced

Teaching methods:

case analysis, text analysis, brainstorming, project-based learning (PBL), teamwork, discussion, lecture, practical simulation training

Activities	Examination methods	Percentage in subject assessment
project classes	project, active participation, test	70.00%

Activities	Examination methods	Percentage in subject assessment
lecture	test	30.00%

Entry requirements

Botany, Vegetable crops production, Fruit production, Plant physiology, Entomology, Crop production, Phytopathology



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Product storage and processing Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI1BO.5e5e1df670c14.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 1	Examination credit	Number of ECTS points 3.0
	Activities and hours lecture: 20, project classes: 15	

Goals

C1	Providing students with knowledge in the field physiological processes occurring in vegetables and fruits in the period straight before and during the storage
C2	Providing students with knowledge of conditions and methods of different species of horticultural crops storage. Principles of the construction and exploitation of the modern storage houses
C3	Providing students with knowledge of home fruit processing on the farm

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	The student will get the skill of estimation the suitability of harvested vegetables and fruits for short and long period of storage. One has a knowledge of the conditions preferable for particular plant species as well as kinds and equipment of storage rooms.	OG_P7S_WG07	written credit, project
Skills - Student can:			
U1	Acquired knowledge will allow the student to select the most efficient method of precooling, storage type, and providing the optimum conditions for short and long storage life vegetable and fruit crop species	OG_P7S_U009	observation of student's work, active participation
Social competences - Student is ready to:			
K1	After completing the course, graduate may run or be employed in the company supplying vegetables and fruits to the wholesale and retail markets.	OG_P7S_KO03	active participation, participation in discussion

Balance of ECTS points

Activity form	Activity hours*	
lecture	20	
project classes	15	
project preparation	10	
consultations	10	
lesson preparation	10	
exam / credit preparation	15	
Student workload	Hours 80	ECTS 3.0
Workload involving teacher	Hours 45	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>1. State and perspectives for vegetable crops and fruits storage in the country and all over the world 2 h</p> <p>2. Life processes and physiological changes in vegetables during storage 4 h</p> <p>3. Life processes and physiological changes in fruits during storage 4 h</p> <p>3. Factors affected the storage ability of vegetables and fruits 2 h</p> <p>4. Optimal conditions for storage of vegetables and fruits 2 h</p> <p>5. Storage methods of vegetables and fruits 2 h</p> <p>6. Storage of vegetables and fruits in modern storage rooms and in KA 2 h</p> <p>7. Postharvest handling system 2 h</p>	lecture
2.	<p>1. Determination of the date of maturity of fruits - test starch, extract 1h</p> <p>2. Designate the date of maturity of the fruit - pulp firmness 1h</p> <p>3. Calculation time for the best harvest of apples 1h</p> <p>4. Diseases physiological apples during storage 1h</p> <p>5. Fungal diseases of apples during storage 1h</p> <p>6. Planning the storage facilities at plants -ćw.projektowe 1h</p> <p>7. Planning the storage conditions of apples-quarter. Project 1h</p> <p>8. Summary of news on the storage of fruits 1h</p> <p>9. Determination of the harvest ripening vegetables for storage, ways of harvesting. Methods for extending the storage life of vegetables 1h</p> <p>10. Design and construction of storage for household warzywniczego. Types of packaging for vegetables 1h</p> <p>11. Technology vegetable storage with high storage stability 1h</p> <p>12. Storage Technology vegetables on average the storage life of 1h</p> <p>13. Storage Technology vegetables with low storage stability 1h</p> <p>14. Bacterial diseases, fungal and physiological vegetables during storage 2h</p>	project classes

Course advanced

Teaching methods:

problem-solving method, computer lab/laboratory, discussion, lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	40.00%
project classes	project, observation of student's work, active participation, participation in discussion	60.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Enterprise management Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI1BO.5e5e1df67c445.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 1	Examination credit	Number of ECTS points 3.0
	Activities and hours lecture: 20, project classes: 15	

Goals

C1	The course defines and gives basic understanding of the science of organization and management. It describes the goals of management and organization, its functions and different type of interactions between organization. Conditions of post-industrial society as factors in managing a contemporary company. The ability to "manage oneself" as a basic condition for management of an institution. Personal features, practical experience, theoretical knowledge as determinants of a manager's success. The organization and its environment as an object of management. Components and management functions. Management as a decision-making process. Praxeology in management. Human resources management and organizational culture. Directions of management and their evolution.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	On completion of this course students: 1. Define the concept of organization. 2. Know the dimensions of the planning-organizing-leading-controlling (P-O-L-C) framework. 3. Understand how globalization is affecting contemporary management principles and practices. 4. Describe matrix, boundaryless and learning organizations. 5. Recognize group dynamics and development.	OG_P7S_WK09	written credit, oral credit, project, participation in discussion, performing tasks
Skills - Student can:			
U1	Students: 6. Are able to develop their values-based leadership skills. 7. Create statements that articulate organizational mission and vision. 8. Explain the process of perception and how it affects work behaviors. 9. Formulate organizational and personal strategy. 10. Compare and contrast individual and group decision making. 11. Overcome barriers to effective communication.	OG_P7S_UU12, OG_P7S_UK08, OG_P7S_UO10	observation of student's work, participation in discussion, performing tasks
Social competences - Student is ready to:			
K1	Students: 12. Appreciate the importance of value-based leadership. 13. Apply mission, vision and values to their personal goals and professional career. 14. Design a high-performance work system.	OG_P7S_KK02, OG_P7S_KO05, OG_P7S_KO06, OG_P7S_KR07, OG_P7S_KR09	oral credit, project, observation of student's work, participation in discussion, performing tasks

Balance of ECTS points

Activity form	Activity hours*	
lecture	20	
project classes	15	
lesson preparation	10	
project preparation	10	
consultations	10	
exam / credit preparation	10	
collecting and studying literature	10	
Student workload	Hours 85	ECTS 3.0
Workload involving teacher	Hours 45	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>Lectures:</p> <p>Introduction to principles of management. Personality, attitudes and work behaviors. History, globalization and values-based leadership. Developing mission, vision and values. Strategizing. Goals and objectives. Organizational structure and change. Organizational culture. Social networks. Leading people and organizations. Decision making. Communication in organizations. Managing groups and teams. Motivating employees. The essentials of control. Strategic human resource management.</p>	lecture
2.	<p>Classes:</p> <p>Background of management philosophy.</p> <p>The complexity of organizational phenomena. Being a professional manager. Classical and traditional management view on effectiveness of organizations. Systems and contingency management approach. Advanced management thinking and environmental changes. Art of management. Planning as the key management function. Modern approach to long-term planning process. Fundamental nature and purpose of management control. Classical approach to organizing process. Structure determining factors. Varieties of organizational architecture. Essentials of leadership. Content and process theories of motivation. Motivation in contemporary organizations. Communication.</p>	project classes

Course advanced

Teaching methods:

case analysis, text analysis, educational film, problem-solving method, situation-based learning, presentation / demonstration, teamwork, discussion, lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	50.00%
project classes	oral credit, project, observation of student's work, participation in discussion, performing tasks	50.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Cultivation of edible and medicinal fungus Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI1BO.5e5e1df686375.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 1	Examination credit	Number of ECTS points 3.0
	Activities and hours lecture: 20, project classes: 15	

Goals

C1	Transmissions of knowledge of the technology of cultivation of edible mushrooms with particular emphasis on the button mushrooms (<i>Agaricus bisporus</i>)
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Student got knowledge of edible and medicinal mushrooms and methods of their cultivation.	OG_P7S_WG07	written credit, project, participation in discussion

W2	Has knowledge of microbiology necessary to understand the phenomena occurring in the environment under the influence of microorganisms, including the use of microbial processes in the practice horticulture (e.g. substrate production).	OG_P7S_ WK12	written credit, project, participation in discussion
W3	Has ordered knowledge of mushroom cultivation technology and knowledge necessary for the organization of the protection mushrooms from diseases and pests.	OG_P7S_ WG01	written credit, project, participation in discussion
Skills - Student can:			
U1	able to use the technology of information technology in the acquisition and processing of information, building databases necessary to design and implement projects in the field of horticultural production of edible mushrooms	OG_P7S_ UO10	project, observation of student's work, participation in discussion
U2	It has the ability to determine the necessity of treatments to protect plants in crops of mushrooms and choice of means and methods of conducting.	OG_P7S_ UW03	project, observation of student's work, participation in discussion
U3	Has the ability to select and plan technology used in gardening for best production results with particular emphasis on the quality of the final product and the economic analysis of the project, applies the principles of occupational safety and health in the implementation of processes related to the production of cultivated mushrooms.	OG_P7S_ UW04	project, observation of student's work, participation in discussion
Social competences - Student is ready to:			
K1	It is aware of the importance of social, professional and ethical responsibility for the production of horticultural crops of high quality, and shaping and the environment,	OG_P7S_ KO04	project, observation of student's work, active participation, participation in discussion
K2	Is able to correctly identify and solve problems related to the planning and execution of the production of cultivated mushrooms.	OG_P7S_ KR07	project, observation of student's work, active participation, participation in discussion
K3	Has awareness of the importance of training and self-development in new technologies in horticulture and understands the need for learning throughout life in order to improve the skills acquired during their studies.	OG_P7S_ KK01	project, observation of student's work, active participation, participation in discussion

Balance of ECTS points

Activity form	Activity hours*
lecture	20
project classes	15
presentation/report preparation	10

exam participation	10	
project preparation	15	
collecting and studying literature	10	
conducting research	10	
Student workload	Hours 90	ECTS 3.0
Workload involving teacher	Hours 45	ECTS 1.0
Practical workload	Hours 25	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	<p>1. General information on edible and medicinal mushrooms. Classification of fungi. Biology and morphology, reproduction of fungi.</p> <p>2. The importance of the economic and nutritional and medicinal mushrooms. Acquisition mushrooms from nature and history of cultivation of selected species.</p> <p>3. Production of mushrooms in the world and in Poland. Prospects for the development and maintenance of the position of Polish mushroom growing, the internal market and export of mushrooms.</p> <p>4, 5. Factors microclimate in mushroom cultivation. Air, CO₂ concentration, light, air and surface temperature, water, soil and air moisture.</p> <p>6. Breeds and varieties of mushrooms and oyster mushrooms. Livestock breeds acquisition spores, banks and the production of mycelium.</p> <p>7, 8. Production of substrate for the cultivation of mushrooms and other fungi. Ingredients for production of the substrate. Phase I, II of composting, conditioning and pasteurization, the substrate Phase III.</p> <p>9. The cover for mushroom growing. The composition, properties and role of cover. Mushrooms supplements.</p> <p>10, 11. Hygiene and crop protection mushrooms. Pests and diseases, identification of species.</p> <p>12, 13. Methods of protection - agronomic, biological, chemical</p> <p>14. Storage of mushrooms after the harvest and preparation for marketing. Sorting, packaging, storage conditions (temp., humidity), transport.</p> <p>15. Processing of mushrooms.</p>	lecture
2.	<p>1-5. The technology of cultivation of mushrooms, cultivation systems, organization of production (<i>Agaricus bisporus</i>, <i>Pleurotus</i> sp., <i>Lentinula edodes</i> and others)</p> <p>6-8. Practical classes in mushroomhouse in Experimental Station in Psary</p> <p>9-10. Protection of mushrooms.</p> <p>11-15. Field trip to the mushroom farm (at once).</p> <p>16-20. Student presentations on chosen topics.</p>	project classes

Course advanced

Teaching methods:

educational film, project-based learning (PBL), presentation / demonstration, teamwork, discussion, participation in research, practical simulation training

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, observation of student's work, active participation, participation in discussion	40.00%
project classes	project, observation of student's work, active participation	60.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Advanced technologies in greenhouse production Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI1BO.5e5e1df694a1c.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 1	Examination credit	Number of ECTS points 3.0
	Activities and hours lecture: 20, project classes: 15	

Goals

C1	The aim of the course is to familiarize students with the methods of horticultural plants cultivation under protected area especially in hydroponic way. Students will learn about types of hydroponic, growing media, watering and fertilizing principles and the production methods impact on yielding and quality of horticultural products. They learn how the cultivation method affects the environment and how to minimize the negative effects of horticultural production.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	Student become familiar with hydroponics technology for horticultural plants growing. The student knows the environmental and nutritional requirements of vegetables.	OG_P7S_WG01, OG_P7S_WG03, OG_P7S_WG07	observation of student's work
Skills - Student can:			
U1	Student acquires the theoretical and practical knowledge connected with nutrient composition. Student can plan hydroponics cultivation in different systems and to assess its impact on the vegetable yield and quality. Can calculate the nutrient solution.	OG_P7S_U009, OG_P7S_UW03, OG_P7S_UW04	project, report
Social competences - Student is ready to:			
K1	The student is able to work in a team, knows how to shape and adapt selected cultivation technologies to produce products with a high biological value, taking into account the protection of the natural environment.	OG_P7S_KO04, OG_P7S_KO06, OG_P7S_KR07	observation of student's work

Balance of ECTS points

Activity form	Activity hours*	
lecture	20	
project classes	15	
presentation/report preparation	30	
consultations	25	
Student workload	Hours 90	ECTS 3.0
Workload involving teacher	Hours 60	ECTS 2.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<ol style="list-style-type: none"> 1. History of hydroponic and developing 1 hour. 2. Types of hydroponics 2 hours. 3. Hydroponic cultivation of lettuce and herbs 1 hour. 4. Hydroponic cultivation of tomato and cucumber 1 hour. 5. Impact of cultivation on the environment 1 hour. 6. Plant growth factors (light, CO₂ , temperature) 2 hours. 7. Growing media for soilless production 3 hours. 8. Plant nutrition - macroelements 2 hours. 9. Plant nutrition - microelements 2 hours. 	lecture
2.	<ol style="list-style-type: none"> 1. Determination of chemical properties of water and nutrient solutions (pH, EC, hardness, bicarbonates, ballast ions constituents) 2 hours. 2. Curve acidification and alkalization of water, nutrient and substrate 4 hours. 3. Growing media physical properties: density, porosity, capacity of air and water 2 hours. 4. Biological properties of growing media 1 hour. 5. Chemical properties of growing media, sorption, chemical composition, salinity, pH 1 hour. 6. Inert growing media , features, properties and uses 3 hours. 7. Organic growing media , features, properties and uses 3 hours. 8. The composition of nutrient solution 1 hour. 9. Fertilizers for preparing nutrient solution 2 hours 10. The calculation and preparation of the nutrient solution 4 hours. 11. Technical equipment (dispensers and fertilizer mixers) 2 hours. irrigation systems , measuring devices) 12. Preparation of the plant material and replanting 1 hour. 13. Care and decontamination of substrates 1 hour. 14. Treatments in the cultivation of horticultural plants 2 hours. 15. Final test 	project classes

Course advanced

Teaching methods:

case analysis, educational film, problem-solving method, presentation / demonstration, teamwork, discussion, lecture, Visit in farms

Activities	Examination methods	Percentage in subject assessment
lecture	project	50.00%

Activities	Examination methods	Percentage in subject assessment
project classes	observation of student's work, report	50.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Special topics on biological control technology Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI1BO.5e5e1df69ea62.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 1	Examination credit	Number of ECTS points 3.0
	Activities and hours lecture: 20, project classes: 15	

Goals

C1	Plant protection methods applied in horticultural crops. Possibility of application of biological methods. Natural enemies of pests from different systematic groups and their effectiveness in greenhouse and field crops. Requirement of horticultural plants relevant to pollination. Main pollinators of horticultural crops. Implementation of biological products to horticulture.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	[OG_P7S_WK12] a graduate knows and understands in greater depth, specifies environmental and agrotechnical factors determining the quality of horticultural products	OG_P7S_WK12	written credit, oral credit
W2	[OG_P7S_WK13] a graduate knows and understands in depth in modern non-chemical, including biological methods of horticultural plant protection	OG_P7S_WK13	written credit, oral credit
Skills - Student can:			
U1	[OG_P7S_UW03] a graduate can choose and modify technologies used in horticulture and adapt them to nature resources in order to improve the quality of human life	OG_P7S_UW03	active participation, test, participation in discussion
Social competences - Student is ready to:			
K1	[OG_P7S_KK01] the graduate is ready to self-improvement in the field of new technologies in horticulture in order to improve skills acquired during studies, is able to inspire and organize the learning process of others	OG_P7S_KK01	observation of student's work, participation in discussion
K2	[OG_P7S_KO04] the graduate is ready to assess the social effects of activities in the field of broadly understood gardening, including its impact on human well-being and the environment, and to comply with the ethical principles of the profession	OG_P7S_KO04	observation of student's work, participation in discussion

Balance of ECTS points

Activity form	Activity hours*	
lecture	20	
project classes	15	
lesson preparation	10	
exam / credit preparation	5	
exam participation	5	
consultations	10	
class preparation	10	
Student workload	Hours 75	ECTS 3.0
Workload involving teacher	Hours 50	ECTS 2.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	<p>1. Non-chemical methods of protection of horticultural plants. Biological method - introduction, colonization and protection</p> <p>2. Beneficial, harmful, economically neutral insects - explanation of these categories.</p> <p>3. Predation and parasitism of organisms and the possibility of using such phenomena in biological pest control - the use of these beneficial organisms in biological protection of horticultural plants</p> <p>4. Bees as specialized plant pollinators. Social and wild bees.</p> <p>5. Attractiveness of plants for bees. Color and smell of the flowers. Nutritional value of pollen and nectar. Honey value of most common plants. Morphological groups of flowers pollinated by bees.</p> <p>6. Human influence on occurrence of beneficial organisms. Threats for living organisms within agroecosystems. Modern intensive agriculture deforestation, habitat destruction, pollution, climate change, the introduction of alien species, overexploitation, the introduction of genetically modified organisms. The effects of habitat loss. The consequences of habitat fragmentation for communities of species, populations and genetic variation.</p> <p>7-10. Biological control of the most important pests in greenhouses</p> <p>11. Microorganisms in the biological plant protection. The history of microorganisms applications in plant protection. Viruses, bacteria and entomopathogenic fungi as potential plant protection products</p> <p>12. Genetics of virulence and pathogens and of resistance</p> <p>13. Induced structural and biochemical defenses and systemic acquired resistance. Defense through genetically engineering. Control through use of transgenic plants</p> <p>14. Control methods that eradicate or reduce the pathogen inoculum</p> <p>15. Direct protections of plants from pathogens. Fungal and bacterial antagonists</p>	lecture

2.	<p>1-2. A general and systematic classification of beneficial organisms. Determination of morphological features – decision how to be a beneficial organism. Characteristics, determination under a binocular and the possibility of practical use of beneficial insects with incomplete metamorphosis from the suborders Thysanoptera and Heteroptera.</p> <p>3-4. Characteristics, determination under a binocular and the possibility of practical use of beneficial insects with complete metamorphosis from order Coleoptera: families Coccinellidae, Carabidae, Staphylinidae and from order Diptera: Syrphidae.</p> <p>5-6. The most important groups of pollinators from the family Apidae - characteristics of species from the genus Bombus and Apis. Determination of bees using keys for identifying.</p> <p>7-8. Characteristics, identifying under a binocular most important parasitoid group – significance in biological plant protection</p> <p>9-10. Beneficial nematods – how to identify them? Importance in biological plant protection.</p> <p>11-14. Field exercises - practice of biological plant protection in vegetables cultivated under cover. Observations of plants, pests and beneficial insects. Means used for biological plant protection and their characteristics. Preparation of reports from the trip.</p> <p>15-16. Biotic relations in the world of microorganisms – symbiosis, competition, parasitism.</p> <p>17-18. Search for and acquisition of microorganisms useful in biological plant protection.</p> <p>19-20. Organisms present in biopreparations – features deciding on their usefulness in practice.</p>	project classes
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Course advanced

Teaching methods:

lecture

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, oral credit	50.00%
project classes	observation of student's work, active participation, test, participation in discussion	50.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

OHS and fire protection training Educational subject description sheet

Basic information

Field of study all	Education cycle 2021/22
Speciality -	Subject code UPWrWS.IIo1A.1593608624.21
Department Uniwersytet Przyrodniczy we Wrocławiu	Lecture languages English
Study level studia drugiego stopnia	Mandatory mandatory
Study form Full-time	Block Przedmioty ogólne
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 1	Examination credit	Number of ECTS points 0.0
	Activities and hours e-learning lecture: 4	

Goals

C1	To familiarize students with the principles of health and safety and fire protection during their stay at the university, preventing and protecting students against accidents
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Skills - Student can:			
U1	be cautious at the university, identify and counteract hazards effectively, and identify harmful and nuisance factors in laboratories and rooms		written credit

U2	provide first aid to victims in certain accidents, behave properly in situations of danger to health and life		written credit
U3	behave properly in the event of a fire and evacuate yourself and other persons at risk from the building		written credit
Social competences - Student is ready to:			
K1	recognise the importance of the impact of their behaviour on their own safety and that of other students/employees of the university		written credit
K2	understanding the importance of health and safety and fire protection for the health and life of students / university employees		written credit
K3	understand the consequences of non-compliance with health and safety rules		written credit

Balance of ECTS points

Activity form	Activity hours*	
e-learning lecture	4	
Student workload	Hours 4	ECTS 0.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	<p>The subject matter of the course is health and safety at work in terms of legal basis and prevention activities, first aid, as well as organization of fire protection at the University.</p> <p>The subject is conducted in the form of a blended learning course on the Moodle platform. The course includes four modules:</p> <ul style="list-style-type: none"> - Module 1: Selected legal issues - Module 2 Health and Life Threats - Module 3 First Aid - Module 4 Fire protection 	e-learning lecture

Course advanced

Teaching methods:

educational film, lecture

Activities	Examination methods	Percentage in subject assessment
e-learning lecture	written credit	100.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Introduction to China and Poland Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI2BO.1591269680.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills Yes

Period Semester 2	Examination credit	Number of ECTS points 3.0
	Activities and hours lecture: 35	

Goals

C1	The course deals with the history, culture and customs of Poland to help the student become a good ambassador of Poland and its heritage.
C2	The course also helps the participants to become understanding, tolerant as well as broad-minded and creative members of the society.
C3	Open-mindedness and creativity enable societies to cope with a variety of problems, not only social and political ones, on the win-win basis.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	The student understands and can talk about Poland, has knowledge on the history of Lower Silesia and Wrocław. He has broader knowledge on modern society and the changes it is undergoing.	OG_P7S_WK08	written credit, active participation, report
W2	The student is able to understand and participate in discussions and lectures related to his academic environment, can comprehensively read complex texts on general and popular science topics related to his field of study and interests.	OG_P7S_WK09	written credit, active participation, report
Skills - Student can:			
U1	The student can talk about Poland using historical and cultural issues thus creating the picture of Poland, can prepare presentations.	OG_P7S_UK06, OG_P7S_UK08	written credit, active participation, report
U2	The student can discuss problem issues in a civilised way without being hostile.	OG_P7S_UW01	written credit, active participation, report
Social competences - Student is ready to:			
K1	The student is ready to actively participate in social life of his area, is concerned about the environment and society, is reliable and self-confident in performing his duties. He is also eager to learn and is open to experience and new requirements.	OG_P7S_KO06, OG_P7S_KR08, OG_P7S_KR09	written credit, active participation, report

Balance of ECTS points

Activity form	Activity hours*	
lecture	35	
collecting and studying literature	30	
consultations	10	
Student workload	Hours 75	ECTS 3.0
Workload involving teacher	Hours 45	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>Lecture:</p> <ol style="list-style-type: none"> 1. An outline of the history of Lower Silesia and Wrocław 2. Trip to Muzeum Etnograficzne, 111, Traugutta St. 3. Lecture: Medieval and Renaissance Wrocław 4. Trip, part 1, to Ostrów Tumski and Sisters of Notre Dame, 12, Św. Marcina St. - Romanesque beginnings 5. Trip, part 2, to Market Square 6. Lecture: Baroque and Romantic Wrocław 7. Trip to Aula Leopoldina, Oratorium Marianum, University Church part 1 8. Trip to Aula Leopoldina... part 2 9. Christmas Eve Supper (2 classes) - supper at a restaurant 10. Christmas Eve Supper 11. Lecture: Pre-war Wrocław, modernism, WUWA 12. Trip: Biskupin, Zalesie, WUWA, Centennial Hall, part 1 13. Trip: Biskupin... part 2 14. Lecture: Post-war Wrocław; lecture combined with a trip to Centrum Historii Zajezdnia, 184, Grabiszyńska St. 15. Trip to Centrum Historii Zajezdnia... - together with the lecture - 2 classes 16. Lecture: Customs, cuisine 17. The floor is yours! Students talk about their own countries and impressions of Poland 18. Final meeting, final discussions. 	lecture
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Course advanced

Teaching methods:

educational film, teamwork, discussion, lecture

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, active participation, report	100.00%

Entry requirements

English B2 level required



UNIwersytet Przyrodniczy we Wrocławiu

Diploma seminar 2 Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI2BO.5e5e1df6ef4cd.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research Yes
	Subject shaping practical skills No

Period Semester 2	Examination credit	Number of ECTS points 2.0
	Activities and hours project classes: 30	

Goals

C1	The aim of the subject is presentation the rules of conducting experiments, writing a research paper with special focus on chapters: Introduction, Material and method and Results. Preliminary presentation of the research results of field and lab experiments. Expanding the knowledge on particular specialties of horticulture
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Student knows the copyright rules and realises the necessity of intellectual property management Student knows rules of proper conducting an scientific experiments	OG_P7S_ WK08, OG_P7S_ WK10	observation of student's work, presentation

Skills - Student can:			
U1	Student can present the results of the conducted experiment and interpret or evaluate them correctly Student can create an oral presentations as a result of their work on Introduction, Literature, Material and methods as well as Results chapters of master's thesis Student can collect professional literature, both in Polish and in English, appropriate to the topic and the research range of master's thesis	OG_P7S_UK06, OG_P7S_UO10, OG_P7S_UW05	observation of student's work, presentation
Social competences - Student is ready to:			
K1	Student accepts responsibility for the results of your task Student works effectively with team members Student solves problems regarding the planning of horticulture production	OG_P7S_KK02, OG_P7S_KO05, OG_P7S_KR07	observation of student's work, presentation

Balance of ECTS points

Activity form	Activity hours*	
project classes	30	
literature study	30	
Student workload	Hours 60	ECTS 2.0
Workload involving teacher	Hours 30	ECTS 1.0
Practical workload	Hours 30	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>Titles of classes:</p> <p>1-2. Rules of writing master's thesis - repetition, updating the methodology input.</p> <p>3-4. Reports on the current research results and discussing the methodology in the form of scholarly paper and presentation (Power Point).</p> <p>5-8. Presentation of Bibliography in the form of scholarly paper and presentation (Power Point). Choice of science and popular science publications, books on horticulture and web sides.</p> <p>9-16. Presentation of chapter Introduction in the form of scholarly paper and presentation (Power Point).</p> <p>17-20. Presentation of chapter Material and method in the form of scholarly paper and presentation (Power Point).</p> <p>21-24. Working out the weather conditions during the field experiment and lab experiment conditions.</p> <p>26-30. Presentation of the master's thesis results in the form of scholarly paper and presentation (Power Point).</p>	project classes
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Course advanced

Teaching methods:

text analysis, foreign language (conversation classes), presentation / demonstration, discussion

Activities	Examination methods	Percentage in subject assessment
project classes	observation of student's work, presentation	100.00%

Entry requirements

Fruit-growing, vegetable-growing, ornamental plants-cultivation, mathematical statistics and research methods



UNIwersytet Przyrodniczy we Wrocławiu

Special topics on horticultural science and technology development Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI2BO.5e5e1df70f29b.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 2	Examination credit	Number of ECTS points 3.0
	Activities and hours lecture: 15, project classes: 20	

Goals

C1	Information on fertilization, crop protection, weed control, tillage system, crops rotation, selection of varieties for organic systems of horticultural production, the principle of "Good farming practices"
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	Students acquire theoretical and practical knowledge of the cultivation of vegetables and fruit crops in the organic system. Learns advantages of integrated cultivation method and the advantages and disadvantages of the organic method. He knows what the environmental benefits from the introduction of these systems compared with conventional cultivation	OG_P7S_WG01, OG_P7S_WG03, OG_P7S_WG04, OG_P7S_WG05	project, active participation, performing tasks
Skills - Student can:			
U1	Students obtain practical skills in the planning of cultivation according to the principles of organic methods to minimize the negative impact of cultivation on the environment.	OG_P7S_UO11, OG_P7S_UK06, OG_P7S_UK08, OG_P7S_UO10	project, active participation, presentation, performing tasks
Social competences - Student is ready to:			
K1	The student acknowledges significance of ecology activities in the environment management, understands the need to action pursuant with the principles of sustainable development, it demonstrates the responsibility in the use of fertilizers, pesticides.	OG_P7S_KO03, OG_P7S_KO04, OG_P7S_KO05, OG_P7S_KO06	project, active participation, presentation, performing tasks

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
project classes	20	
exam / credit preparation	30	
project preparation	15	
collecting and studying literature	10	
Student workload	Hours 90	ECTS 3.0
Workload involving teacher	Hours 35	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>Discussion of issues related to the different cultivation systems of horticultural plants. Principles of cultivation of vegetables and fruit crops in the organic system and environmental (advantages and disadvantages). The selection of varieties of vegetables and fruits, tillage system, crop rotation, weed control. Procedure on fertilization and plant protection against diseases and pests according to the principles of organic and environmentally friendly system of production of vegetables and fruit plants. Cultivation without plowing. The use of cover crops. Intercropping system. Modern technology of harvest.</p> <p>Titles of lectures:</p> <p>1-2. Introduction. Vegetable zoning. Description of term: tillage system, conventional cultivation, organic cultivation, integrated cultivation. Law principle regulated cultivation rule in each system .</p> <p>3. General principles of growing vegetables in organic system, its advantages and disadvantages. Tillage. Crop rotation.</p> <p>4. Fertilization, diseases and pest crop protection, weed control at organic system.</p> <p>5-6. Organic system in vegetable production. Principles of conduction, fertilization, plant protection against diseases and pests, weed control</p> <p>7. No – till technic. Cover crops at plant cultivation. Intercropping system. Vegetable cultivation accordance with the principles of "Good Agricultural Practice".</p> <p>8. Organic production of fruit. Status and prospects of development in Poland and in the world. General principles of organic fruit production.</p> <p>9. Establishment of orchard and plantations, according to the principles of organic fruit production. Varieties of fruit trees suitable for organic production. Selection guidance systems of trees in plantings in organic.</p> <p>10-11. Agronomic treatments in orchards using the principle of the IFP. Cultivation of the soil, fertilizing orchards IFP. Protection of fruit plants in the integrated production.</p> <p>12-13. Integrated production of berry fruit. Principles of integrated production of strawberries, currants and raspberries.</p> <p>14. Organic production of fruit. Status and prospects of development in Poland and in the world. Principles of ecological orchard plantings.</p> <p>15. Modern technology of harvest</p>	lecture
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2.	<p>Titles of classes:</p> <p>1-5. Implementation of projects to cultivation of vegetables in the organic system. The selection species and varieties, crop rotation, tillage, fertilization.</p> <p>6-10. Implementation of projects to cultivation of vegetables in the organic system. Plant protection against diseases and pests, weed control, other protection treatment.</p> <p>11-15. Implementation of projects about fruit growing in the organic system. The choice of species and varieties, spacing, pollinators, soil tillage, fertilization</p> <p>16-20. Implementation of projects fruit growing in the organic system. Plant protection against diseases and pests, prevent weeds, thinning of buds, cutting and shaping of canopy, harvesting.</p>	project classes
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Course advanced

Teaching methods:

case analysis, text analysis, brainstorming, educational film, problem-solving method, project-based learning (PBL), lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	active participation, performing tasks	50.00%
project classes	project, active participation, presentation	50.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Comprehensive practice of horticultural modernization production Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI2BO.5e5e1df71aba3.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 2	Examination credit	Number of ECTS points 6.0
	Activities and hours practical training: 105	

Goals

C1	The aim of the course is to familiarize students with the methods of horticultural plants cultivation. Students will learn about modern methods of producing vegetables and ornamental plants under cover and in the field, as well as the cultivation of fruit and berry plants. They will learn how production rules and methods affect the yield and quality of horticultural products. They learn how the cultivation method affects the environment and how to minimize the negative effects of horticultural production.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
	Knowledge - Student knows and understands:		

W1	Student become familiar with modern methods and technologies of horticultural plants growing. The student knows the affect of agrotechnic on the yield and quality of horticultural products.	OG_P7S_WG03, OG_P7S_WG07, OG_P7S_WK10	report, presentation
Skills - Student can:			
U1	Student acquires the theoretical and practical knowledge connected with modern horticultural plant growing. Student can plan modern horticultural cultivation in different systems and to assess its impact on the yield quantity and quality.	OG_P7S_U009, OG_P7S_UW03, OG_P7S_UW04	project, observation of student's work
Social competences - Student is ready to:			
K1	The student is able to work in a team, knows how to shape and adapt selected cultivation technologies to produce products with a high biological value, taking into account the protection of the natural environment.	OG_P7S_KO05, OG_P7S_KR07	observation of student's work

Balance of ECTS points

Activity form	Activity hours*	
practical training	105	
presentation/report preparation	25	
consultations	50	
Student workload	Hours 180	ECTS 6.0
Workload involving teacher	Hours 155	ECTS 6.0
Practical workload	Hours 105	ECTS 4.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<ol style="list-style-type: none"> 1. Apple and pear harvest in the experimental orchard - 6 h 2. Evaluation of yield and quality of harvested fruit, weighing, sorting, preparation for sale - 6 h 3. Collection of dessert raspberries in conditions of soil moisture regulation -6 h 4. Grape harvest in Lower Silesian vineyards. Assessment of the impact of the examined factors on the quantity and quality of the obtained yield - 6 h 5. Quality analysis of grapes at the initial stage of wine production - 6 h 6. Visit to the farm producing tulips for cut flowers - 6 h 7. Visit to the farm producing roses for cut flowers - 6 h 8. Visit to a farm producing radish and lettuce for the retail and wholesale market - 6 h 9. Rules for fertilizing horticultural crops - 6 h <p>Visit to the flower and fruit and vegetable wholesale market - quality analysis of gardening products - 6 h</p> <ol style="list-style-type: none"> 11. Harvest of vegetables grown in the field and analysis of their quality - 6 h <p>Assessment of vine growth strength in selected Lower Silesian vineyards -6 h</p> <ol style="list-style-type: none"> 13. Establishing experiments in vegetable growing in the field -6 h <p>Assessment of quality parameters of horticultural products in the laboratory - vitamin C, chlorophyll, sugars, dry matter -6 h</p> <ol style="list-style-type: none"> 15. Development of a project for growing a selected horticultural plant - 15 h <p>16. Summary. Assessment of factors affecting the quality of horticultural products and the amount of yield - 6 h</p>	practical training
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Course advanced

Teaching methods:

case analysis, educational film, presentation / demonstration, teamwork, discussion, participation in research, lecture, classes, Visit in farms

Activities	Examination methods	Percentage in subject assessment
practical training	project, observation of student's work, report, presentation	100.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Special topics on the arrangement design of horticultural plants Educational subject description sheet

Basic information

Field of study horticulture Speciality - Department The Faculty of Life Sciences and Technology Study level Second-cycle (engineer) programme Study form Full-time Education profile General academic	Education cycle 2021/22 Subject code WPTPHOS.MI2BO.5e5e1df724ecc.21 Lecture languages English Mandatory mandatory Block Przedmioty kierunkowe prowadzone w językach obcych Subject related to scientific research No Subject shaping practical skills No
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Period Semester 2	Examination credit Activities and hours lecture: 15, project classes: 15	Number of ECTS points 3.0
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Goals

C1	Delivering knowledge on plant material, tools and complementary accessories, durability of cut flowers, florist styles, rules of plants composition, compositions in vessels and seasonal decorations.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Student knows and describes the plants species used in floristry. Student knows complementary equipment used in floristry. Student knows methods affecting vase life of cut flowers; acquires rules of preparing the plants compositions.	OG_P7S_WG05, OG_P7S_WG07	active participation

Skills - Student can:			
U1	Student can plan and analyzes the tasks in the field of interior decoration with plants. Student can select plant material and complementary equipment for plants compositions. He/she create plants compositions in vessels and occasional decorations. Presents his/her composition and in discussion justifies used materials.	OG_P7S_UK07	project, performing tasks
Social competences - Student is ready to:			
K1	Student exhibits sensitivity for aesthetics of work- and resting-places. Student is aware of the need for constant education and updating of floristry skills. Student can work individually and in a team, taking part in the task playing different roles.	OG_P7S_KK01, OG_P7S_KO05	active participation

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
project classes	15	
project preparation	30	
class preparation	30	
Student workload	Hours 90	ECTS 3.0
Workload involving teacher	Hours 30	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Characteristics of ornamental plants used in floristry. 2. Characteristics of cut green used in floristry. 3. Aging processes in cut flowers, proecological methods affecting the shelf life of cut flowers. 4. Rules of floristry compositions. 5. Rules of indoor plant exposition 6. Interior conditions for plants 7. Containers and styles for indoor plant decorations	lecture

2.	<ol style="list-style-type: none"> 1. Equipment for floristry studio, tools and accessories used in floristry. 2. Compositions with cut flowers in vessels. 3. Bouquets and bunches. 4. Decorations for Easter and Christmas. 5. Plants decorations in interiors 6. Terrariums 7. Decorations of terraces, balconies, building entrances. 	project classes
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Course advanced

Teaching methods:

situation-based learning, teamwork, discussion, lecture, practical simulation training, classes

Activities	Examination methods	Percentage in subject assessment
lecture	active participation	30.00%
project classes	project, performing tasks	70.00%

Entry requirements

Cultivation of ornamental plants in the field and under cover, botany, plant physiology



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Advanced molecular biology of horticulture Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI2BO.5e5e1df730055.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 2	Examination exam	Number of ECTS points 5.0
	Activities and hours lecture: 20, project classes: 25	

Goals

C1	The course is designed to familiarize students with the techniques of genotyping DNA markers. These are techniques such as genotyping: RAPD, RFLP, AFLP, and SNP commonly used in plant biotechnology.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Knows molecular techniques	OG_P7S_WG02	project, observation of student's work, active participation, presentation

W2	Knows the rules for the separation of visualization of nucleic acids	OG_P7S_WG02	project, observation of student's work, active participation, presentation
W3	Knows the principles of conducting DNA replication in vitro	OG_P7S_WG02	project, observation of student's work, active participation, presentation
Skills - Student can:			
U1	Has the ability to search for information, analysis and use of literature and databases	OG_P7S_UK06	project, observation of student's work, active participation
Social competences - Student is ready to:			
K1	Is able to think and act creatively towards the practical use of plant biotechnology	OG_P7S_KR07	observation of student's work, active participation

Balance of ECTS points

Activity form	Activity hours*	
lecture	20	
project classes	25	
lesson preparation	35	
project preparation	50	
Student workload	Hours 130	ECTS 5.0
Workload involving teacher	Hours 45	ECTS 1.0
Practical workload	Hours 25	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. DNA markers 2. The role of restriction enzymes in the manipulation of DNA - RFLP technique 3. Polymerase chain reaction - PCR technique RAPD 4. Usefulness of markers based on the sequences of satellite technology SSR and ISSR 5. The AFLP technique 6. DNA sequencing - the use of SNP markers 7. Genotyping SNP markers	lecture

2.	<ol style="list-style-type: none"> 1. Designing starters 2. Methods of isolation and storage of plant DNA and RNA 3. Electrophoresis, principles of DNA electrophoretic separation analysis 4. PCR 5. SNP genotyping 6. qPCR part I 7. qPCR part II 	project classes
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Course advanced

Teaching methods:

teamwork, computer lab/laboratory, lecture

Activities	Examination methods	Percentage in subject assessment
lecture	presentation	15.00%
project classes	project, observation of student's work, active participation	85.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Polish language Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI2JO.5e5e1df6b415e.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Języki obce
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 2	Examination credit	Number of ECTS points 2.0
	Activities and hours foreign language (course): 30	

Goals

C1	The student is made acquainted with educational contents required at a given level of the Polish language for the purpose of achieving the relevant language competence.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Skills - Student can:			
U1	The student can: make use of very basic vocabulary at A1 level, apply very elementary grammar rules at A1 level, communicate in accordance with the requirements assigned to a given level.	OG_P7S_UK08	observation of student's work, active participation, test

Balance of ECTS points

Activity form	Activity hours*	
foreign language (course)	30	
lesson preparation	26	
consultations	4	
Student workload	Hours 60	ECTS 2.0
Workload involving teacher	Hours 34	ECTS 1.0
Practical workload	Hours 30	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	<p>The curriculum contents are realized on the basis of appropriate coursebooks at a given level.</p> <p>The detailed range of the curriculum contents are available on the SJOiNHS website.</p>	foreign language (course)

Course advanced

Teaching methods:

foreign language (conversation classes), classes

Activities	Examination methods	Percentage in subject assessment
foreign language (course)	observation of student's work, active participation, test	100.00%

Entry requirements

0, A1



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Chinese language Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI2JO.5e5e1df6c035a.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Języki obce
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 2	Examination credit	Number of ECTS points 2.0
	Activities and hours foreign language (course): 30	

Goals

C1	The student is made acquainted with educational contents of the Chinese language required at the B2+ level for the purpose of achieving the relevant language competence enabling him/her to properly function both in the professional and academic environment.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Skills - Student can:			

U1	The student: can understand statements and lectures related to his/her academic environment, field of study, films and recordings concerning the academia, specialist as well as general knowledge and information related to a given field of study and specialty science; can comprehensively read the texts on general and popular science topics related to his/her field of study, publications in a given scope of specialty science (master thesis). can communicate, participate in discussions, present views and topics related to his/her fields of study and interests; can prepare and deliver oral presentation related to the field of study; can fully command his/her own oral utterances, come into communication interactions as well as identify the most common mistakes committed by himself/herself and correct them; can write a cover letter & CV, respond to a job offer, formulate an abstract, etc. and prepare a scientific text for oral presentation.	OG_P7S_UK08	observation of student's work, active participation, presentation, test
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Balance of ECTS points

Activity form	Activity hours*	
foreign language (course)	30	
consultations	4	
lesson preparation	26	
Student workload	Hours 60	ECTS 2.0
Workload involving teacher	Hours 34	ECTS 1.0
Practical workload	Hours 30	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>During the course based on scientific materials, films and books, students have the opportunity to master the language skills necessary for activities in the field of their study in English-speaking countries; study scientific contents in English - learn how to talk and write on topics related to their studies.</p> <p>At the end of the course, students ought to be able to: read the professional literature easily; communicate with professionals from other countries; prepare oral presentation in English.</p> <p>During the course, students also have the opportunity to expand their professional vocabulary and acquire linguistic fluency, which in turn can facilitate the undertaking of scientific work in foreign centres.</p> <p>The materials realized during the course include specialist, lexical and grammatical topics adapted to the B2+ level (CEFR) - regardless of the level of the students' foreign language knowledge.</p> <p>Specialist language - topics realized during 2 semesters:</p> <p>Vocabulary and structures used in academic and scientific language;</p> <p>Mathematical language, charts, tables, statistics;</p> <p>Acquiring competences necessary for description of studies, universities and academic life;</p> <p>Methods of delivering effective presentations in a foreign language;</p> <p>Delivery presentations on topics related to the field of study;</p> <p>Formulation of a CV and cover letter;</p> <p>Methods of effective interaction in job interviews;</p> <p>Formulation of the master thesis;</p> <p>Specialist texts.</p>	foreign language (course)
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Course advanced

Teaching methods:

foreign language (conversation classes), classes

Activities	Examination methods	Percentage in subject assessment
foreign language (course)	observation of student's work, active participation, presentation, test	100.00%

Entry requirements

Adequate level of language is required

Group level Min. level
B2+ --> B1, B2



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Tea culture Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI2HS.5e5e1df74c369.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty humanistyczno-społeczne
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills Yes

Period Semester 2	Examination credit	Number of ECTS points 2.0
	Activities and hours lecture: 15, project classes: 15	

Goals

C1	Student has a knowlage about tea culture, kind of tea - six major categories in China
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Student has a knowlage about six major tea categories in China	OG_P7S_ WG06	observation of student's work
Skills - Student can:			

U1	Student can imagine a Chinese Tea Ceremony.	OG_P7S_U011	observation of student's work
Social competences - Student is ready to:			
K1	Student is ready to understanding an appreciation and meaning of traditional Chinese culture.	OG_P7S_KO04, OG_P7S_KR09	observation of student's work

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
project classes	15	
lesson preparation	30	
Student workload	Hours 60	ECTS 2.0
Workload involving teacher	Hours 30	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Chapter1 Introduction to the Tea Industry Chapter 2 Origin and Development of Chinese Tea Culture Chapter 3 Six Major Tea Categories in China Chapter 4 Chinese Tea Ceremony Chapter 5 Tea and Health	lecture

2.	<p>Lesson 1 The Development of Global Tea Industry</p> <p>Lesson 2 The Development of China's Tea Industry</p> <p>Lesson 3 Origin of Tea in China</p> <p>Lesson 4 The Formation and Change of Tea Drinking Culture</p> <p>Lesson 5 Spread of Tea to Other Countries</p> <p>Lesson 6 Tea Name and Its Classification</p> <p>Lesson 7 Green Tea</p> <p>Lesson 8 White Tea</p> <p>Lesson 9 Yellow Tea</p> <p>Lesson 10 Oolong Tea</p> <p>Lesson 11 Black Tea</p> <p>Lesson 12 Dark Tea</p> <p>Lesson 13 Basic Tea Etiquette</p> <p>Lesson 14 Introduction of Tea Utensil</p> <p>Lesson 15 Tea Ceremony, Drink Tea Scientifically, Storage of Tea</p>	project classes
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Course advanced

Teaching methods:

teamwork, lecture

Activities	Examination methods	Percentage in subject assessment
lecture	observation of student's work	40.00%
project classes	observation of student's work	60.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Tai chi

Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI2HS.5e5e1df756da4.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty humanistyczno-społeczne
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills Yes

Period Semester 2	Examination credit	Number of ECTS points 2.0
	Activities and hours lecture: 15, project classes: 15	

Goals

C1	To provide students fundamental knowledge on tai chi philosophy.
C2	To teach students breathing exercises, calmness and meditation.
C3	To promote among students a healthy lifestyle with holistic approach to the topic of health.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	Student knows the fundamentals of tai chi philosophy, basic knowledge of Chinese Kongfu.	OG_P7S_WK14	observation of student's work, active participation, performing tasks
Skills - Student can:			
U1	Student performs the first 15 tai chi postures.	OG_P7S_UU12	observation of student's work, active participation, performing tasks
Social competences - Student is ready to:			
K1	Student critically assess his knowledge and to use appropriate exercises to obtain the best results for the body and mind critically assessing their usefulness for different types of people.	OG_P7S_KK02	observation of student's work, active participation, performing tasks

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
project classes	15	
consultations	2	
lesson preparation	20	
Student workload	Hours 52	ECTS 2.0
Workload involving teacher	Hours 32	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>1. Part the Wild Horse's Mane, LEFT and RIGHT</p> <p>2. White Crane Spreads Its Wings</p> <p>3. Brush Knee and Step Forward, LEFT and RIGHT</p> <p>4. Playing the Lute</p> <p>5. Reverse Reeling Forearm, LEFT and RIGHT</p> <p>6. Left Grasp Sparrow's Tail, Grasp the Bird's Tail</p> <p>(1) Ward Off</p> <p>(2) Rollback</p> <p>(3) Press</p> <p>(4) Push</p> <p>7. Right Grasp Sparrow's Tail, Single Whip</p> <p>8. Wave Hands Like Clouds, Single Whip</p> <p>9. High Pat on Horse</p> <p>10. Right Heel Kick, Separate Right Foot, Kick with Right Foot</p> <p>11. Strike to Ears with Both Fists, Turn Body and Left Heel Kick</p> <p>13. Left or Right of Lower Body and Stand on One Leg</p> <p>14. Shuttle Back and Forth, LEFT and RIGHT, Needle at Sea Bottom, Fan Through Back</p> <p>15. Turn Body, Deflect, Parry, and Punch, Appears Closed, Withdraw and Push, as if Closing a Door, a Cross Hands and anecdotes</p>	lecture
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2.	1. Part the Wild Horse's Mane, LEFT and RIGHT 2. White Crane Spreads Its Wings 3. Brush Knee and Step Forward, LEFT and RIGHT 4. Playing the Lute 5. Reverse Reeling Forearm, LEFT and RIGHT 6. Left Grasp Sparrow's Tail, Grasp the Bird's Tail (1) Ward Off (2) Rollback (3) Press (4) Push 7. Right Grasp Sparrow's Tail, Single Whip 8. Wave Hands Like Clouds, Single Whip 9. High Pat on Horse 10. Right Heel Kick, Separate Right Foot, Kick with Right Foot 11. Strike to Ears with Both Fists, Turn Body and Left Heel Kick 13. Left or Right of Lower Body and Stand on One Leg 14. Shuttle Back and Forth, LEFT and RIGHT, Needle at Sea Bottom, Fan Through Back 15. Turn Body, Deflect, Parry, and Punch, Appears Closed, Withdraw and Push, as if Closing a Door, a Cross Hands and anecdotes	project classes
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Course advanced

Teaching methods:

educational film, presentation / demonstration, lecture, PE (physical education)

Activities	Examination methods	Percentage in subject assessment
lecture	active participation	40.00%
project classes	observation of student's work, active participation, performing tasks	60.00%

Entry requirements

No prerequisites



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Flower bouquet Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI2HS.5e5e1df762a06.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty humanistyczno-społeczne
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills Yes

Period Semester 2	Examination credit	Number of ECTS points 2.0
	Activities and hours lecture: 15, project classes: 15	

Goals

C1	Chinese traditional flower arrangement is deeply influenced by Confucianism, Taoism, Buddhism and feudal ethics, forming the unique cosmology and aesthetic taste of the Han nationality. It believes that all things have spirituality, advocates "the unity of heaven and man", and regards the flowers, plants and trees in the nature as more spiritual and emotional things. Therefore, Chinese people all have feelings, flowers, trees and Phoenix, giving various flowers and trees many symbols and moral meanings, Be personified and deified, so as to make clear one's mind, place one's feelings and thoughts, and expand one's interests. Chinese traditional flower arrangement advocates nature, pays attention to beautiful lines and natural posture. Its composition layout is staggered, and the work is elegant and smooth. According to the natural form of plant growth, there are different flower arrangement forms such as upright, slanting, bending and drooping. The six traditional flower arrangements in China are bottles, plates, jars, bowls, barrels and baskets. The bottle flower is high, the plate flower is deep and wide, the cylinder talks about the block body, the bowl seeks to hide in the middle, the cylinder is graceful, the basket is dignified.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Student has a knowlage about Chinese traditional flower arrangement, which is deeply influenced by Confucianism, Taoism, Buddhism and feudal ethics, forming the unique cosmology and aesthetic taste of the Han nationality.	OG_P7S_ WG05	observation of student's work
Skills - Student can:			
U1	Student can make a flower bouqet.	OG_P7S_ UK07	observation of student's work
Social competences - Student is ready to:			
K1	Student is ready to understand a meaning of flower composition for the Chinese human culture. Student can work together with team members.	OG_P7S_ KO05	observation of student's work

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
project classes	15	
lesson preparation	30	
Student workload	Hours 60	ECTS 2.0
Workload involving teacher	Hours 30	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1-3. Basic knowledge of Chinese traditional flower arrangement. 4-5. Orientation and application of traditional Chinese flower arrangement. 6-7. The creation of up-right type for plate 8-9. The creation of slanting type for plate. 10-11. Technique and application of flower fixing. 12-13 .The creation of up-right type for bottle. 14-15. The creation of slanting type for bottle.	lecture

2.	1-3. Basic knowledge of Chinese traditional flower arrangement. 4-5. Orientation and application of traditional Chinese flower arrangement. 6-7. The creation of up-right type for plate 8-9. The creation of slanting type for plate. 10-11. Technique and application of flower fixing. 12-13 .The creation of up-right type for bottle. 14-15. The creation of slanting type for bottle.	project classes
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Course advanced

Teaching methods:

teamwork, lecture

Activities	Examination methods	Percentage in subject assessment
lecture	observation of student's work	40.00%
project classes	observation of student's work	60.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Calligraphy

Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI2HS.5e5e1df76e48e.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty humanistyczno-społeczne
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills Yes

Period Semester 2	Examination credit	Number of ECTS points 2.0
	Activities and hours lecture: 15, project classes: 15	

Goals

C1	Calligraphy is an art that reflects life. People's emotions can also be expressed in Chinese calligraphy, just as they are in poetry and music. Calligraphy appreciation is through the evaluation of excellent calligraphy works, to appreciate the beauty contained therein. Calligraphy is a way for the writer to compose a pleasing article or poem. Of course, there are composition methods and rules for writing articles, so do calligraphy works.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Student knows a basic knowledge of Chinese calligraphy	OG_P7S_WK14	observation of student's work

Skills - Student can:			
U1	Student can appreciate traditional Chinese calligraphy.	OG_P7S_UU12	observation of student's work
Social competences - Student is ready to:			
K1	Student is ready to know something about Chinese traditional culture. Student can simple communicate with Chinese people.	OG_P7S_KO05	observation of student's work

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
project classes	15	
lesson preparation	30	
Student workload	Hours 60	ECTS 2.0
Workload involving teacher	Hours 30	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1-3. The Introduction 4-5. Pen And Ink For Calligraphy 6-7. Classical Chinese Calligraphy 8-9. Li Calligraphy 10-11. Cursive Writing 12-13. Regular Script Appreciation 14-15. Calligraphy Structure	lecture
2.	1-2. Pen And Ink For Calligraphy 3-4. Classical Chinese Calligraphy 5-6. Li Calligraphy 7-8. Cursive Writing 9-10. Regular Script Appreciation 11-12. Calligraphy Structure 13-15. The Layout Of Calligraphy	project classes

Course advanced

Teaching methods:

teamwork, lecture

Activities	Examination methods	Percentage in subject assessment
lecture	observation of student's work	40.00%
project classes	observation of student's work	60.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Enology and ampelography Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI2HS.5e5e1df787c36.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty humanistyczno-społeczne
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 2	Examination credit	Number of ECTS points 2.0
	Activities and hours lecture: 15, project classes: 15	

Goals

C1	The course covers an overview of grape varieties, methods of cultivation and the types of wine produced in selected regions of the wine world. Classes are divided into topic areas planted with vines on some continents, including consideration of their specific feature.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	The student acquires knowledge of the physiology of vines, including regulatory mechanisms of life processes of plants, water management and adaptation to environmental conditions. The student has knowledge of genetics and diversity of the genus Vitis. The student has detailed knowledge of the technology running the vineyard in different climatic conditions	OG_P7S_WG03, OG_P7S_WG04, OG_P7S_WG06, OG_P7S_WG07	active participation, test
Skills - Student can:			
U1	The student can assess the position under vines in the analysis of environmental factors affecting plant growth. He can identify and specify the elements characteristic of the grape varieties	OG_P7S_UK06, OG_P7S_UO09, OG_P7S_UO10, OG_P7S_UW03	project, active participation
Social competences - Student is ready to:			
K1	The student is aware of the importance of raising his knowledge and training in the field of new technologies in gardening. The student is aware of the importance of social, professional and ethical responsibility for the production of horticultural crops and their development. The student is aware of the risk and is able to assess the social impact of the activity in the field of viticulture and wine production, as well as the responsibility for decisions	OG_P7S_KK01, OG_P7S_KO03, OG_P7S_KO04, OG_P7S_KO06, OG_P7S_KR07, OG_P7S_KR09	project, active participation, participation in discussion

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
project classes	15	
exam participation	15	
project preparation	15	
Student workload	Hours 60	ECTS 2.0
Workload involving teacher	Hours 45	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>The vine - growing position in the country and the world. The main growing regions species. The varieties grown in different regions of the world - the requirements, characteristics of fruit and wine. Ampelography of grape varieties. Grape variety and the characteristics of fruit and wine produced in specific regions of the world (North America, South America, Asia, Europe, other). Economic aspects of wine-growing in the world. Social and health aspects of wine consumption. The influence of wine on human health.</p> <p>Titles of lectures:</p> <ol style="list-style-type: none"> 1. Viticulture in the world and in Poland. The area of cultivation. Requirements climate and soil grade 2. The main wine-growing regions in the world. Characteristics of production in the various regions of the world. 3. Ampelography - knowledge about grape varieties. The introduction, the main type varieties. 4. Wine grape varieties and the characteristics of fruit and wine produced in South America. The most important growing regions and their characteristics. 5-6. Grape variety and the characteristics of fruit and wine produced in North America. The most important growing regions and their characteristics. 7-8. Grape variety and the characteristics of fruit and wine produced in Asia. The most important growing regions and their characteristics. 9-12. Grape variety and the characteristics of fruit and wine produced in Europe. The most important growing regions and their characteristics. 13. The vine varieties and the characteristics of fruit and wines produced in other regions of the world. The most important growing regions and their characteristics. 14. Economic aspects of wine-growing in the world. 15. Social aspects of wine consumption and health. The influence of wine on human health. 	lecture
2.	<p>Titles of classes:</p> <ol style="list-style-type: none"> 1-5. Project of establish vineyard and viticulture (select of cultivar, rootstock, spacing, type of construction, fertilizing, harvest, machinery, costs) 5-10. Project of winery and project of production process of wine (equipment, sort of wine, method of production, production processes, storage) 11-12. Marketing project for winery and wine selling (method of selling, price level, wine-tourism, additional offer) 13-15. Review of wine available on market (research). 	project classes

Course advanced

Teaching methods:

case analysis, text analysis, brainstorming, educational film, problem-solving method, project-based learning (PBL), situation-based learning, teamwork, discussion, lecture, practical simulation training, classes

Activities	Examination methods	Percentage in subject assessment
lecture	active participation, test	50.00%
project classes	project, active participation, participation in discussion	50.00%



UNIwersytet PRZYRODNICZY WE WROCLAWIU

Propaedeutics of Horticulture Educational subject description sheet

Basic information

Field of study horticulture Speciality - Department The Faculty of Life Sciences and Technology Study level Second-cycle (engineer) programme Study form Full-time Education profile General academic	Education cycle 2021/22 Subject code WPTPHOS.MI2HS.5e5e1df794245.21 Lecture languages English Mandatory optional Block Przedmioty humanistyczno-społeczne Subject related to scientific research No Subject shaping practical skills No
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Period Semester 2	Examination credit Activities and hours lecture: 15, project classes: 15	Number of ECTS points 2.0
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Goals

C1	Presentation for students of history of plants and horticultural crops, the origin of horticultural plants and their importance for man.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Is able to characterize further directions of gardening development, selection of new plant species for cultivation, utilization	OG_P7S_WG03, OG_P7S_WG07	participation in discussion

W2	has extended social knowledge and humanities	OG_P7S_ WK14	participation in discussion
Skills - Student can:			
U1	to search, analyze and creatively use information	OG_P7S_ UO10	report, presentation
U2	Plan your own professional or scientific career yourself.	OG_P7S_ UU12	report, presentation
Social competences - Student is ready to:			
K1	demonstrates readiness to analyze the performed task in terms of determining the right priorities.	OG_P7S_ KK02	project, presentation, participation in discussion
K2	Is aware of the importance of training and self-improvement and understands the need for lifelong learning.	OG_P7S_ KK01, OG_P7S_ K006	project, presentation, participation in discussion

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
project classes	15	
consultations	5	
presentation/report preparation	10	
collecting and studying literature	10	
Student workload	Hours 55	ECTS 2.0
Workload involving teacher	Hours 35	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Division of horticultural sciences, origin of horticultural plants, development of horticulture across the ages, botanical gardens history and present day, development of community gardens and allotments, innovative development of protected horticulture, directions of development horticulture in Poland and China	lecture
2.	presentation prepared by chinese students on development of horticulture in China glasshouse production, field production of ornamental plants, vegetables and fruit	project classes

Course advanced

Teaching methods:

educational film, presentation / demonstration, discussion, lecture

Activities	Examination methods	Percentage in subject assessment
lecture	report, participation in discussion	40.00%
project classes	project, presentation	60.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Plants in Polish culture Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI2HS.5e5e1df7a036d.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty humanistyczno-społeczne
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 2	Examination credit	Number of ECTS points 2.0
	Activities and hours lecture: 15, project classes: 15	

Goals

C1	The lectures show how man has used plants for purposes beyond food, culture and art have benefited from the surrounding landscape and nature, what elements of vegetable origin were used in decorating the immediate surroundings, home gardens, etc.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	traditional use of horticultural plants for food, medicinal, decorative, associated with holidays in Poland	OG_P7S_WG05, OG_P7S_WK14	active participation, participation in discussion

W2	zastosowanie tradycyjnie popularnych roślin w ogrodnictwie dzisiaj i ich znaczenie gospodarcze	OG_P7S_ WG05, OG_P7S_ WG07	active participation, participation in discussion
Skills - Student can:			
U1	Student acquires the ability to select the cultivar of particular vegetable species best suitable for the specific aim of production and the most efficient and environmental friendly methods of plant production,	OG_P7S_ U010, OG_P7S_ UW01	observation of student's work, presentation
U2	student is able to use available sources of literature, use to prepare a presentation	OG_P7S_ U010	observation of student's work, presentation
U3	the student is able to use English at a level that allows them to actively participate in classes	OG_P7S_ UK08	observation of student's work, presentation
Social competences - Student is ready to:			
K1	the student is ready to draw on tradition in the use and development of new species and technologies in horticultural production	OG_P7S_ K004	active participation, presentation, participation in discussion
K2	the student is ready to use the traditions of his country in the broadly understood planning and development of various branches of gardening	OG_P7S_ K006	active participation, presentation, participation in discussion

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
project classes	15	
presentation/report preparation	10	
consultations	5	
collecting and studying literature	5	
Student workload	Hours 50	ECTS 2.0
Workload involving teacher	Hours 35	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	The importance of plants in European and World culture, origin centers of arable crops, gardening in the valleys of great three rivers of ancient Middle East, gardening in Middle Ages in Poland, art of Polish gardens modelled on French, English, Naturalistic and Far East gardens, plants in art, art of herbaria, symbolism of plants in Europe and Poland, the appearance of fruit and vegetable in the old days according to art of still life	lecture
2.	Plants and folk tradition connected with holidays and celebrations in Poland and China, Still life art in National Museum in Wrocław, folk art in Ethnographic Museum, aromatic plants in Polish tradition of cuisine, production of wine, vodka, tinctures.	project classes

Course advanced

Teaching methods:

educational film, presentation / demonstration, discussion, lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	observation of student's work, active participation	40.00%
project classes	observation of student's work, active participation, presentation, participation in discussion	60.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Technical English Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI4BO.1591611842.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 3	Examination credit	Number of ECTS points 2.0
	Activities and hours project classes: 30	

Goals

C1	Technique horticultural English is a course mainly teaching basic knowledge of horticulture, to help students access scientific and technological foreign language materials, participate in English science and technology lectures, conferences, and written English scientific papers. Understand the common English vocabulary of agricultural specialty in agricultural specialty English, grasp the English vocabulary of crop type and crop morphological structure. Grasp the word formation, prefix and suffix composition of English vocabulary in crop type and plant morphology.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Skills - Student can:			

U1	Students can skillfully discover and identify the vocabulary of agricultural English. Student can complete literature review base on the agricultural specialized sources.	OG_P7S_UK08	observation of student's work, active participation, participation in discussion
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Balance of ECTS points

Activity form	Activity hours*	
project classes	30	
literature study	30	
Student workload	Hours 60	ECTS 2.0
Workload involving teacher	Hours 30	ECTS 1.0
Practical workload	Hours 30	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	[M1] Agricultural professional English common words BLOCK 1. Common words BLOCK 2. Crop style words [M2] Plant structure and unit words BLOCK 1. Leaf glossary BLOCK 2. Root glossary BLOCK 3. Fruits, flowers and seeds glossary [M3] Reading comprehension of agricultural English articles BLOCK 1. Grammar BLOCK 2. Syntax	project classes

Course advanced

Teaching methods:

text analysis, educational game, situation-based learning, teamwork, discussion

Activities	Examination methods	Percentage in subject assessment
project classes	observation of student's work, active participation, participation in discussion	100.00%

Entry requirements

College English□Basic English pronunciation and grammar knowledge should be mastered grasp 1800 words and student has

been trained in reading, listening, writing and speaking.



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Theory and practice of agricultural extension Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI4BO.5e5e1df7d1a72.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research Yes
	Subject shaping practical skills Yes

Period Semester 3	Examination exam	Number of ECTS points 2.0
	Activities and hours lecture: 30	

Goals

C1	The main task of the agricultural extension course is to give students a comprehensive and systematic understanding of the basic theories and knowledge of agricultural extension. Master the basic methods and skills of agricultural extension. Cultivate students' ability to observe and analyze problems and solve problems, and lay the foundation for students to promote modern agriculture and improve modern agricultural management.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	Student can understand the combination of scientific and technological achievements and production in the process of agricultural extension; the transformation and dissemination of scientific and technological achievements.	OG_P7S_WG03	test
Skills - Student can:			
U1	Student improves an application of scientific and technological achievements in production.	OG_P7S_U009	test
Social competences - Student is ready to:			
K1	Student is ready to improve the application of scientific and technological achievements in production as a change of the characteristics of farmers' behavior in practice.	OG_P7S_KK02	test

Balance of ECTS points

Activity form	Activity hours*	
lecture	30	
exam / credit preparation	30	
Student workload	Hours 60	ECTS 2.0
Workload involving teacher	Hours 30	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>Chapter 1 Problems with agricultural extension</p> <p>1-2. Analysis from an international perspective</p> <p>3-4. Analysis from a domestic perspective</p> <p>Chapter 2 Basic concepts of agricultural extension</p> <p>5-6. Definition of agricultural extension</p> <p>7-8. The function of agricultural extension</p> <p>9-10. The theory of agricultural extension</p> <p>Chapter 3 A brief history of the development of agricultural extension</p> <p>11-12. Agricultural development history</p> <p>13-14. A brief history of the development of agricultural extension in my country</p> <p>15-16. Taiwan Agricultural Extension Overview</p> <p>17-18. The origin of European agricultural extension</p> <p>19-20. Practice of agricultural extension in the United States</p> <p>21-22. Agricultural promotion in Japan</p> <p>23-24. Agricultural extension in India(Representatives of developing countries)</p> <p>Chapter 4 Changes in farmers' behavior caused by agricultural extension</p> <p>25. The emergence of farmers' behavior</p> <p>26. Changes in farmers' behavior</p> <p>27. Application of Behavior Principle in Agricultural Extension</p> <p>Chapter 5 Agricultural extension and communication</p> <p>28. Basic concepts of communication</p> <p>29. Agricultural Extension Communication System</p> <p>30. Improvement of agricultural extension communication efficiency</p>	lecture
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Course advanced

Teaching methods:

lecture

Activities	Examination methods	Percentage in subject assessment
lecture	test	100.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Agricultural communication technology and application Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI4BO.5e5e1df7dd09d.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills Yes

Period Semester 3	Examination exam	Number of ECTS points 2.0
	Activities and hours lecture: 30	

Goals

C1	The main task of the agricultural extension course is to give students enriching the theory of communication science, expanding it, promoting and promoting the construction and development of the discipline, and learning from other research results.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Student understands an application of modern communication methods and techniques in agriculture. .	OG_P7S_WG03	written exam, oral exam

Skills - Student can:			
U1	Student can improve the persuasion ability and interpersonal communication skills.	OG_P7S_ U010, OG_P7S_ UW01	written exam, oral exam
Social competences - Student is ready to:			
K1	Student is ready to comprehensive application in agricultural communication.	OG_ P7S _ KR07	written exam, oral exam

Balance of ECTS points

Activity form	Activity hours*	
lecture	30	
exam / credit preparation	30	
Student workload	Hours 60	ECTS 2.0
Workload involving teacher	Hours 30	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	<p>Chapter 1 Introduction</p> <ol style="list-style-type: none"> 1. Basic concepts of agricultural communication 2. Research on agricultural communication 3. The purpose and significance of agricultural communication 4. Research methods of agricultural communication <p>Chapter 2 Agricultural communication</p> <ol style="list-style-type: none"> 5. Overview of agricultural communication 6. Characteristics of agricultural communication 7. Basic principles of agricultural communication <p>Chapter 3 Agricultural communication mode</p> <ol style="list-style-type: none"> 8. Mode and communication mode 9. Agricultural communication mode 10. Existing problems and prospects <p>Chapter 4 Disseminator and audience of agricultural communication</p> <ol style="list-style-type: none"> 11. Agricultural communicators and their related behaviors 12. The institutional environment of agricultural communicators 13. Related concepts of agricultural communicators and audiences 14. How to understand the audience in the process of agricultural communication 15. Opinion leaders in agricultural communication 16. The interaction between subject and object of agricultural communication <p>Chapter 5 The medium of agricultural communication</p> <ol style="list-style-type: none"> 17. Overview of agricultural media 18. The choice of agricultural media 19. New media of agricultural communication <p>Chapter 6 Contents of agricultural communication</p> <ol style="list-style-type: none"> 20. Characteristics of agricultural communication content 21. Classification of agricultural communication content 22. Quality problems of agricultural communication content <p>Chapter 7 The effect of agricultural communication</p> <ol style="list-style-type: none"> 23. Essence of agricultural communication effect 24. The formation of agricultural communication effect 25. Evaluation system of agricultural communication effect 26. Integrated media and optimization of agricultural communication effect <p>Chapter 8 Types of agricultural communication</p> <ol style="list-style-type: none"> 27. Interpersonal media 28. Group communication 29. Organizational communication 30. Mass communication 	lecture
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Course advanced

Teaching methods:

lecture

Activities	Examination methods	Percentage in subject assessment
lecture	written exam, oral exam	100.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Diploma seminar 3 Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI4B0.5e5e1df7e79eb.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research Yes
	Subject shaping practical skills No

Period Semester 3	Examination credit	Number of ECTS points 2.0
	Activities and hours project classes: 30	

Goals

C1	The diploma seminar is mainly for the graduate students to complete the work according to the requirements of the training plan. The content of the investigation is from the content and progress of the degree thesis, achievements achieved during the postgraduate career, academic achievements, The current problems and the next stage of planning and other aspects.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Student has a professional knowledge about his master's thesis investigation.	OG_P7S_WG02, OG_P7S_WK10	written credit, oral credit

Skills - Student can:			
U1	Student has a professional skills: language expression ability, reading and writing abilities of scientific English connected with the master's thesis .	OG_P7S_ UK08	written credit, oral credit
Social competences - Student is ready to:			
K1	Student is ready to current affairs, policies and humanistic knowledge connected with the master's thesis.	OG_P7S_ KO06, OG_P7S_ KR09	written credit, oral credit

Balance of ECTS points

Activity form	Activity hours*	
project classes	30	
exam / credit preparation	30	
Student workload	Hours 60	ECTS 2.0
Workload involving teacher	Hours 30	ECTS 1.0
Practical workload	Hours 30	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Diploma seminars	project classes

Course advanced

Teaching methods:

discussion

Activities	Examination methods	Percentage in subject assessment
project classes	written credit, oral credit	100.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Horticultural plant ecology and stress physiology Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI4BO.5e5e1df7f2314.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research Yes
	Subject shaping practical skills No

Period Semester 3	Examination exam	Number of ECTS points 4.0
	Activities and hours lecture: 20, project classes: 25	

Goals

C1	The knowledge about the biological factors including plants and plants, herbivores and insects, pathogenic microorganisms, abiotic factors include strong light and ultraviolet rays, high salt concentration, aluminum metal, thermal stress and other adverse conditions of the biological ecological adaptation of plants is feedback mechanism. In addition, the bioecological function of bioactive polyamine, which plays an important role in plant resistance, is introduced.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	Student understands the adverse due to biological and chemical factors: effects of climate, such as drought, heat, cold and freezing, as well as adverse situation caused by geographical location, such as excessive salinity or lack of water in the soil, excessive light intensity, high altitude, and mountain adversity.	OG_P7S_ WK12	written exam, oral exam, written credit, project, observation of student's work, presentation
Skills - Student can:			
U1	Student analyzes current problems and choose the best solution in practices according to their specific environment factors. Student designs an implementation case based on the principles learned	OG_P7S_ U009, OG_P7S_ UW03	written exam, oral exam, written credit, project, observation of student's work, presentation
Social competences - Student is ready to:			
K1	Student participatis in the group's work, building on specific discussions and cases to increase the impact of the environment on plants. Student can work both individual and in teams using the available network applications.	OG_P7S_ KK01, OG_P7S_ _KK02, OG_P7S_ _KR09	written exam, oral exam, written credit, project, observation of student's work, presentation

Balance of ECTS points

Activity form	Activity hours*	
lecture	20	
project classes	25	
class preparation	20	
presentation/report preparation	20	
exam / credit preparation	20	
Student workload	Hours 105	ECTS 4.0
Workload involving teacher	Hours 45	ECTS 1.0
Practical workload	Hours 25	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>[M1]Introduction</p> <p>BLOCK 1. About Plant Adverse Physiology Ecology BLOCK 2. Concepts and Types of Plant Adversity BLOCK 3. The concept of plant resistance BLOCK 4. Current Research Focus in Physiological Ecology of Plant Adversity BLOCK 5. General Theory of Adverse Response and Signal Transduction in Plant Cells BLOCK 6. The significance of studying the physiological ecology of plant adversity</p> <p>[M2] Allelopathy between higher plants</p> <p>BLOCK 1. Overview and Research Methods of Allelopathy BLOCK 2. Sensational substances in higher plants BLOCK 3. Mechanism of allelopathic substances BLOCK 4. The allelopathy of plants under environmental stress BLOCK 5. Application of allelopathy in agroforestry production</p> <p>[M3] Plant Toxins and Their Ecological Significance</p> <p>BLOCK 1. Non-protein amino acids and their ecological significance BLOCK 2. Cyanosine and its Ecological Significance BLOCK 3. Alkaloids and their Ecological Significance BLOCK 4. Protein Toxins and Their Ecological Significance BLOCK 5. Nitrogen Free Toxins and Their Ecological Significance BLOCK 6. Toxicity mechanism of plant toxins and detoxification methods in animals</p> <p>[M4] Physiological and ecological relationship between plants and pathogenic bacteria</p> <p>BLOCK 1. Pathogenic toxins and plant antitoxins BLOCK 2. Process of pathogenic bacteria infecting plants and its effects on host plants BLOCK 3. Molecular mechanism of plant and pathogen interaction and resistance</p> <p>[M5] Light damage and plant protection</p> <p>BLOCK 1. Damage to plants caused by solar radiation BLOCK 2. Protection of plants from light damage and adaptation to local radiation conditions BLOCK 3. Regulation and Signal Transmission of CHS Gene Expression by Ultraviolet Radiation</p> <p>[M6] Molecular mechanism of plant salt stress response and salt tolerance</p> <p>BLOCK 1. Plant and salt stress BLOCK 2. Molecular mechanism of salt tolerance in plants BLOCK 3. Transmission pathways of salt stress signals</p> <p>[M7] Aluminium poisoning and plant aluminum resistance mechanism</p> <p>BLOCK 1. The toxic effects of aluminum on plants BLOCK 2. Aluminum resistance mechanism of plants BLOCK 3. Measures and Research Prospects for Reducing Aluminium Toxicity</p> <p>[M8] Thermal response and signal transduction pathways in plants</p> <p>BLOCK 1. Thermal stress of plants BLOCK 2. A family of plant thermophilic proteins BLOCK 3. Signal transduction of thermal reaction</p> <p>[M9] Metabolism of polyamines and proline in higher plants and its relationship with plant</p> <p>BLOCK 1. Metabolism of free polyamine and its relationship with plant resistance BLOCK 2. Iterative state and rare polyamine metabolism and its relationship with plant resistance BLOCK 3. Proline metabolism and its effect on plant resistance</p>	lecture
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2.	<p>[M1]Introduction</p> <p>BLOCK 1. About Plant Adverse Physiology Ecology BLOCK 2. Concepts and Types of Plant Adversity BLOCK 3. The concept of plant resistance BLOCK 4. Current Research Focus in Physiological Ecology of Plant Adversity BLOCK 5. General Theory of Adverse Response and Signal Transduction in Plant Cells BLOCK 6. The significance of studying the physiological ecology of plant adversity</p> <p>[M2] Allelopathy between higher plants</p> <p>BLOCK 1. Overview and Research Methods of Allelopathy BLOCK 2. Sensational substances in higher plants BLOCK 3. Mechanism of allelopathic substances BLOCK 4. The allelopathy of plants under environmental stress BLOCK 5. Application of allelopathy in agroforestry production</p> <p>[M3] Plant Toxins and Their Ecological Significance</p> <p>BLOCK 1. Non-protein amino acids and their ecological significance BLOCK 2. Cyanosine and its Ecological Significance BLOCK 3. Alkaloids and their Ecological Significance BLOCK 4. Protein Toxins and Their Ecological Significance BLOCK 5. Nitrogen Free Toxins and Their Ecological Significance BLOCK 6. Toxicity mechanism of plant toxins and detoxification methods in animals</p> <p>[M4] Physiological and ecological relationship between plants and pathogenic bacteria</p> <p>BLOCK 1. Pathogenic toxins and plant antitoxins BLOCK 2. Process of pathogenic bacteria infecting plants and its effects on host plants BLOCK 3. Molecular mechanism of plant and pathogen interaction and resistance</p> <p>[M5] Light damage and plant protection</p> <p>BLOCK 1. Damage to plants caused by solar radiation BLOCK 2. Protection of plants from light damage and adaptation to local radiation conditions BLOCK 3. Regulation and Signal Transmission of CHS Gene Expression by Ultraviolet Radiation</p> <p>[M6] Molecular mechanism of plant salt stress response and salt tolerance</p> <p>BLOCK 1. Plant and salt stress BLOCK 2. Molecular mechanism of salt tolerance in plants BLOCK 3. Transmission pathways of salt stress signals</p> <p>[M7] Aluminium poisoning and plant aluminum resistance mechanism</p> <p>BLOCK 1. The toxic effects of aluminum on plants BLOCK 2. Aluminum resistance mechanism of plants BLOCK 3. Measures and Research Prospects for Reducing Aluminium Toxicity</p> <p>[M8] Thermal response and signal transduction pathways in plants</p> <p>BLOCK 1. Thermal stress of plants BLOCK 2. A family of plant thermophilic proteins BLOCK 3. Signal transduction of thermal reaction</p> <p>[M9] Metabolism of polyamines and proline in higher plants and its relationship with plant</p> <p>BLOCK 1. Metabolism of free polyamine and its relationship with plant resistance BLOCK 2. Iterative state and rare polyamine metabolism and its relationship with plant resistance BLOCK 3. Proline metabolism and its effect on plant resistance</p>	project classes
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Course advanced

Teaching methods:

presentation / demonstration, teamwork, lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	written exam, oral exam, project, observation of student's work, presentation	50.00%
project classes	written exam, written credit, project, observation of student's work, presentation	50.00%

Entry requirements

Basic knowledge of plants: plant recognition, ecological habits, a certain understanding of the natural environment, a basic degree of geography and expertise.



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Faculty horticulture engineering technology Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI4BO.5e5e1df809c55.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills Yes

Period Semester 3	Examination credit	Number of ECTS points 4.0
	Activities and hours lecture: 15, project classes: 30	

Goals

C1	The knowledge about the construction of greenhouse engineering facilities and environmental control techniques, facilities soilless cultivation techniques, facilities vegetable cultivation techniques, facilities fruit tree cultivation techniques, facilities floriculture techniques, and herbal facilities cultivation techniques.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	Student understands the characteristics of horticultural engineering technology in facilities, as well as the materials and structure needed for the facility gardening project. Student knows the characteristics of cultivation techniques.	OG_P7S_WG01, OG_P7S_WG03, OG_P7S_WG05	project, active participation, report, presentation
Skills - Student can:			
U1	Student designs a greenhouse according to engineering principles, environmental requirements and facilities. Student selects the required materials according to the requirements, dimensions and characteristics of the engineering technology. Student uses engineering materials suitable for the site, requirements, characteristics, functions and specific requirements	OG_P7S_UO09, OG_P7S_UW01, OG_P7S_UW03	project, active participation, report, presentation
Social competences - Student is ready to:			
K1	Student can use existing knowledge to work individually and in teams, through participation in the work of the group. Student has raised awareness of the techniques of horticultural engineering in facilities based on specific discussions and designs. Student builds the ability of sustainable development while ensuring the combination of economic benefits and environmental benefits.	OG_P7S_KK01, OG_P7S_KK02, OG_P7S_KO05	project, active participation, report, presentation

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
project classes	30	
presentation/report preparation	20	
report preparation	20	
project preparation	20	
Student workload	Hours 105	ECTS 4.0
Workload involving teacher	Hours 45	ECTS 1.0
Practical workload	Hours 50	ECTS 2.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>[M1] Achievements and Prospects of Horticultural Engineering in Facilities</p> <p>BLOCK 1. The Status and Role of Horticultural Engineering Technology in the Construction of Vegetable Basket Project</p> <p>BLOCK 2. History and Achievements of Horticultural Engineering in Facilities</p> <p>BLOCK 3. Horticultural Engineering Technology Outlook for Facilities</p> <p>[M2] Basic Structure and Overlay Materials of Horticultural Engineering Technology for Facilities</p> <p>BLOCK 1. Simple coverage</p> <p>BLOCK 2. Plastic film arch shed</p> <p>BLOCK 3. Greenhouse</p> <p>BLOCK 4. Modern greenhouse and plastic grille</p> <p>BLOCK 5. Greenhouse .Facilities Environmental Control System and Related Devices and Equipment</p> <p>BLOCK 6. Research and development of agricultural mulch materials abroad and its main achievements</p> <p>[M3] Engineering Technology of Vegetable Seedling in Facilities [M4]Engineering Technology for Vegetable Cultivation in Facilities [M5]Engineering technology of soilless vegetable cultivation in facilities [M6]Cultivation technology of vegetable mulch [M7]Engineering technology of plant vegetable pest control [M8]Engineering technology of plant flower and fruit tree cultivation</p>	lecture
2.	<p>[M1] Achievements and Prospects of Horticultural Engineering in Facilities</p> <p>BLOCK 1. The Status and Role of Horticultural Engineering Technology in the Construction of Vegetable Basket Project</p> <p>BLOCK 2. History and Achievements of Horticultural Engineering in Facilities</p> <p>BLOCK 3. Horticultural Engineering Technology Outlook for Facilities</p> <p>[M2] Basic Structure and Overlay Materials of Horticultural Engineering Technology for Facilities</p> <p>BLOCK 1. Simple coverage</p> <p>BLOCK 2. Plastic film arch shed</p> <p>BLOCK 3. Greenhouse</p> <p>BLOCK 4. Modern greenhouse and plastic grille</p> <p>BLOCK 5. Greenhouse .Facilities Environmental Control System and Related Devices and Equipment</p> <p>BLOCK 6. Research and development of agricultural mulch materials abroad and its main achievements</p> <p>[M3] Engineering Technology of Vegetable Seedling in Facilities [M4]Engineering Technology for Vegetable Cultivation in Facilities [M5]Engineering technology of soilless vegetable cultivation in facilities [M6]Cultivation technology of vegetable mulch [M7]Engineering technology of plant vegetable pest control [M8]Engineering technology of plant flower and fruit tree cultivation</p>	project classes

Course advanced

Teaching methods:

teamwork, lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	project, active participation, report, presentation	50.00%
project classes	project, active participation, report, presentation	50.00%

Entry requirements

Basic knowledge of plants: plant recognition, ecological habits, ornamental characteristic, etc., some engineering skills.
Basic materials connected with master engineering techniques.



UNIwersytet Przyrodniczy we Wrocławiu

Special practice of horticultural modernization production Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI4BO.5e5e1df81474e.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills Yes

Period Semester 3	Examination credit	Number of ECTS points 5.0
	Activities and hours practical training: 60	

Goals

C1	<p>With the development of economy and the improvement of people's living standard, the horticultural industry, which is mainly composed of fruit, vegetable, tea and flower, has become the pillar industry of invigorating the rural economy and promoting the rural development. At present, the horticultural industry has changed from the traditional production to the development path of production scale, product standardization, intensive management, modern management and diversified circulation, which is beneficial to the employees of the horticultural industry. The professional quality and comprehensive ability of the staff put forward higher requirements. Therefore, it will play an important role in promoting the development of modern agricultural economy to build the horticultural technology specialty and cultivate a large number of high skilled applied talents. Professional practice is a practical course in a series of comprehensive practice courses for horticultural students. It is a practical teaching link for students to consolidate and improve the basic theory. After the students have studied and interned in the basic professional courses, they go deep into the horticultural production enterprises, agricultural production enterprises and other relevant internship units for professional practice. Through the teaching of professional practice, students can understand the key links of horticultural production process, master the key technologies in different production links, and through professional practice, combine the theoretical knowledge and production practice organically, be able to integrate theory with practice, master the theoretical basis of horticultural production process, and systematically master the cultivation and design of horticultural plants Practical knowledge of regulation and control, horticultural plant breeding, horticultural plant marketing, horticultural plant harvesting and storage, and landscape planning and design to understand the latest trends and development trends of horticultural production.</p>
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Student can understand the key links of horticultural production process, master the key technologies in different production links, and through professional practice.	OG_P7S_WG03	report
Skills - Student can:			
U1	Student combines the theoretical knowledge and production practice organically, be able to integrate theory with practice.	OG_P7S_U009	report
Social competences - Student is ready to:			
K1	Student is ready to work in teams well s to estimate an effect in horticultural production.	OG_P7S_KO04, OG_P7S_KO05	report

Balance of ECTS points

Activity form	Activity hours*	
practical training	60	
presentation/report preparation	90	
Student workload	Hours 150	ECTS 5.0
Workload involving teacher	Hours 60	ECTS 2.0

Practical workload	Hours 60	ECTS 2.0
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* hour means 45 minutes

Study content

No.	Course content	Activities
1.	<p>1-12. Baiguoyuan-Modern Agricultural Industrial Park facilities visit and seedling production practice. Understand the application of horticultural plant cultivation technology, facility control technology, horticultural plant marketing technology, horticultural plant harvesting and storage technology in production practice, and be familiar with the principles of horticultural production process.</p> <p>13-24. Visit to Yuehu Park-Upscale Living Community and Discussion on Planning and Design of Modern Living Community. Basically grasp the basic principles of garden planning and design, and understand the specific working methods and methods of garden design, construction, maintenance and other links.</p> <p>25-36. Chang'an Tea Farm-Display of fine tea processing technology and modern tea farm facilities and equipment. Understand the plant management and picking techniques of tea plants, and master the characteristics and processing techniques of the six major teas.</p> <p>37-48. Panlong Grand View Garden-Modern Flower Production, Exhibition and Sales Park Construction Seminar. Understand the application of flowering techniques for ornamental plants and the application of flower preservation techniques</p> <p>49-60. Qianlu Lake Organic Vegetable Cultivation Base-Modern Vegetable Production, Exhibition and Sales Park Construction Seminar. Understand the application of vegetable cultivation techniques and pest control techniques as well as post-harvest commercial treatment and preservation techniques in production</p>	practical training

Course advanced

Teaching methods:

practical simulation training

Activities	Examination methods	Percentage in subject assessment
practical training	report	100.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Horticultural plant resources and protection Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI4BO.5e5e1df82cccd.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills Yes

Period Semester 3	Examination credit	Number of ECTS points 3.0
	Activities and hours lecture: 15, project classes: 20	

Goals

C1	Practical and theoretical knowledge about plant resources and protection.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Student has a practical and theoretical knowledge about plant resources and protection.	OG_P7S_WG04	active participation, report, presentation
Skills - Student can:			

U1	Student can introduce in life a practical and theoretical knowledge about plant resources and protection.	OG_P7S_U011	active participation, report, presentation
Social competences - Student is ready to:			
K1	Student is able to understand a meaning of protection of plant resources.	OG_P7S_KR08	active participation, report, presentation

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
project classes	20	
presentation/report preparation	20	
lesson preparation	20	
Student workload	Hours 75	ECTS 3.0
Workload involving teacher	Hours 35	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1-15. Practical and theoretical knowledge about plant resources and protection.	lecture
2.	1-20. Practical and theoretical knowledge about plant resources and protection.	project classes

Course advanced

Teaching methods:

lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	active participation, report, presentation	50.00%
project classes	active participation, report, presentation	50.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Plant tissue culture Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI4BO.5e5e1df838219.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research Yes
	Subject shaping practical skills No

Period Semester 3	Examination credit	Number of ECTS points 3.0
	Activities and hours lecture: 15, project classes: 20	

Goals

C1	Research history of plant tissue cultures, application status, basic concepts and basic theories[]Understanding tissue culture laboratory construction, master the basic theoretical knowledge and basic skills of plant tissue culture.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Student understands the principles and operation procedures of plant tissue culture. Student is aware of possible problems in plant tissue culture and their solutions.as well as importance of plant tissue culture.	OG_P7S_ WG02, OG_P7S_ WG03	active participation, report, presentation

Skills - Student can:			
U1	Student can make a procedure for rapid propagation of whole plant tissue in vitro with the changes of cells in different stages during the process of plant tissue culture.	OG_P7S_UW03, OG_P7S_UW04	active participation, report, presentation
Social competences - Student is ready to:			
K1	Student forms a group to design and conduct an experiment, and conducted the next operation for the plant tissue culture objects in different periods. Student can work both individual and in teams using the available network applications.	OG_P7S_KK01, OG_P7S_KK02, OG_P7S_KO05	active participation, report, presentation

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
project classes	20	
presentation/report preparation	20	
lesson preparation	20	
Student workload	Hours 75	ECTS 3.0
Workload involving teacher	Hours 35	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>[M1] Basic principles of plant tissue culture</p> <p>BLOCK 1. Plant cells totipotency</p> <p>BLOCK 2. Plant cell differentiation and dedifferentiation</p> <p>BLOCK 3.Types of plant differentiation into Plantlets in vitro</p> <p>[M2] Plant tissue culture facilities and basic conditions</p> <p>BLOCK 1. Laboratory design</p> <p>BLOCK 2. Laboratory instruments and equipment</p> <p>BLOCK 3.Commonly used experimental equipment</p> <p>[M3] General operation techniques of plant tissue culture</p> <p>BLOCK 1. Washing and sterilization</p> <p>BLOCK 2. Aseptic operation</p> <p>BLOCK 3.Culture medium and its preparation</p> <p>[M4] plant tissue culture</p> <p>BLOCK 1. plant organ culture</p> <p>BLOCK 2. Plant meristem culture</p> <p>BLOCK 3. Plant callus culture</p> <p>BLOCK 2. Plant other tissue culture</p> <p>[M5] In vitro rapid propagation techniques</p> <p>BLOCK 1. Significance of rapid propagation technology in vitro</p> <p>BLOCK 2. Factors affecting rapid propagation of plants in vitro</p> <p>[M6] Plant embryo culture</p> <p>BLOCK 1. Plant embryo culture in vitro</p> <p>BLOCK 2. Ovule culture</p> <p>[M7] Plant virus free technology</p> <p>BLOCK 1. Significance of plants virus</p> <p>BLOCK 2. Plant virus method</p> <p>BLOCK 3. Plant virus inspection</p>	lecture
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2.	<p>[M1] Basic principles of plant tissue culture</p> <p>BLOCK 1. Plant cells totipotency</p> <p>BLOCK 2. Plant cell differentiation and dedifferentiation</p> <p>BLOCK 3.Types of plant differentiation into Plantlets in vitro</p> <p>[M2] Plant tissue culture facilities and basic conditions</p> <p>BLOCK 1. Laboratory design</p> <p>BLOCK 2. Laboratory instruments and equipment</p> <p>BLOCK 3.Commonly used experimental equipment</p> <p>[M3] General operation techniques of plant tissue culture</p> <p>BLOCK 1. Washing and sterilization</p> <p>BLOCK 2. Aseptic operation</p> <p>BLOCK 3.Culture medium and its preparation</p> <p>[M4] plant tissue culture</p> <p>BLOCK 1. plant organ culture</p> <p>BLOCK 2. Plant meristem culture</p> <p>BLOCK 3. Plant callus culture</p> <p>BLOCK 2. Plant other tissue culture</p> <p>[M5] In vitro rapid propagation techniques</p> <p>BLOCK 1. Significance of rapid propagation technology in vitro</p> <p>BLOCK 2. Factors affecting rapid propagation of plants in vitro</p> <p>[M6] Plant embryo culture</p> <p>BLOCK 1. Plant embryo culture in vitro</p> <p>BLOCK 2. Ovule culture</p> <p>[M7] Plant virus free technology</p> <p>BLOCK 1. Significance of plants virus</p> <p>BLOCK 2. Plant virus method</p> <p>BLOCK 3. Plant virus inspection</p>	project classes
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Course advanced

Teaching methods:

computer lab/laboratory, lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	active participation, report, presentation	50.00%
project classes	active participation, report, presentation	50.00%

Entry requirements

Knowledge of botany, biochemistry and plant physiology. Understanding common equipment and basic operations in biological laboratories.



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Science and technology thesis writing and literature retrieval Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI4BO.5e5e1df8477e8.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research Yes
	Subject shaping practical skills No

Period Semester 3	Examination credit	Number of ECTS points 3.0
	Activities and hours lecture: 15, project classes: 20	

Goals

C1	Scientific Paper Writing is an interdisciplinary subject with the mutual penetration of Liberal Arts, science and engineering. It involves not only the related fields of natural science, but also writing, science, information science, logic, dialectics of nature and methodology. It is a professional and comprehensive practice. On the basis of scientific research and scientific experiments, the task of writing scientific papers is to use logical thinking methods such as concept, judgment, reasoning, proof and refutation to analyze or elaborate some phenomena or problems in the field of natural science and professional technology, so as to reveal the nature and regularity of these phenomena and problems. The author's scientific opinions and new discoveries are expressed and published in public in the form of argumentative papers, so as to transform scientific research achievements into social productivity and then promote the continuous development of science and technology.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
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Knowledge - Student knows and understands:			
W1	Student has a basic knowledge, requirements and format of scientific papers.	OG_P7S_ WG02, OG_P7S_ WG03	written credit, oral credit, presentation
Skills - Student can:			
U1	Student can reading literature and writing thesis abilities.	OG_P7S_ UK08	written credit, oral credit, presentation
Social competences - Student is ready to:			
K1	Student is ready to find information and sci-tech writing master's thesis ability	OG_P7S_ KK02	written credit, oral credit, presentation

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
project classes	20	
presentation/report preparation	20	
lesson preparation	20	
Student workload	Hours 75	ECTS 3.0
Workload involving teacher	Hours 35	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities

1.	<p>Content of the course unit (detailed description)</p> <p>Chapter1 Overview of scientific paper writing</p> <p>Lesson1 The nature and function of Sci-tech paper writing</p> <p>Lesson2 The classification and characteristics of Sci-tech paper writing</p> <p>Lesson3 The language of Sci-tech paper writing</p> <p>Chapter2 Requirements for scientific papers</p> <p>Lesson4 Characteristics and types of scientific papers</p> <p>Lesson5 Writing requirements of scientific papers</p> <p>Chapter3 Format of scientific papers</p> <p>Lesson6 The composition and writing requirements of the title and signature</p> <p>Lesson7 The composition and writing requirements of abstract and key words</p> <p>Lesson8 The composition and writing requirements of introduction</p> <p>Lesson9 The composition and writing requirements of text</p> <p>Lesson10 The composition and writing requirements of conclusion</p> <p>Lesson11 The composition and writing requirements of reference</p> <p>Lesson12 The composition and writing requirements of acknowledgment and appendix</p> <p>Chapter4 Paper writing</p> <p>Lesson12 The requirements of the dissertation</p> <p>Lesson13 The principles of the topic selection</p> <p>Lesson14 The preparation of the paper writing</p> <p>Lesson15 The general format and requirements of the dissertation</p> <p>Lesson16 The defense of the paper</p> <p>Chapter5 Writing of common paper styles</p> <p>Lesson17 Sci-tech research achievements overview and review</p> <p>Lesson18 Sci-tech Research Report</p> <p>Lesson19 Feasibility study report</p> <p>Lesson20 Science and technology investigation report</p>	lecture
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2.	<p>Content of the course unit (detailed description)</p> <p>Chapter1 Overview of scientific paper writing</p> <p>Lesson1 The nature and function of Sci-tech paper writing</p> <p>Lesson2 The classification and characteristics of Sci-tech paper writing</p> <p>Lesson3 The language of Sci-tech paper writing</p> <p>Chapter2 Requirements for scientific papers</p> <p>Lesson4 Characteristics and types of scientific papers</p> <p>Lesson5 Writing requirements of scientific papers</p> <p>Chapter3 Format of scientific papers</p> <p>Lesson6 The composition and writing requirements of the title and signature</p> <p>Lesson7 The composition and writing requirements of abstract and key words</p> <p>Lesson8 The composition and writing requirements of introduction</p> <p>Lesson9 The composition and writing requirements of text</p> <p>Lesson10 The composition and writing requirements of conclusion</p> <p>Lesson11 The composition and writing requirements of reference</p> <p>Lesson12 The composition and writing requirements of acknowledgment and appendix</p> <p>Chapter4 Paper writing</p> <p>Lesson12 The requirements of the dissertation</p> <p>Lesson13 The principles of the topic selection</p> <p>Lesson14 The preparation of the paper writing</p> <p>Lesson15 The general format and requirements of the dissertation</p> <p>Lesson16 The defense of the paper</p> <p>Chapter5 Writing of common paper styles</p> <p>Lesson17 Sci-tech research achievements overview and review</p> <p>Lesson18 Sci-tech Research Report</p> <p>Lesson19 Feasibility study report</p> <p>Lesson20 Science and technology investigation report</p>	project classes
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Course advanced

Teaching methods:

presentation / demonstration, lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	written credit, oral credit	50.00%

Activities	Examination methods	Percentage in subject assessment
project classes	presentation	50.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Fertilizer consulting Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WTPHOS.MI4BO.5e5e1df852fa7.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills Yes

Period Semester 3	Examination credit	Number of ECTS points 3.0
	Activities and hours lecture: 15, project classes: 20	

Goals

C1	Development of knowlage about fertilization in horticultural production
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Student has a knowlage about main rules of fertilization in horticultural production.	OG_P7S_WG01	active participation, report, presentation
Skills - Student can:			

U1	Student can create a plan of fertilization of horticultural plants.	OG_P7S_ U009, OG_P7S_ U010	active participation, report, presentation
Social competences - Student is ready to:			
K1	Student is ready to create a plan of fertilization of horticultural plants.	OG_P7S_ KR07	active participation, report, presentation

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
project classes	20	
presentation/report preparation	20	
lesson preparation	20	
Student workload	Hours 75	ECTS 3.0
Workload involving teacher	Hours 35	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1-15. Different aspects connected with fertilization of the horticultural plants	lecture
2.	1-20. Projects connected with fertilization of the horticultural plants	project classes

Course advanced

Teaching methods:

lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	active participation, report, presentation	50.00%
project classes	active participation, report, presentation	50.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Biologically active substances in fruits and vegetables Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI4BO.5e5e1df85df8d.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research Yes
	Subject shaping practical skills No

Period Semester 3	Examination credit	Number of ECTS points 3.0
	Activities and hours lecture: 15, project classes: 20	

Goals

C1	The role of bioactive substances of fruits and vegetables in human life.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Student has a knowlage about nutritional composition in plants. Students need to understand the effects of plant compounds on the human body - both beneficial and harmful effects on health.	OG_P7S_WG03	active participation, report, presentation
Skills - Student can:			

U1	Student can choose plant material based on desired form, scale, texture, and color appropriate to the design problem. Student can design a set of reasonable meal combinations.	OG_P7S_U009	active participation, report, presentation
Social competences - Student is ready to:			
K1	Student has a deeper understanding of the role of vegetables and fruits in human life. Student improves their quality of life based on specific information and survey reports. Student can work both individual and in teams using the available network applications	OG_P7S_KK02, OG_P7S_K003, OG_P7S_K004	active participation, report, presentation

Balance of ECTS points

Activity form	Activity hours*	
lecture	15	
project classes	20	
presentation/report preparation	20	
project preparation	20	
Student workload	Hours 75	ECTS 3.0
Workload involving teacher	Hours 35	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>[M1] Overview of plant chemicals</p> <p>BLOCK 1. The concept of plant chemistry</p> <p>BLOCK 2. Classification and Sources of Phytochemistry</p> <p>BLOCK 3. The function of phytochemistry</p> <p>[M2] Origin and Biological Effects of Flavonoids</p> <p>BLOCK 1. Sources of flavonoids</p> <p>BLOCK 2. Biological function of flavonoids</p> <p>[M3] Origin and Biological Effects of Saponins</p> <p>BLOCK 1. Source of food</p> <p>BLOCK 2. Biological role of saponins</p> <p>[M4] Food Sources and Physiological Functions of Sulphur</p> <p>BLOCK 1. Food sources of sulphides</p> <p>BLOCK 2. Sulphide biological effects</p> <p>[M5] Origin and Biological Effects of Isothiocyanate Salts</p> <p>BLOCK 1. Food Sources of Isothiocyanate Salts</p> <p>BLOCK 2. Biological function of isothiocyanate salts</p>	lecture
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2.	<p>[M1] Overview of plant chemicals</p> <p>BLOCK 1. The concept of plant chemistry</p> <p>BLOCK 2. Classification and Sources of Phytochemistry</p> <p>BLOCK 3. The function of phytochemistry</p> <p>[M2] Origin and Biological Effects of Flavonoids</p> <p>BLOCK 1. Sources of flavonoids</p> <p>BLOCK 2. Biological function of flavonoids</p> <p>[M3] Origin and Biological Effects of Saponins</p> <p>BLOCK 1. Source of food</p> <p>BLOCK 2. Biological role of saponins</p> <p>[M4] Food Sources and Physiological Functions of Sulphur</p> <p>BLOCK 1. Food sources of sulphides</p> <p>BLOCK 2. Sulphide biological effects</p> <p>[M5]Origin and Biological Effects of Isothiocyanate Salts</p> <p>BLOCK 1.Food Sources of Isothiocyanate Salts</p> <p>BLOCK 2.Biological function of isothiocyanate salts</p>	project classes
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Course advanced

Teaching methods:

problem-solving method, lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	active participation, report, presentation	50.00%
project classes	active participation, report, presentation	50.00%

Entry requirements

A preliminary knowlage about vegetables and fruits. Relationship between plants and the human body



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Diploma seminar 4 Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI8BO.5e5e1df885e94.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 4	Examination credit	Number of ECTS points 2.0
	Activities and hours project classes: 30	

Goals

C1	- present students with the rules of conducting experiments
C2	- present students with writing a research paper
C3	- present students with the ways of expanding their knowledge on particular specialties of horticulture

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	the copyright rules and the necessity of intellectual property management	OG_P7S_ WK08	oral credit

W2	principles of establishing and conducting field experiments related to horticultural production	OG_P7S_ WK10	oral credit
Skills - Student can:			
U1	collect data which are the result of the experiment and analyzes them statistically	OG_P7S_ UW05	oral credit
U2	make conclusions based on collected results	OG_P7S_ UK06	oral credit
U3	make presentation of problem on the basis of literature in a clear and concise way	OG_P7S_ UO10	oral credit
Social competences - Student is ready to:			
K1	continuous skills enhancement	OG_P7S_ KK01	oral credit
K2	accept responsibility for the results of your task	OG_P7S_ KO05	oral credit
K3	solve problems regarding the planning of horticulture production and analyze the course of the task	OG_P7S_ KR07	oral credit

Balance of ECTS points

Activity form	Activity hours*	
project classes	30	
lesson preparation	20	
consultations on diploma paper	10	
Student workload	Hours 60	ECTS 2.0
Workload involving teacher	Hours 40	ECTS 1.0
Practical workload	Hours 30	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	<p>1-4. Rules of writing master's thesis, updating the Bibliography and Discussion input. Reports on the laboratory research results.</p> <p>5-10. Development of experimental results taking into account the weather course.</p> <p>11-26. Presentation the results of experience in the form of multimedia presentations.</p> <p>27-30. Completing Bibliography, Discussion and presentation chapter - Conclusion.</p>	project classes

Course advanced

Teaching methods:

classes

Activities	Examination methods	Percentage in subject assessment
project classes	oral credit	100.00%



Case analysis of policies and regulations on horticultural plants
Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI8BO.5e5e1df89030d.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 4	Examination credit	Number of ECTS points 2.0
	Activities and hours lecture: 30	

Goals

C1	Providing students with knowledge of quality standards and production in horticulture
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	student knows the concept of quality garden products and the principles of its control	OG_P7S_WG06	oral credit
Skills - Student can:			

U1	student is able to assess the quality of gardening products, knows the applicable quality standards	OG_P7S_ U009	observation of student's work, active participation
Social competences - Student is ready to:			
K1	The student is ready to take professional and ethical responsibility for the production of high-quality fruit and vegetables, taking into account environmental protection aspects and the safety of consumption of horticultural products	OG_ P7S _ K003	observation of student's work, active participation

Balance of ECTS points

Activity form	Activity hours*	
lecture	30	
exam / credit preparation	15	
literature study	10	
Student workload	Hours 55	ECTS 2.0
Workload involving teacher	Hours 30	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>1. The concept of quality in horticulture, methods of measurement and quality control 2 h</p> <p>2. Surveys of consumers - the quality of horticultural products, GLOBAL GAP 2 h</p> <p>3. Fruit quality standards 2 h</p> <p>4. Vegetable quality standards 2 h</p> <p>5. Cut flowers quality standards in the stock market 2 h</p> <p>6. Quality recommendations for decorative and fruit nursery material 2 h</p> <p>7- 8 . Factors affecting the quality of horticultural products 4 h</p> <p>9-11. Sorting lines for fruit, vegetables and cut flowers 6 h</p> <p>12-15. Individual and collective packaging for fruit, vegetables and cut flowers 6 h</p>	lecture
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Course advanced

Teaching methods:

case analysis, text analysis, educational film, discussion, lecture

Activities	Examination methods	Percentage in subject assessment
lecture	oral credit, observation of student's work, active participation	100.00%



UNIwersytet Przyrodniczy we Wrocławiu

Development of master thesis Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI8BO.5e5e1df89eb7c.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory mandatory
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research Yes
	Subject shaping practical skills No

Period Semester 4	Examination exam	Number of ECTS points 20.0
	Activities and hours test assignments and project assignments: 10	

Goals

C1	Analysis of individual parts of the master's thesis: literature review, results of the investigation, summary, list of literature
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	The graduate knows and understands abiotic and biotic threats to plants, knows techniques and protection measures has knowledge of the biodiversity of the natural environment, its formation and protection, and the functioning of agroecosystems	OG_P7S_WG01, OG_P7S_WK12	diploma paper

W2	The graduate is able to make a critical analysis and assessment of factors affecting horticultural production and its quality and the state of the natural environment (engineering)	OG_P7S_WG01, OG_P7S_WG04, OG_P7S_WG06	diploma paper
W3	The graduate knows and understands the advanced level of issues in the field of habitat requirements, nutritional needs, techniques and technologies of plant cultivation and determining their impact on the quality of horticultural crops and plant materials,	OG_P7S_WG01, OG_P7S_WG07, OG_P7S_WK12	diploma paper
Skills - Student can:			
U1	The graduate is able to search and use information from various fields of science for a critical analysis of the functioning of existing technical and technological solutions	OG_P7S_UW01	observation of student's work
U2	The graduate is able to assess factors affecting horticultural production and its quality and the condition of the natural environment	OG_P7S_UW03	observation of student's work
U3	The graduate is able to develop documentation on the task, master's project using analytical, simulation and experimental methods and present the way to solve it using advanced information and communication techniques	OG_P7S_UK06, OG_P7S_UW01	observation of student's work
Social competences - Student is ready to:			
K1	The graduate is ready to use horticultural knowledge to solve professional problems	OG_P7S_KO03, OG_P7S_KR08	observation of student's work

Balance of ECTS points

Activity form	Activity hours*	
test assignments and project assignments	10	
conducting research	200	
consultations on diploma paper	40	
preparation of diploma paper	150	
exam participation	20	
collecting and studying literature	150	
Student workload	Hours 570	ECTS 20.0
Workload involving teacher	Hours 70	ECTS 2.0
Practical workload	Hours 200	ECTS 8.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	Student's work under the guidance of the supervisor	test assignments and project assignments

Course advanced

Teaching methods:

text analysis, participation in research

Activities	Examination methods	Percentage in subject assessment
test assignments and project assignments	observation of student's work, diploma paper	100.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Case analysis of horticultural industry Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI8BO.5e5e1df8b4ef8.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 4	Examination credit	Number of ECTS points 3.0
	Activities and hours lecture: 20, project classes: 15	

Goals

C1	Providing students with knowledge of global trends in horticulture against the background of horticultural production in Poland and China
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	The student will get the skill of estimation the suitability of different vegetable groups and fruit crops to the food industry in the area of companies as well as small factories. One has a knowledge of the preferable for particular horticultural plant species crops for fresh market.	OG_P7S_WG03	report
Skills - Student can:			
U1	Acquired knowledge will allow the student to analyze of global and local statistic data connected with open field and glass house production and food processing all over the world as well as in Poland and China.	OG_P7S_UO09	project, observation of student's work, active participation
Social competences - Student is ready to:			
K1	After completing the course, graduate may run or be employed on the field or in the glass house production, or company as well as different kind of extension service supplying vegetables and fruits to the markets of fresh and processed crops.	OG_P7S_KR07	project, observation of student's work, active participation

Balance of ECTS points

Activity form	Activity hours*	
lecture	20	
project classes	15	
presentation/report preparation	10	
lesson preparation	10	
project preparation	10	
report preparation	10	
Student workload	Hours 75	ECTS 3.0
Workload involving teacher	Hours 35	ECTS 1.0
Practical workload	Hours 25	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>1. Global and local information about different kind of vegetable horticultural production and industry 2 h</p> <p>2. Global and local information about different kind of fruit horticultural industry 2 h</p> <p>3. Global and local information about ornamental plants production [The World, Poland, China] 2 h</p> <p>4. Legal regulations of international trade in horticultural products 2 h</p> <p>5. The most modern fruit production technologies in the world 2 h</p> <p>6. The most modern fruit and ornamental plants technologies in the world 2 h</p> <p>7. The control of fruit, vegetable and ornamental plant quality on the world trade 2 h</p> <p>8. Problems of world horticulture and possibilities of solving them 2 h</p> <p>9. The development direction of world and local horticulture 2 h</p> <p>10. Agriculture i Horticulture XXI century: problems and challenges 2 h</p>	lecture
2.	<p>1. Comparison of horticulture production in Polish and Chinese orchards 2 h</p> <p>2. Model of a modern orchard, plantations and vegetable and ornamental plants cultivation 4 h</p> <p>3. Analysis of horticultural fresh vegetable market in Poland and China 2 h</p> <p>2. Analysis of horticultural processed vegetable food market products in Poland and China 2 h</p> <p>3. Analysis of horticultural fresh fruit market in Poland and China 2 h</p> <p>4. Analysis of horticultural processed fruit food market products in Poland and China 2 h</p> <p>5. Specificity and comparison of cut flowers production in Poland and China 1 h</p>	project classes

Course advanced

Teaching methods:

case analysis, text analysis, project-based learning (PBL), discussion, lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	report	30.00%
project classes	project, observation of student's work, active participation	70.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Modern cultivation technique of cut flower Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI8BO.5e5e1df8c100b.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills No

Period Semester 4	Examination credit	Number of ECTS points 3.0
	Activities and hours lecture: 20, project classes: 15	

Goals

C1	The student will learn about the modern cultivation of ornamental plants for cut flowers. The production of the most sold cut flowers on world exchanges will be discussed
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	He has detailed knowledge in the field of horticultural production technology: horticulture, gardening, medicinal plants, ornamental plants, nurseries. It has knowledge in the field of dendrology and green areas development necessary for their design and operation	OG_P7S_WG03, OG_P7S_WG05, OG_P7S_WG06, OG_P7S_WK11, OG_P7S_WK13	written credit, oral credit, project, active participation

Skills - Student can:			
U1	He has the ability to select and plan technologies used in horticulture in order to achieve the best production results with particular emphasis on the quality of the final product and economic analysis of the project.	OG_P7S_UK07, OG_P7S_UO10, OG_P7S_UW03	observation of student's work, participation in discussion, case study
Social competences - Student is ready to:			
K1	He/she is aware of the importance of further education and self-improvement in new technologies in horticulture and understands the need for lifelong learning in order to improve the skills acquired during studies. It shows willingness to analyze the task being carried out with a view to determining appropriate priorities, taking into account the role of its individual contractors	OG_P7S_K004, OG_P7S_K005, OG_P7S_KR07	written credit, oral credit, project, observation of student's work, active participation, participation in discussion, case study

Balance of ECTS points

Activity form	Activity hours*	
lecture	20	
project classes	15	
presentation/report preparation	30	
class preparation	15	
lesson preparation	10	
Student workload	Hours 90	ECTS 3.0
Workload involving teacher	Hours 35	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>1. Modern methods of generative propagation of ornamental plants of trees, shrubs and ornamental perennials. Discussion of selected methods of pre-sowing seed treatment in modern cut flower ornamental plant production.</p> <p>2. Self-seeding vegetative propagation in modern city flower ornamental plant production.</p> <p>3. modern equipment of a horticultural holding producing ornamental plants in the ground and under cover.</p> <p>4. production of cut flower bulbs using soilless crops .</p> <p>5. modern production of cut flower lilies .</p> <p>6. cut flower production of garden dahlias in the ground.</p> <p>7. modern production of perennial perennials for cut flower in the ground and under cover.</p> <p>8. production of roses in the ground and under shelter using the most modern cultivation methods.</p> <p>9. production of alstromerias in the ground and under shelter using energy-saving methods.</p> <p>10. production of little-known species of green cuttings under shelter.</p> <p>11. cultivation of selected ornamental shrubs whose stems are used for cut flowers.</p> <p>12. controlled cultivation of the aster type under shelter for cut flowers.</p> <p>13. use of indoor cut-flower cultivation methods using an artificial light source.</p> <p>14. technology of cultivation of ornamental shrubs which are shoots of cut flowers.</p> <p>15. whether it is possible to cultivate native species of perennials and shrubs growing in Poland for cut flowers</p>	lecture
2.	<p>1. going to a farm producing trees, shrubs and used in the production of cut flowers. - 7 hours Warmth Farm</p> <p>2. production of perennials for cut flowers - trip to the ŚWIERK nursery. - 6 hours.</p> <p>3. modern technology of bulbous plants production - a trip to the Nowackich Farm in Kalisz - 6 hours.</p> <p>4. modern cultivation of roses and anthurium - a trip to the Bird Farm - 6 hours.</p> <p>5th Classes on the commodity exchange - getting acquainted with the range of produced flowers - 2 hours.</p> <p>6. development and presentation of a project of production of modern ornamental plants for cut flowers - 4 hours.</p>	project classes

Course advanced

Teaching methods:

case analysis, text analysis, brainstorming, educational film, problem-solving method, project-based learning (PBL),

situation-based learning, presentation / demonstration, teamwork, discussion, lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	30.00%
project classes	oral credit, project, observation of student's work, active participation, participation in discussion, case study	70.00%



UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Arrangement of community gardens Educational subject description sheet

Basic information

Field of study horticulture	Education cycle 2021/22
Speciality -	Subject code WPTPHOS.MI8BO.5e5e1df8cc0ab.21
Department The Faculty of Life Sciences and Technology	Lecture languages English
Study level Second-cycle (engineer) programme	Mandatory optional
Study form Full-time	Block Przedmioty kierunkowe prowadzone w językach obcych
Education profile General academic	Subject related to scientific research No
	Subject shaping practical skills Yes

Period Semester 4	Examination credit	Number of ECTS points 3.0
	Activities and hours lecture: 20, project classes: 15	

Goals

C1	Climatic and soil characteristic of basic and less known species. Choice of species to the agritourism farm, a small garden in the area of the 'City Family Gardens', and home garden. Cultivar description of the horticultural plants with the special focus using of the heirloom and ornamental ones the only in the small garden production. Choice of rootstock for the fruit trees. Rules of the project of the small garden production, spacing for plant and agrotechnical methods on the small area cultivation.
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Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			

W1	The student has an knowledge about climatically requirements of the horticulture plants and the rules of their cultivation. The student is able to make a choice of the recommended species and varieties to the small garden production and agrotechnical methods of these production. The student has a knowledge about historical aspects of home gardening arrangement.	OG_P7S_WG03, OG_P7S_WG07	project, observation of student's work, active participation
Skills - Student can:			
U1	The student creates a projects with the special focus on the selected species and cultivars suitable to the small garden production. Student creates a plan of the plant spacing in the in the agritourism small home farm, the garden in the area of the 'City Family Gardens' and home garden. The student is able to make a agrotechnical work set connected with seedling, weeding and protecting of the plants in the small garden production	OG_P7S_UW01, OG_P7S_UW02, OG_P7S_UW04	project, active participation
Social competences - Student is ready to:			
K1	The student understands a meaning of the small garden production in order to improve human health and life. Student appreciates roles and owing of the small garden as a source of the products and as a green area - the place of the meeting and rest.	OG_P7S_KK02, OG_P7S_KO04, OG_P7S_KR07	observation of student's work

Balance of ECTS points

Activity form	Activity hours*	
lecture	20	
project classes	15	
project preparation	20	
collecting and studying literature	20	
Student workload	Hours 75	ECTS 3.0
Workload involving teacher	Hours 35	ECTS 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
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1.	<p>1.-2. The rules for the use of horticultural plants in allotments and home gardens - outdoor lecture in the 'City Family Gardens'.2h</p> <p>3. The importance of edible horticultural plants in human life and culture. The origin of usable horticultural plants. 1h</p> <p>4. Growing vegetables and fruits in antiquity 1h</p> <p>5-6. The development of gardening in Poland in the Middle Ages. Patios, monastic, castle, rural gardens, patterns of gardens. 2h</p> <p>7-8. Growing vegetables and fruit in the Renaissance and Baroque era. Patterns of assumptions of vegetable and fruit gardens from Ludwik XIV. 2h</p> <p>9-10. Palace assumptions in Poland, rural assumptions, selection of edible plant species. 2h</p> <p>11-12. Gardening of the 19th century, history of suburban greenhouse gardening. 2h</p> <p>13-14. Urban cultivation of vegetables and fruit in times of the World War I and II. 2h</p> <p>15-16. Development of garden gardens' movement in Poland and in the world. 2h</p> <p>17-20. Urban and rural gardening in the twentieth and twenty-first century. 4h</p>	lecture
2.	<p>1-3. Usability of separate species, cultivars and technologies of the horticultural plant cultivations to the small garden production with special focus on the less known and ornamental species. Design rules of the horticultural production in the small garden. 3h</p> <p>4-6. Project of the garden at the agritourism home farm. 3h.</p> <p>7-9. Cultivation technology projects of the plant in the garden at the agritour. home farm. 3h.</p> <p>10-11. Project of the garden in the area of the 'City Family Gardens' or home garden.3h.</p> <p>12-15. Cultivation technology projects of the plants in the garden of the area of the 'City Family Gardens' or home garden. 3h.</p>	project classes

Course advanced

Teaching methods:

presentation / demonstration, discussion, lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	observation of student's work, active participation	20.00%
project classes	project, observation of student's work	80.00%

Entry requirements

Fruit growing, vegetable production, ornamental plants production