COURSE CATALOG

Winter Semester 2024

within the project DILLUGIS
(Digital Labs & Lectures for Ukrainian, German & International Students)

Implemented with the support of the GERMAN ACADEMIC
EXCHANGE SERVICE DAAD as part of the «Ukraine digital:
Ensuring academic success in times of crisis» initiative

About the project

The DILLUGIS (Digital Labs & Lectures for Ukrainian, German & International Students) project provides for the inclusion of students and lecturers of the NU «Zaporizhzhya Polytechnic», NTUU «Ihor Sikorsky Kyiv Polytechnic Institute», Odessa State Agrarian University, Kyiv National University of Construction and Architecture and Volodymyr Vynnychenko Central Ukrainian State University in the digital training in the courses of the East Bavarian University Amberg-Weiden Digital Technology and Management program. Also, professors will work together to develop new digital courses and digital labs for students.

Also the project provides for the holding of two powerful events «Ukrainian-German Teaching Week» and «Workshop for lecturers: using digital technologies in educational process» with the possibility of lectures and students participation either in face-to-face or in online format

The project is implemented with the support of the German academic exchange service DAAD as part of the «Ukraine digital: Ensuring academic success in times of crisis» initiative.

Інформація про проєкт

Проєкт DILLUGIS (Digital Labs & Lectures for Ukrainian, German & International Students) передбачає залучення студентів та викладачів НУ «Запорізька політехніка», НТУУ «Київський політехнічний інститут імені Ігоря Сікорського», Одеського державного аграрного університету, Київського національного університету будівництва та архітектури і Центральноукраїнського державного університету імені Володимира Винниченка до цифрового навчання за окремими курсами освітньої програми «Цифрові технології і менеджмент» Східно-Баварського університету Амберг-Вайден. Спільними зусиллями викладачі працюватимуть над розробкою нових цифрових лабораторних робіт для студентів.

Також проект передбачає проведення двох потужних заходів «Українсько-німецький навчальний тиждень» та «Майстерня для викладачів: використання цифрових технологій у навчальному процесі» з можливістю читання лекцій та участі студентів як в очному, так і в онлайн-форматі.

Проєкт реалізується за підтримки німецької служби академічних обмінів DAAD в рамках ініціативи «Ukraine digital: Ensuring academic success in times of crisis».

Why this is important for Ukrainian students

- involvement in the international educational environment through online courses of the Digital Technology and Management program in East Bavarian University Amberg-Weiden (https://www.oth-aw.de/en/)

- the possibility of obtaining modern knowledge, skills and competences, that meet the requirements of the European labor market, from specialists of German technological companies (Siemens, OnraSens) and professors of a German university, whose courses have a significant practical orientation

- access to the digital educational materials and participation in digital labs and practical works

- getting the experience of participation in the academic mobility program and implementation of the international project DILLUGIS (Digital Labs & Lectures for Ukrainian, German & International Students) with the support of the German academic exchange service DAAD

- improvement of English language knowledge

- participation in multicultural educational process

- receiving a certificate from the East Bavarian University Amberg-Weiden (in case of successful completion of the course)

- the possibility of re-enrollment in Ukrainian university of the studied discipline (course) in accordance with the Regulation on academic mobility

- acquisition of knowledge and skills that go beyond the traditional educational program in frames of non-formal education

- familiarization with the educational environment of East Bavarian University Amberg-Weiden for the future continuation of studies within the framework of international academic mobility and internationalization of education.

Чому це важливо для українських студентів

- долучення до міжнародного освітнього середовища шляхом онлайн-навчання за курсами програми «Цифрові технології і менеджмент» потужного німецького університету Східно-Баварського університету Амберг-Вайден (https://www.oth-aw.de/en/)

- можливість одержання сучасних знань, навичок і компетенцій, що відповідають вимогам європейського ринку праці, від фахівців німецьких технологічних компаній (Siemens, OnraSens) та професорів німецького університету, чиї курси мають суттєву практичну спрямованість

- користування цифровим навчальним матеріалами та участь у цифрових лабораторних і практичних роботах

- досвід участі у програмі академічної мобільності та реалізації міжнародного проєкту DILLUGIS (Digital Labs & Lectures for Ukrainian, German & International Students) за підтримки Німецької служби академічного обміну DAAD

- досвід навчання в середовищі міжнародних студентів

- вдосконалення знання англійської мови професійного спрямування

- одержання сертифікату Східно-Баварського університету Амберг-Вайден (у разі успішного проходження курсу, із зазначенням модулів, змісту та тривалості курсу, отриманих компетенцій и навичок)

- можливість перезарахування в українському університеті вивченої навчальної дисципліни (курсу) відповідно до Положення про академічну мобільність

- здобуття знань та навичок, які виходять за межі традиційної освітньої програми в рамках неформальної освіти

- ознайомлення з освітнім середовищем Східно-Баварського університету Амберг-Вайден для продовження в перспективі навчання в межах міжнародної академічної мобільності та інтернаціоналізації освіти.

About Digital Technology and Management program

Digitalization, connectivity, big data and AI, but also globalization have revolutionized the way companies are run. These megatrends impact not only the product and service offerings of companies. They are also fundamentally changing how companies develop, procure, produce and market, and how they earn money as a result.

To master this transformation, we need graduates

- who think and act in an interdisciplinary, cross-functional and interfacing way;
- who have a deep understanding of digital technologies as well as management know-how;
- who posses language skills and intercultural competencies;
- who are creative and at the same time strong in implementation;
- who are able to familiarize themselves with ever new topics while still keeping an eye on the old.

These are exactly the competencies you will acquire in the Digital Technology and Management program!

Про програму «Цифрові технології і менеджмент»

Цифровізація, комунікації, BigData та штучний інтелект, а також глобалізація кардинально змінили спосіб управління компаніями. Ці мегатренди впливають не лише на пропозиції компаніями товарів і послуг. Вони також докорінно змінюють те, як компанії розробляють, закуповують, виробляють і продають, і як в результаті вони заробляють гроші.

Щоб освоїти цю трансформацію, потрібні випускники:

- які мислять і діють у міждисциплінарний, міжфункціональний та взаємодіючий спосіб;
- які мають глибоке розуміння цифрових технологій, а також управлінські ноу-хау;
- які володіють мовними та міжкультурними навичками;
- які є креативними і водночас сильними у реалізації;
- які можуть знайомитися з постійно новими темами, в той же час володіючи старими.

Саме такі компетенції студенти отримають на програмі «Цифрові технології та менеджмент» Східно-Баварського університету Амберг-Вайден!

Disciplines/courses (volume of each course – 5 credits ECTS)
Дисципліни/курси (обсяг кожного курсу – 5 кредитів ECTS):

Business Model Innovation (Інновації в бізнес моделях)

Marketing and Sales (Маркетинг і продажі)

Object-oriented Coding (Об'єктно-орієнтоване програмування)

Project Management and Agile Methods (Управління проєктами та Agile методи)

Sensors for Smart Systems (Сенсори для смарт-систем)

The important organizational points

1. The training will take place in an online format according to the courses of the «Digital Technology and Management» program of the East Bavarian University Amberg-Weiden.
2. The language of education and communication is English.
3. During the entire period of study, support from Ukrainian-speaking professors is provided.
4. The start of online classes - October 1, 2024, the end of classes and final assessment - the end of December 2023.
5. Mandatory participation in at least 80% of online classes.
6. The number of students participating in the project is limited, so registration is on the principle of «first come, first served», on the condition of successful selection.

Важливі організаційні моменти

1. Навчання відбуватиметься в онлайн форматі за курсами навчальної програми «Цифрові технології і менеджмент» Східно-Баварського університету Амберг-Вайден.
2. Мова навчання та комунікації - англійська.
3. Протягом всього періоду навчання передбачена підтримка з боку україномовних професорів.
4. Початок он-лайн занять - 1 жовтня 2024 року, закінчення занять і підсумкове оцінювання – кінець грудня 2024 року.
5. Обов'язкова участь у не менше, ніж 80% он-лайн занять.
6. Кількість студентів, що беруть участь у проєкті, обмежена, тому зарахування, за умов успішного відбору, відбувається за принципом «той, хто перший прийшов».

How to participate in the academic mobility program DILLUGIS project (Digital Labs & Lectures for Ukrainian, German & International Students)

Як взяти участь у програмі академічної мобільності за проєктом DILLUGIS (Digital Labs & Lectures for Ukrainian, German & International Students)

1. Carefully read the information about the project and decide whether you need it.

2. Choose the courses/disciplines that you are interested in among those that will be studied online at the East Bavarian University Amberg-Weiden, after thoroughly familiarizing yourself with their structure, competencies and skills.

3. Fill out the application form with brief information about yourself, chosen courses and explaining of the importance of participating in the project (2-3 sentences).

4. Have a short interview with the project coordinators.

5. Receive a confirmation letter about enrollment in courses.

6. Take part in the organizational meeting and receive the class schedule.

7. Take part in online lectures and digital practical activities.

8. Pass the final assessment and receive a certificate.

1. Уважно прочитати інформацію про проєкт та прийняти рішення, чи потрібно тобі це.

2. Обрати цікаві для тебе курси/дисципліни, які будуть вивчатися он-лайн в Східно-Баварському університеті Амберг-Вайден, після ретельного ознайомлення з їх структурою, компетенціями та навичками.

3. Заповнити аплікаційну форму з короткою інформацією про себе, обрані курси та обґрунтуванням важливості участі у проєкті (2-3 речення).

4. Пройти невелику співбесіду з координаторами проєкту.

5. Отримати лист-підтвердження про зарахування на курси.

6. Прийняти участь в організаційному зібранні та отримати розклад занять.

7. Взяти участь в он-лайн лекціях та цифрових практичних зайняттях.

8. Пройти підсумкове оцінювання та отримати сертифікат.

	Business Model Innovation		**The multicultural project-orientated course with the participation of students and lectures team from Germany, Finland and Belgium**

Professor / Lecturer	Course Content
Prof. Dr. Julia Heigl and international team of lecturers from Haaga-Helia University of Applied Sciences, Helsinki/Finland and Thomas More Hogeschool, Geel/Belgium	As part of the module, students work in an international project in teams with students from other universities on a current, real-life practical issue in which a new business model is to be developed.

Teaching Methods	Number of Credits (ECTS)	Workload
Seminar-based teaching, guided self-study, online lectures	5	Classroom attendance: 50 h Self-study/review: 25 h Project work: 75 h Total effort: 150 h

Learning Outcomes

After successful completion of the module, students possess the following professional, methodological and personal competencies:

Expertise:

- Students analyze current and expected environment, industry and company specifics, especially with regard to the effects of digitalization (and other megatrends).
- Students analyze customer needs and develop new value propositions.
- Students analyze, develop and evaluate business models, including revenue model and necessary architecture (resources, activities, partnerships).

Methodological competence:

- The students apply common methods of business model development, requirements and needs analysis as well as innovation approaches for the further development of the business model in a concrete (practical) project. They use personas, business model canvas and other templates, among others.
- Students recognize intercultural and interdisciplinary challenges in teamwork and adapt their working methods accordingly.
- Students use digital collaboration and communication tools.

Personal competence (social competence and self-competence):

- Students will be able to cooperatively plan and execute a team project on time, working effectively and thoughtfully, especially in a heterogeneous, interdisciplinary, and international team, and if necessary, leading the team.
- Students will be able to communicate results effectively and express complex information concisely and comprehensively in both written and oral proficiently.

The task is processed in defined sub-steps, which are supported by teaching units on the following topics:

- Working with the Business Model Canvas: analysis, development and evaluation of an own business model
- Impact of digitalization and other megatrends on business models and organizations
- Basics of the Design Thinking process
- Understanding user groups and their needs, requirements and problems
- Brainstorming and creativity techniques
- Evaluating market potential and revenue model
- Business models in practice

Method of Assessment

Form of Examination	Type/Scope incl. Weighting	Learning Objectives/Competencies to be Assessed
Project work	Project work (written + oral) in groups of approx. 6 students each (2 from OTH, 4 from Finland and/or Belgium) on a business question presented at the beginning of the semester in several phases, which are presented at the project kickoff and are to be worked on successively. Each student has to contribute individually to the common task. The overall results are to be submitted in the group in the form of a pitch video (English) as well as in the form of a written elaboration (approx. 15 pages per OTH group of 2, language English or German), weighting 50/50.	Almost all of the above-mentioned competencies are tested via the project work.

Marketing and Sales

The practically orientated course with the modern software appliance from a German professor, a participant of many international projects and an expert in marketing and international communications

Professor / Lecturer	Course Content
Prof. Dr. Julia Heigl	Special features of marketing in B2B (e.g. decision-making process, investment/life cycle approach). Market and customer planning: procedure, methods and instruments. Strategies in B2B marketing and value proposition design. Product (group) management, importance of services, opportunities through digitalization in product and service policy. Price management. Traditional vs. digital communication measures. Marketing controlling. Fundamentals and core process of sales management. Acquiring new customers and initiating business. Buying center analyses and management. Checking inquiries and preparing offers. Value selling. Fundamentals of sales talks and negotiations. Customer relationship management, customer retention and loyalty measures.

Teaching Methods	Number of Credits (ECTS)	Workload
Lecture, seminar with exercises, guest lecture, project work, practical applications using software	5	Contact time: 60 h Self-study: 90 h Total workload: 150 h

Learning Outcomes

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Professional skills:

- Students know the principles, basic analytical methods, main strategies and instruments of B2B marketing. In particular, they can describe the essential elements of marketing planning in B2B business as well as the importance of segmentation and customer prioritization, describe possible marketing strategies and starting points for defining value propositions, describe possible instruments for their operational implementation (product/service, price, communication) and know basic KPIs of marketing controlling.
- Students describe the operational sales process and know suitable instruments and methods for identifying targets and winning and developing customers.
- They reflect in a differentiated manner on the effects of digitalization on marketing and sales with regard to opportunities and risks.

Methodological skills:

- Students apply typical instruments of customer, market and competition analysis in simple case studies.
- Based on their analysis, they develop suitable marketing strategies, value propositions and sales concepts.
- They select suitable instruments of the marketing mix and apply these to case studies.
- They know key market, marketing and sales figures and apply these in case studies and data sets.
- They use phase-specific sales planning and sales tools.

Personal skills:

- Practical skills in sales presentation, relationship building, and effective negotiation strategies
- A grasp of ethical considerations in marketing and sales, with the ability to identify and navigate ethical dilemmas.
- Improved communication skills, both written and verbal, essential for effective marketing and sales interactions.

Method of Assessment (if applicable, notes on multiple choice as form of examination - APO §9a)		
Form of Examination	**Type/Scope incl. Weighting**	**Learning Objectives/Competencies to be Assessed**
Written Exam (90 minutes)	Written exam, duration 90 minutes (100 points)	If the module examination is not passed, the bonus earned is forfeited. It is not possible to transfer bonus points to repeat examinations.

Object-oriented Coding

A unique course from a German professor on the basics of programming

Professor / Lecturer	Course Content
Prof. Dr.-Ing. Manfred Beham	This course provides an introduction to object-oriented programming, including an overview of the language syntax and how to develop simple applications. Students will learn how to write custom classes and methods, and how to test their code using unit testing and test-driven development. Topics include basic data structures like Arrays and Lists and concepts of inheritance or overloading methods.

Teaching Methods	Number of Credits (ECTS)	Workload
Lecture; instruction seminars; practical exercise	5	Contact time: 60 h Self-study: 60 h Exam preparation: 30 h Total effort: 150 h

Learning Outcomes

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Professional Skills:

- Identify core aspects of object-oriented programming and features of an object-oriented language.
- Use a development environment for writing and running your code.
- Develop and implement programs that apply core object-oriented programming concepts like classes, polymorphism, and method overloading.
- Use built in data-structures (collections) and functions.
- Convert a given algorithm into a procedural program.

Methodological Skills:

- You are able to analyse and design an application using OO methods
- You can use step-by-step refinement to break down a problem into sub-problems (modularisation)

Personal Skills (Social Competence and Self-competence):

- You are also able to present solutions that have been created, to discuss their quality and alternatives and to reflect on their problem-solving strategy in a technical and methodical manner.

Method of Assessment

Form of Examination	Type/Scope incl. Weighting	Learning Objectives/Competencies to be Assessed
Module Work (ModA)	Project Work: An application for a given task must be developed, documented and presented. Written: Code and documentation (70 %) Orally: Presentation (30 %)	With this practical work, all of the above-mentioned competencies are tested.

Project Management and Agile Methods

The course was run at universities of Germany and France with the use of the modern software for project work

Professor / Lecturer	Course Content
Prof. Dr.Kris Dalm	Function, types, contents and processes of conventional project management.
	Content and use of basic project documents such as project proposal, project order, work-breakdown-structure and Gantt-chart.
	Process and resource planning in projects.
	Use of an IT-tool with exercises for project planning and control.
	Communication, teamwork, self-reflection and versatility in projects.
	Introduction and practice of agile project management methods.

Teaching Methods	Number of Credits (ECTS)	Workload
Lecture; instruction seminars; case studies; field trip; practical exercise	5	Contact time/coaching: 60 h Self-study: 90 h Total workload: 150 h

Learning Outcomes

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- **Professional and Methodological Skills:**
  - The students know the basic methods and tools of project management.
  - They are able to select the appropriate ones for a given context.
  - They can apply these methods and tools flexibly to projects.
  - They are able to manage their own projects responsibly.
  - They are prepared to deal with the dynamics of a real project.

- **Personal Skills (Social Competence and Self-competence):**
  - The students approach their own projects in an open and structured way.
  - They are able to work and communicate cooperatively as a team to manage a project together.
  - They have the ability to independently expand and deepen the acquired knowledge and competences.

Method of Assessment

Form of Examination	Type/Scope incl. Weighting	Learning Objectives/Competencies to be Assessed
Module work (ModA)		The form of examination covers the above mentioned professional and methodological skills.

Sensors for Smart Systems

The course from an experienced professional of ONRASens company with own know-hows in sensor solutions

Professor / Lecturer	Course Content
Arno Erzberger Dipl.-Ing. mechanical engineering (T.H.) and over 20 years in sensor technology. As a mechanical engineer specializing in measurement and control technology and vibration theory, he combine in-depth knowledge of sensor technology with practical mechanical implementation in mechanical engineering.	This module provides students with a comprehensive overview of the broad field of sensors for smart systems in the lecture, covering functional principles, signal processing, interfaces and applications. The various sensors are presented systematically. Basic concepts for sensing requirements and performance are presented, and costs and prices for sensor deployment are evaluated. In addition to the technical/ physical understanding and resulting costs, the ability to communicate professionally with both sensor/system developers and sensor suppliers is provided. A detailed practical example with live-demonstration of a technical/commercial sensor design is developed, evaluated and alternative solutions are considered. Solutions for various sensor tasks are worked out and presented by individual student groups.

Teaching Methods	Number of Credits (ECTS)	Workload
Lecture; case studies; practical exercise; demonstration	5	Contact time: 60 h Self-study: 60 h Exam preparation: 30 h Total effort: 150 h

Learning Outcomes

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Professional skills and competencies:

- know structure and basic elements of sensors
- know physical sensor principles
- know physical signal transmission
- evaluate performance and accuracy of sensors
- evaluate sensor specifications
- know costs and prices of sensor solutions
- know sensor system interfaces (electrical and mechanical)
- evaluate sensor system integration
- know and evaluate disturbances variables and the related system impact.

Methodological skills and competencies:

- decide if a sensor is necessary in the system or not
- decide what kind of sensors are necessary in the system
- cost-benefit consideration in sensor selection and design
- question and evaluate sensor specifications, requirements and performance

Personal skills and competencies:

systematically and competently communicating commercial and technical sensor requirements with product developers and sensor suppliers.

Method of Assessment

Form of Examination	Type/Scope incl. Weighting	Learning Objectives/Competencies to be Assessed
Written Exam (Kl90)	Written Exam, 90 minutes Information about multiple-choice questions and a possible bonus system will be provided starting in the semester the module is taught for the first time	With the exam and a possible bonus exercise, all of the above-mentioned competencies are tested.