OTH Amberg-Weiden

Course Catalogue

TANDEM-UA-DE

Teaching and Administration Network for Double Degree Education and Mobility – Ukraine and Germany

Winter Semester 2025/2026

Digital Technology and Management

Department of Industrial Engineering and Healthcare

TANDEM ua-de

The project is implemented with the support of the DAAD as part of the 'German-Ukrainian University Network' programme funded by the Federal Ministry of Research, Technology and Space (BMFTR)

About

The TANDEM-UA-DE (Teaching and Administration Network for Double Degree Education and Mobility – Ukraine and Germany) creates a transformative partnership between Ostbayerische Technische Hochschule Amberg-Weiden and six Ukrainian universities for lasting, impactful cooperation in the preparation of specialists in digital technology and management.

Ukrainian partner universities: National University "Zaporizhzhia Polytechnic", National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Odesa State Agrarian University, Kyiv National University of Construction and Architecture, Volodymyr Vynnychenko Central Ukrainian State University, Lutsk National Technical University.

The project aims to establish a double-degree program in Digital Technologies and Management (DTM) and develop joint teaching modules that enhance collaboration between students and faculty from Germany and Ukraine.

More information: https://www.oth-aw.de/studium/studienangebote/studiengaenge/bachelor/studium/studienangebote/studiengaenge/bachelor/digital-technology-management/tandem-ua-de-project/

Table of contents

English for Academic Purposes

Classification	Module ID	Kind of Module	Number of Credits (ECTS)
	5.1	Mandatory	5

Location	Language	Duration of Module	Frequency of Module	Max. Number of Participants
Weiden	English	One Semester	Annually in Winter Semester	60

Module Convenor	Professor / Lecturer
Dr. Lisa Mora	PhD. Natalia Zhukova PhD. Angelika Yanovets

Prerequisites*

None
***Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.**

Usability	Teaching Methods	Workload
This module is part of the module group Language and Soft Skills in the Digital Technology Management bachelor program. Compatibility with other programs of the university is to be examined individually.	Seminar with exercises (role-play exercises, partner work, group work)	Contact time: 60 h Self-study: 90 h Total workload: 150 h

Learning Outcomes
Learning Outcomes

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

- Students learn selected vocabulary and concepts and acquire skills (listening, reading, writing, speaking) used in academic settings.

Personal Skills (Social Competence and Self-competence):

- Students acquire the necessary skills to work cooperatively in teams and present group-related results in presentations, role plays and dialogues.

Course Content

Research and organization
Selecting and prioritizing
Preparing for lectures
Predicting content, group work, referencing
Reading in detail, taking notes, writing preparation, reporting
Using preparation strategies, listening for topic change organizing questions
Recognizing plagiarism, summarizing, paraphrasing
Organizing information for an essay, skimming and scanning texts, writing essay conclusions
Reading critically, inferring meaning, using academic styles
Understanding a writer's opinion, identifying main ideas, describing information in figures
Reading for evidence, expressing an opinion or theory
Overcoming problems during lectures, understanding specialized terms, understanding backward and forward reference

Teaching Material / Reading

Hewings, M., Cambridge Academic English: An integrated skills course for EAP, Cambridge University Press (2012)
Note: Other material may be used in this course as seen appropriate by the instructor.

Internationality (content-related)

English literature, international case studies and examples, international/English video, audio and guest lectures. Students also interact with other (international) students as required in course.

Method of Assessment (if applicable, notes on multiple choice as form of examination - APO §9a)

Form of Examination*1)	Type/Scope incl. Weighting *2)	Learning Objectives/Competencies to be Assessed
ModA	Portfolio examination Consisting of oral/written exams during the semester and one final test. • Oral /Written exams 0.50 2 oral/written grades completed during the semester • Written test 0.50 final test lasting 90 minutes Both the final test and the orals need to be passed.	The entire learning contents and competence profiles are assessed by way of the aforementioned examination forms.

*1) Please refer to the applicable overview of the forms of examination at the OTH Amberg-Weiden
*2) Please provide additional information on the weighting (in % share) and, if applicable, explain the bonus system.

Fundamentals of Business Administration

Classification	Module ID	Kind of Module	Number of Credits (ECTS)
	3.1	Mandatory	5

Location	Language	Duration of Module	Frequency of Module	Max. Number of Participants
	English	One Semester	Winter Semester	60

Module Convenor	Professor / Lecturer
Assoc. prof. PhD. Kateryna Kopishynska	Assoc. prof. PhD. Kateryna Kopishynska Assoc. prof. PhD. Maksym Voichuk

Prerequisites*

None

* **Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.**

Usability	Teaching Methods	Workload
The module is part of the module group *Management* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Lecture; instruction seminars; practical exercise	Contact time: 60 h Self-study: 60 h Exam preparation: 30 h Total effort: 150 h

Learning Outcomes

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:

- Demonstrate knowledge and understanding of basic concepts and principles of business, influence of internal and external environment on business performance, the role of management and administration.
- Know and use methods and functions of management.
- Describe the content of the functional areas of the organisation.
- Analyse the functioning of business entities.
- Apply selected methods of analysis and decision-making in practical case studies.

Personal Skills:

- Students will be able to work and communicate cooperatively as a team in the process of joint work on solving specific tasks of practical cases.
- Students will be able to justify management decisions.

Course Content

The course "Fundamentals of Business Administration" provides an overview of the key principles of Business Administration from a managerial standpoint:

- Introduction: key concepts, objectives and principles of business
- Business environment, social and ethical responsibility
- Management and administration of business
- Organizational structure
- People management and corporate culture
- Marketing in business
- Innovation & ICT in business
- Change management & risks

Teaching Material / Reading

Detailed bibliographical information will be provided in the respective semester script

Internationality (content-related)

The content of the course can be used in an international context

Method of Assessment (if applicable, notes on multiple choice as form of examination - APO §9a)

Form of Examination*1)	Type/Scope incl. Weighting *2)	Learning Objectives/Competencies to be Assessed
Written Exam (Kl90)	Written Exam, 90 minutes Details will be explained in the first lecture	With the exam, all of the above-mentioned competencies are tested.

*1) Please refer to the applicable overview of the forms of examination at the OTH Amberg-Weiden

*2) Please provide additional information on the weighting (in % share) and, if applicable, explain the bonus system.

IoT Technology

Classification	Module ID	Kind of Module	Number of Credits (ECTS)
	2.1	Mandatory	5

Location	Language	Duration of Module	Frequency of Module	Max. Number of Participants
Zaporizhzhzia	English	One Semester	Winter Semester	40

Module Convenor	Professor / Lecturer
Associate Prof. Anzhelika Parkhomenko	Associate Prof. Anzhelika Parkhomenko Associate Prof. Olga Gladkova

Prerequisites*

None

* **Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.**

Usability	Teaching Methods	Workload
The module is part of the module group *Digital Technology* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Lecture, practical exercise, group discussion, digital and real labs	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:

- Students can map out IoT system and explain its components (hardware, software, cloud).
- Students can create a basic design applicable to IoT sensors, actuators and embedded controllers.
- Students can develop software for IoT application and interface for it.
- Students recognize cloud environments for storing and visualizing data and can use them.

Methodological Skills:

- Students can brainstorm IoT ideas within specific areas of expertise.
- Students can compare and select components and tools s for developing IoT applications.

Personal Skills (Social Competence and Self-competence):

- Students can present the IoT applications they have created, discuss their quality and alternatives, and analyze their problem-solving strategy from a technical and methodological point of view.

Course Content

This course provides an introduction to the Internet of Things (IoT) technology and explains why Embedded Systems (ESs) are the basis of IoT infrastructure. Students will gain the vocabulary needed to navigate the complex landscape of IoT technology and learn how, when and where it can create value and improve business performance. The basics of creating a design solution for IoT will be considered: the IoT network architecture; software and hardware components; IoT services and cloud platforms. Main topics of lectures include: Introduction to IoT technology; Embedded systems as the basis of IoT infrastructure; Engineering of IoT applications; Cloud and wireless technologies for running IoT applications. Lab works are aimed at creating IoT application using online simulators and cloud platforms.

Teaching Material / Reading

1. Krogh, E. An Introduction to the Internet of Things, 2020.
2. Kernighan, Ritchie. C Programming Language, 2nd Edition. 2021.
3. Lakhwani. Internet of Things (IoT): Principles, Paradigms and Applications of IoT. 2020.

Internationality (content-related)

The course content is internationally and universally relevant and applicable.

Method of Assessment (if applicable, notes on multiple choice as form of examination - APO §9a)

Form of Examination*1)	Type/Scope incl. Weighting *2)	Learning Objectives/ Competencies to be Assessed
Written Exam (Kl90)	Written Exam, 90 minutes. *Information about possible bonus system will be provided via Moodle and explained in the first lecture.*	With the exam, all of the above mentioned competencies are tested.

*1) Please refer to the applicable overview of the forms of examination at the OTH Amberg-Weiden

*2) Please provide additional information on the weighting (in % share) and, if applicable, explain the bonus system.

Mathematics

Classification	Module ID	Kind of Module	Number of Credits (ECTS)
	1.1	Mandatory	5

Location	Language	Duration of Module	Frequency of Module	Max. Number of Participants
	English	One Semester	Winter Semester	60

Module Convenor	Professor / Lecturer
Prof. Dr. Olena Mikulich	Prof. Dr. Olena Mikulich Ph. D. Iryna Lazarenko

Prerequisites*

None

* **Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.**

Usability	Teaching Methods	Workload
The module is part of the module group Fundamentals of Mathematics, Informatics and Scientific Methods of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each case.	Online course: IEM - Introduction to Engineering Mathematics	Contact time: 60 h Self-study: 60 h Exam preparation = 30 h = 150 h

Learning Outcomes
Learning Outcomes

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

- **Professional Skills:**
  - Students will understand and effectively apply essential mathematical tools used by industrial engineers. They'll be able to analyze and solve mathematical problems within the topics covered in the course content, at a level consistent with relevant university literature.
- **Methodological Skills:**
  - Students will comprehend mathematical models of technical and economic challenges and can translate simple technical or economic problems into mathematical ones.
- **Personal Skills (Social Competence and Self-competence):**
  - Students will gain the ability to acquire further mathematical knowledge and skills independently**.**

Course Content

The contents of this course are central to first-year students in physics, chemistry, biology, computer science, and all engineering sciences. It contains the following chapters
- Geometry: Straight Lines. Quadratic Equations.
- Algebra: Complex numbers. Vectors. Matrices. Systems of equations.
- Function Analysis: One-variable functions (Sequences and limits. Derivatives. Integrals. Series). Multivariate functions (Derivatives. Integrals)
- Differential equations (Ordinary differential equations. Modelling. Laplace Transform)

Teaching Material / Reading

Available via Moodle

Internationality (content-related)

The course content is universally applicable.

Method of Assessment (if applicable, notes on multiple choice as form of examination - APO §9a)

Form of Examination*1)	Type/Scope incl. Weighting *2)	Learning Objectives/Competencies to be Assessed
Kl (written exam)	90 minutes Bonus points can be earned by submitting additional exercises. These can amount to a maximum of 20% of the total number of points in the exam.	The exam covers the professional and methodological skills mentioned above.

Principles of Accounting and Finance

Classification	Module ID	Kind of Module		Number of Credits (ECTS)
	3.2	Mandatory		5
Location	**Language**	**Duration of Module**	**Frequency of Module**	**Max. Number of Participants**
Weiden	English	One Semester	Winter Semester, start in 2025/26	60
Module Convenor			**Professor / Lecturer**	
Prof. Doc. Econ. Viktor Zamlynskyi			Doc. in Economics, Professor – Viktor Zamlynskyi Doc. in Economics, Professor – Nadia Shmygol	

Prerequisites*

None

* **Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.**

Usability	Teaching Methods	Workload
This module is part of the module group Management in the Digital Technology and Management bachelor program. The usability in other courses of study must be checked in each individual case.	Lecture; seminars; practical exercise	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 and Methodological Skills:

- have a general idea of the essence of accounting and analytical information in enterprise management, organizational communications in the management system, requirements for accounting and analytical information, the relevance of accounting information and its impact on making management decisions
- know the importance of accounting as a way of reflecting economic phenomena and processes, the tasks and functions of accounting in enterprise management, elements and functions of management and cost accounting.
- the basics of financial and management accounting, basic principles, double entry, preparation of financial statements, the interrelationship of micro- and macroeconomics, law, statistics and accounting in order to understand the economic environment in which companies operate
- describe the main tools of management and cost accounting, apply them to simple business cases and draw conclusions from the results.
- know the basics and acquire fundamental skills in preparing and analyzing annual financial statements and management reports.
- understand the basics of balance sheet analysis and be able to calculate relevant key indicators and analyze balance sheets at a low and medium level of complexity.
- o be able to systematically collect and evaluate relevant information on costs in order to subsequently apply it to determine cost norms or calculations (application and system competence).
- be able to identify problems in determining costs and calculations in practice using acquired instrumental knowledge and solve them at least with simple approaches (problem solving competence).
- know the basics of corporate finance, types and features of financial decisions and be able to describe them.
- explain the basics of investment decisions and selected methods of calculating investments.
- choose classical methods of calculating investments and corporate finance to solve practical business problems of low and medium complexity.
- analyze, interpret, structure and solve practical issues and tasks related to corporate finance and the assessment of investment projects.

Personal Skills (Social Competence and Self-competence):

- use the technical language of business administration in assignments, for later personal communication and discussion skills in financial and investment accounting topics.
- analyze, interpret and structure practical business issues related to corporate finance and the assessment of investment projects, working individually or in small teams.
- analyse, interpret and structure practical business issues relating to corporate finance and the assessment of investment projects working individually or in small teams.

Course Content

- Tasks and basic terms of external and internal accounting
- cost accounting
- managerial accounting
- Basic terminology of the financial industry, objectives and instruments, e.g. financial ratios, finance plan.
- Capital requirements and forms of capital; types of financing; financing rules; substitution of financing, credit security.
- Practice of financial planning; liquidity planning; basics of investment management; most important procedures of static and dynamic investment calculation; types of investment; investment planning; qualitative assessment of investments.

Teaching Material / Reading

Detailed bibliographical information will be provided in the respective semester script

Internationality (content-related)

The course content is internationally and universally relevant and applicable.

Method of Assessment (if applicable, notes on multiple choice as form of examination - APO §9a)

Form of Examination*1)	Type/Scope incl. Weighting *2)	Learning Objectives/Competencies to be Assessed
Written Exam	Written Exam, 90 minutes Information about multiple-choice	With the exam and a possible bonus exercise, all of the above- mentioned competencies are tested.

(Kl90)	questions and a possible bonus system will be provided via Moodle and explained in the first lecture.	

*1) Please refer to the applicable overview of the forms of examination at the OTH Amberg-Weiden

*2) Please provide additional information on the weighting (in % share) and, if applicable, explain the bonus system.