



# D4.4 Work-based Learning Component



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## **Project Partners**



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## 1. Executive Summary

### 1.1. Introduction

In the context of the ARISA project, this report aims at gathering the Work-based Learning (WBL) components that could be embedded into the new ARISA learning Programmes.

Work-based Learning (WBL) encompasses a range of activities from awareness to training, blending structured learning with real work experiences giving students the opportunity to do practical exercises that prepare them for real-life work challenges. Its main goal is to integrate knowledge and theory with practical work, enhancing professional development. As careers evolve, WBL equips students to engage in continuous learning both at work and in the classroom, fostering skill development throughout their careers. WBL is a crucial element of the curriculum.

Work-based learning is a powerful tool for effectively aligning learning programmes with the needs of the workplace, providing students with the opportunity to **integrate the acquisition of knowledge and skills with practical experience** in authentic work settings, together with the application of skills and knowledge within a framework that equips participants with the practical skills and capabilities essential for specific ARISA AI roles. **Cross-Institution and International Academic Cooperation** can develop joint curricula, learning modules, and WBL components that foster transnational learning experiences.

Under the ARISA project, WBL "components" refer to specific elements or pieces of the training courses being developed, particularly those related to the workplace where learners can apply academic and technical skills and develop their employability. These components balance theoretical knowledge with practical application, distinct from general practical exercises. They combine learning in an education and training setting, integrating practical skills and capabilities essential for ARISA AI roles.

D4.4 will provide insights, **transferable elements and recommendations** for the enhancement of the WBL components that will provide learners with the opportunity to gain knowledge in practical "real-life" training scenarios related to the ARISA AI Practitioners and Managerial roles.

### 1.2. Objectives

The objective of this report is to structure the input gathered in Task 4.4 Work-based Learning Component to collect examples and data on WBL designed by partners, with the aim of **identifying and collecting scalable and adaptable WBL elements** to enhance the relevance and efficacy of ARISA's training offerings.

This report will cover several key areas:

1. **Collection of WBL Examples:** Detailed accounts of WBL components from partner organisations, illustrating a diverse range of approaches and methodologies.
2. **Data analysis:** Examination of qualitative and quantitative data provided by ARISA partners using the WBL template and mapping tool (see chapter 3.1) to identify patterns and strengths in current WBL practice.
3. **Recommendations and transferable elements:** Exploring elements within relevant WBL components that can be adapted and integrated into ARISA's training programmes, ensuring that they are scalable and adaptable to different contexts, including transnational learning experiences and disciplines with a particular focus on the underlying principles and strategies that contributed to their effectiveness (see section 5 on Recommendations).

By detailing and examining the practices employed by ARISA partners in the development of WBL examples, this Report can offer Higher Education (HE) and Vocational Education and Training (VET) providers enhanced understanding and guidance on implementing WBL to achieve optimal learning

outcomes. From the recommendations and examples provided, interested parties can select and utilize the components that best suit their needs.

### 1.3. Methodological approach

To gather the perspectives of ARISA Consortium Partners, **two primary methods** were employed: (1) **the development of a WBL Template and Mapping Tool**, (2) the organisation of **WBL Dedicated Meetings** with Consortium and piloting partners.

ARISA WBL components were designed to effectively achieve the Programme Learning Outcomes (PLOs) identified in D4.1 Collection of Learning Outcomes.

To gain detailed insights into the use of WBL components that VET providers and HE could embed into the training programmes, the WBL template tool has been developed by ADECCO and validated by partners through dedicated meetings. Each partner described their most significant and effective WBL examples using these tools. The collected descriptions of WBL components were then analyzed as described in Chapter 3 and organized by various aspects (AI Role, EQF level, PLOs etc.). A comprehensive repository of exemplary WBL components is included in the Appendix of this document.

### 1.4. Results

The WBL components for ARISA training programs effectively prepare students and mid-career professionals for various AI roles, including Data Analysts, Data Scientists, Machine Learning Engineers, NLP Engineers, Decision Makers, and Policy Makers.

The WBL examples blends **technical skills, ethical considerations, and real-world problem-solving**, ensuring participants to meet industry demands and drive responsible AI innovation. Through hands-on, project-based learning, participants immediately contribute to their host employers, adding value and fostering a culture of continuous growth and innovation, that can benefit from transnational collaboration and international academic cooperation.

### 1.5. Conclusions

The ARISA Work-based learning (WBL) Components, along with our recommendations, provide a robust foundation for the development and implementation of effective AI curricula. These resources are designed to facilitate the skilling, upskilling, and reskilling of individuals into high-demand AI roles within an international context.

The WBL examples indicate a strong emphasis on practical, hands-on learning experiences across various domains of data science, machine learning, and artificial intelligence, with a clear progression from foundational skills at lower EQF levels to advanced, specialized knowledge at higher levels. The focus on regulatory compliance and ethical considerations further empowers participants to implement AI solutions that are both innovative and responsible.

The WBL components described will be tested by VET providers and HE during ARISA pilot programmes in 7 countries, namely: **Hungary, Italy, Lithuania, Poland, Slovenia, Spain, Netherland**. ARISA partners can draw inspiration from other partners' practices to broaden the cultural horizons of WBL Components and equip learners with an international perspective on industry practices.

Going forward, ARISA Consortium will refine the conclusions and recommendations based on the ongoing analysis of results, ensuring continuous improvement and relevance of our WBL strategies adaptable to different contexts.

## 1.6. Use of this document

This document provides a comprehensive overview of the Work-based Learning (WBL) components within the ARISA learning programme. It includes recommendations for establishing WBL components, highlighting best practices for integrating practical, hands-on learning experiences into the learning programmes.

The main use of this document is to inform the further development of the D.4.3 Learning Programmes, Training Materials/Resources which will be released in July 2024.

It can further be used by trainers, educators, and key industry stakeholders, to get insights into the key factors and enablers of effective WBL Components, to understand how to identify and design WBL contents and learning activities for AI Roles at different EQF Levels.

## 1.7. Introduction

This document presents an in-depth analysis of the work-based learning (WBL) components developed under Task 4.4 of the ARISA project, which aimed to enhance learning programmes through practical, **real-life training** scenarios.

The main goals of Task 4.4 were:

1. To develop and describe the embedded work-based learning components for the learning programmes.
2. To design practical "real life" training scenarios related to ARISA roles, including trans-national learning experience when possible.

The objective of this document is to detail the methodology, analysis, and outcomes of integrating WBL into the ARISA curriculum, providing a comprehensive understanding of its implementation and impact.

Work-based learning is a powerful tool for effectively aligning learning programmes with the needs of the workplace, providing students with the opportunity to **integrate the acquisition of knowledge and skills with practical experience** in authentic work settings, together with the application of skills and knowledge within a framework that equips participants with the practical skills and capabilities essential for specific AI roles.

The word "component" refers to a specific element or piece of the training course being developed, that can combine elements of learning in workplace with classroom-based learning. These components balance theoretical knowledge with practical application, distinct from general practical exercises. They involve real-world experiences, integrating practical skills and capabilities essential for ARISA AI roles.

Within the ARISA project, WBL components were meticulously designed to align with Programme Learning Outcomes (PLOs) identified in previous deliverable. This alignment was crucial to ensure that the learning experiences provided through WBL were directly relevant to the competencies and skills required in the professional AI landscape. The PLOs served as a guiding framework, ensuring that each WBL activity was purposeful and targeted towards achieving **specific educational objectives**.

Following this introduction, the document is organized into several key sections. The first section outlines the methodology employed in the development and integration of WBL components, detailing the collaborative processes, design of templates, and alignment with Programme Learning Outcomes (PLOs). The next section presents an analysis of the implementation phase, highlighting the practical application of WBL in various training scenarios and the feedback gathered from the Consortium. Subsequently, the document delves into the outcomes and impacts of WBL integration, examining the enhancement of learners' skills and competencies. Finally, the concluding section offers a summary of findings, lessons learned, and recommendations for future iterations of WBL within the ARISA curriculum.

## 1.8. Methodology

This section presents the methodology used and further describes the goals, and key elements identified by Partners to create WBL components. The Task 4.4 Work-based learning component commenced at the end of March 2024, it leveraged inputs from D4.1 “Collection of Learning Outcomes (LO)”, and was concluded by the end of June 2024.

The efforts for T4.4. started with the design of a methodological approach, which included a specific methodology for addressing WBL Components.



To collect WBL Components and include the expertise of Consortium partners in the definition of WBL examples, a multi-method approach has been used: **the WBL template and Mapping Tool and dedicated WBL meetings with the ARISA Consortium.**

This multi-method approach resulted in extensive data collection gathered by partners, described in the next section.

## 1.9. Development of a WBL Template and Mapping Tool

ADECCO designed a structured framework for partners to provide information about WBL examples and data to standardize the way in which partners shared their WBL practices, ensuring consistency and comparability across the information provided.

- **The WBL template and Mapping Tool** was designed to capture essential information about WBL activities, including their structure, implementation, and outcomes, accompanied by detailed instructions to facilitate accurate and comprehensive data entry.

In the context of data collection, during the '**Gathering of WBL Components**', these tools were presented and discussed with ARISA partners in dedicated meetings and shared online for collaborative work. Each partner was asked to provide detailed data and descriptions of the WBL, aligned with specific PLOs, via the submission form, available online (See Annex 1), specifying different aspects of the WBL activities:

- **WBL Title**  
The WBL Activity name.
- **AI Role**  
The AI Role for which they designed the WBL.
- **EQF level**  
The EQF level to which the WBL Components correspond.
- **Target Group**  
The target group for which they designed the WBL.
- **Didactical Approach**

- The didactical approach related to the WBL example.
- **WBL Description**  
A short description of Work-based Learning task and the related output.
  - **Related Learning Unit(s)-**  
A list of the Programme Learning Outcomes (PLOs) and Unit Learning Outcomes (ULOs) addressed by the WBL Component. (WBL)
  - **WBL Output Format**  
A concise description of the foreseen WBL learning outcomes based on SMART (Specific, Measurable, Achievable, Relevant, Time-bound).
  - **Time Estimation**  
An estimate of the time required for workload needed to achieve the LO. In hours of study and in ECTS credits, where possible.
  - **Assessment Criteria**  
A short Assessment description and related criteria.

## 1.10. Dedicated WBL meetings

In addition to the WBL Template and mapping tools, **dedicated WBL meetings were held on a weekly basis** from the end of March to the end of June, to gather qualitative insights and foster collaborative discussions. These interactions provided an opportunity for partners to share their experiences and insights in real-time, ensuring an exchange of knowledge and understanding of effective WBL practices.

During the **in-person meeting in Budapest on 22 May**, a special session was organized to provide ARISA partners with excellence criteria based on **lessons learned** from other successful Blueprint projects, such as **ESSA, the European Software Skill Alliance**.

The Lithuanian partner, BCS Koolitus that coordinated the WBL work package in ESSA project, presented the best practices and best examples of ESSA WBL Components. The ESSA recommendations can be summarized in the following key findings:

- Include WBL as an integral part of Curricula development.
- Encourage collaborative engagement of stakeholders and industry partners.
- Align WBL with programme learning outcomes (PLOs).
- Support professional development through WBL components.
- Encourage the development of skills in practical, work-based learning scenarios.



### 1.11. Results

In ARISA Project, partners submitted 23 WBL Components for six AI Practitioners and AI Managers profiles.

As shown in table 1, these Components encompass profiles for **Data Analysts (5), Data Scientists (4), Machine Learning Engineers (MLE) (4), Natural Language Processing Engineers (NLP) (4), Decision Makers (4) and Policy Makers (2).**

Table1 shows the number of WBL Components developed by ARISA Partners presented by the learning profile they address.

AI Role Group	AI Profile	# WBL Examples
<b>AI Practitioners</b>	Data Analysts	5
	Data Scientists	4
	Machine Learning Engineers (MLE)	4
	Natural Language Processing Engineers (NLP)	4
<b>AI Managers</b>	Decision Makers	4
	Policy Makers	2
<b>Total</b>		<b>23</b>

### 1.12. General Overview of the WBL Components

This set of 23 WBL Components offer a diverse range of learning opportunities across different roles and European Qualifications Framework (EQF) levels, as described in the following Table, to apply **theoretical knowledge in practical settings, develop industry-relevant skills**, and gain **real-world experience** in various domains, particularly focusing on **data analytics, machine learning, artificial intelligence, and legal compliance in AI.**

Table 2 shows an overview of the WBL examples designed by ARISA Partners, presented by AI profile and EQF level designed for each task linking them with the **corresponding Programme Learning Outcomes (PLOs)** to provide a clear overview of the objectives and skills developed in each WBL Component.

N	WBL Title	Partner	Objective	PLOs
<b>Data Analyst EQF 4/5</b>				
1.	<b>Data Science fundamentals</b>	UNIPI SA	Apply data analysis techniques, like data collection and cleaning, statistical analysis, data visualization, machine learning basics, and examine ethical implications of data science to a real-world problem.	<ol style="list-style-type: none"> <li>1. PLO Big Data &amp; Data Analytics</li> <li>2. PLO AI Ethics</li> <li>3. PLO AI Awareness</li> </ol>
2.	<b>Project: Dataset Analysis</b>	UNIPI SA	Apply data analysis techniques to a real-world problem, create visualizations using Python libraries	<ol style="list-style-type: none"> <li>1. PLO AI Technologies</li> <li>2. Big Data &amp; Data Analytics</li> <li>3. Soft Skills</li> </ol>

<b>Data Analyst EQF 6</b>				
3.	<b>Data visualisation based on real-world data, dashboard and reports creation</b>	BCS	Transform raw data into actionable insights, prepare for real-world data analytics challenges.	<ol style="list-style-type: none"> <li>1. PLO Big Data &amp; Data Analytics</li> <li>2. PLO Business Intelligence</li> </ol>
4.	<b>Mentoring session with a data analyst</b>	BCS	Gain insights into real-world analytics practices, enhance collaborative and problem-solving skills.	<ol style="list-style-type: none"> <li>1. Can be developed in connection with different PLOs</li> </ol>
5.	<b>Machine Learning (ML) and data science methods and applications</b>	UL	Gain hands-on experience with ML methods, data analysis, ML data representation, basic computational blocks for data analysis, modeling, and evaluation and intuitive ML concepts.	<ol style="list-style-type: none"> <li>1. PLO Privacy by design</li> <li>2. PLO Value Sensitive Design</li> </ol>
<b>Data Scientist EQF 6</b>				
6.	<b>Classification of Medical Images</b>	UNIR	Ability to classify and segment medical images using ML and DL techniques.	<ol style="list-style-type: none"> <li>1. PLO Deep learning</li> <li>2. PLO AI Technologies</li> <li>3. PLO Machine Learning</li> <li>4. PLO Explainable AI</li> <li>5. PLO Human-Centered AI</li> <li>6. PLO 8 AI Futures and Innovation</li> <li>7. PLO Soft Skills</li> </ol>
7.	<b>Prediction of COVID-19 Cases</b>	UNIR	Predict future COVID cases using historical data and ML/DL techniques.	<ol style="list-style-type: none"> <li>1. PLO Deep learning</li> <li>2. PLO AI Technologies</li> <li>3. PLO Machine Learning</li> <li>4. PLO Explainable AI</li> <li>5. PLO Human-Centered AI</li> <li>6. PLO Soft Skills</li> </ol>
<b>Data Scientist EQF 7</b>				
8.	<b>Legal Issues for Data Science</b>	UNIPI SA	Understand AI ethical and Legal Issues i.e. Data privacy, bias in AI systems, intellectual property rights, societal impacts of AI technologies and legal frameworks for responsible AI development.	<ol style="list-style-type: none"> <li>1. PLO AI Ethics</li> <li>2. PLO AI Futures and Innovation</li> <li>3. PLO AI Awareness</li> </ol>

9.	<b>Advanced Data Science and Machine Learning</b>	UNIPI SA	Master advanced data science concepts, ML algorithms, big data analytics, NLP, data mining techniques, ethical considerations apply to complex problems.	<ol style="list-style-type: none"> <li>1. PLO Deep Learning</li> <li>2. PLO AI Technologies</li> <li>3. PLO Machine Learning</li> <li>4. PLO Big Data &amp; Data Analytics</li> <li>5. PLO Generative AI</li> </ol>
<b>Machine Learning Engineers (ML) EQF 7</b>				
10.	<b>Implementation of Business/Industry Projects</b>	WSCS	Collaborate with IT companies, apply ML solutions in business contexts, manage real-world constraints on ML projects from design to deployment.	<ol style="list-style-type: none"> <li>1. PLO Deep Learning</li> <li>2. PLO AI Technologies</li> <li>3. PLO HPC and Cloud services</li> <li>4. PLO AI Ethics</li> <li>5. PLO Change Management</li> </ol>
11.	<b>Industry practitioner-led sessions</b>	WSCS	Participate in sessions led by industry practitioners who are experts in building ML applications and gain real-world perspectives and insights from industry experts.	<ol style="list-style-type: none"> <li>1. PLO Deep Learning</li> <li>2. PLO AI Technologies</li> <li>3. PLO ML Ops</li> <li>4. PLO PC and Cloud services</li> <li>5. PLO Machine Learning</li> <li>6. PLO Explainable AI</li> <li>7. PLO Big Data and data Analytics</li> <li>8. PLO Human Centered AI</li> <li>9. PLO AI Ethics</li> <li>10. PLO AI Awareness</li> <li>11. PLO Cyber and Data Security</li> <li>12. PLO Generative AI</li> <li>13. Soft Skills</li> </ol>
12.	<b>AI application development</b>	BME	Develop AI applications, using high-level modules, integrate models into applications, individual or group work.	<ol style="list-style-type: none"> <li>1. PLO Deep Learning</li> <li>2. PLO AI Technologies</li> <li>3. PLO Explainable AI</li> <li>4. PLO Human-Centered AI</li> <li>5. PLO AI Awareness</li> <li>6. PLO Generative AI</li> <li>7. PLO Soft Skills</li> </ol>
13.	<b>AI model development</b>	BME	Build and evaluate Machine Learning (ML) /Deep Learning (DL) models,	<ol style="list-style-type: none"> <li>1. PLO Deep Learning</li> </ol>

			focus on incremental development and precise evaluation.	<ol style="list-style-type: none"> <li>2. PLO AI Technologies</li> <li>3. PLO ML Ops</li> <li>4. PLO Machine Learning</li> <li>5. PLO Soft Skills</li> </ol>
<b>Natural Language Processing Engineers (NLP) EQF 6</b>				
14.	<b>Text Mining Course</b>	UNIPISA	Work with real-world datasets to build and evaluate NLP deep learning models, Data preprocessing and Model evaluation.	<ol style="list-style-type: none"> <li>1. PLO Machine Learning</li> <li>2. PLO NLP</li> </ol>
15.	<b>NLP project for corpora exploration and analysis</b>	UNIPISA	Implement NLP techniques and innovate with domain-specific analysis.	<ol style="list-style-type: none"> <li>1. PLO AI Technologies</li> <li>2. PLO NLP</li> <li>3. PLO Soft Skills</li> </ol>
<b>Natural Language Processing Engineers (NLP) EQF 7</b>				
16.	<b>Advanced Natural Language Processing and Gen AI</b>	UNIPISA	Implement NLP techniques, delves into the latest techniques and applications in the field, transformer models, deep learning for NLP, text generation, sentiment analysis, entity recognition, and machine translation.	<ol style="list-style-type: none"> <li>1. PLO Deep Learning</li> <li>2. PLO AI Technologies</li> <li>3. PLO Machine Learning</li> <li>4. PLO NLP</li> <li>5. PLO Generative AI</li> </ol>
17.	<b>Generative AI Project</b>	UNIPISA	Develop a text generation application using an open-source LLM.	<ol style="list-style-type: none"> <li>1. PLO Deep Learning</li> <li>2. PLO AI Technologies</li> <li>3. PLO Machine Learning</li> <li>4. PLO NLP</li> <li>5. PLO Generative AI</li> <li>6. PLO Soft Skills</li> </ol>
<b>Decision Maker EQF 6</b>				
18.	<b>Recognize opportunities and challenges</b>	UL	Gain an intuitive understanding of machine learning, including clustering and classification, and build AI models that support business decisions.	<ol style="list-style-type: none"> <li>1. PLO AI Fundamentals</li> </ol>

<b>Decision Maker EQF 7</b>				
19.	<b>AI regulations &amp; strategic business operations</b>	ADEC CO	Understand AI laws and regulations, apply them in strategic business operations.	1. PLO Organisational decision-making on AI
20.	<b>AI Tools for Organizational Decision-Making</b>	ADEC CO	Develop competencies in AI-driven innovation and strategy formulation.	1. PLO Organisational decision-making on AI
21.	<b>Decision maker hackathon assignment for real client</b>	HU	Solve data and design issue for a real client. Hackathon participation, client interaction, problem solving	1. PLO Organisational decision-making on AI
<b>Policy Maker EQF 7</b>				
22.	<b>Policy maker-project for government unit</b>	HU	Work on project shared by the Dutch government organisation, Policy making, project implementation, real-world problem solving.	1. PLO AI strategy 2. PLO AI implementation
23.	<b>Policy maker AI consultant-hackathons</b>	HU	Hackathons: cases are presented and the participants are divided into groups - after each master class there will be a hackathon	1. PLO AI Fundamentals (EQF6) 2. PLO Impact of AI 3. PLO Ai Ethic Advanced

### 1.13. General conclusion of ARISA WBL Analysis

As an overall analysis, the WBL examples indicate a **strong emphasis on practical, hands-on learning experiences** across various domains of **data science, machine learning, and artificial intelligence**. There is a clear progression from foundational skills at lower EQF levels to advanced, specialized knowledge at higher levels.

The WBL examples embody a pragmatic approach to skill development, seamlessly integrating rigorous technical expertise with ethical considerations and practical problem-solving in real-world contexts.

The incorporation of ethical and legal dimensions into AI education underscores a commitment to promoting responsible AI practices, addressing pivotal issues such as data privacy and bias.

Section 5 of the Recommendations will outline key elements to further optimize these WBL examples.

The data collected by the two-method approach are summarised in Table 3 as follows:

Research method	Data collected
<b>WBL template and Mapping Tool</b>	<b>23 WBL Examples collected:</b> <ul style="list-style-type: none"> <li>▪ 6 for AI Manager Roles</li> <li>▪ 17 For AI Practitioners Roles</li> </ul>
<b>Dedicated WBL Meetings</b>	<ul style="list-style-type: none"> <li>▪ 5 WBL dedicated meeting with Consortium Partners during T4.4</li> <li>▪ 15- 18 participants in every WP4 meeting</li> <li>▪ 33 participants in the ARISA in-person Budapest meeting</li> <li>▪ 6 WBL best cases presented from ESSA, the European Software Skill Alliance, blueprint project.</li> </ul>

### 1.14. Recommendations

The findings reveal a growing focus on WBL and scenario-based learning within the educational community. The following recommendations present principles and strategies that can be adapted and integrated into ARISA’s training programmes, ensuring **transferable elements, scalable and adaptable** across different contexts and disciplines, including transnational learning experiences.

- Encouraging cross-institution, and international academic cooperation when developing Joint Curriculum, Learning Modules and WBL Components to foster **transnational learning experiences** and disciplines, encouraging faculty and students from different institutions to participate in **joint projects** related to WBL.
- Developing standardized WBL components that can be adapted and implemented across different educational contexts. This ensures consistency in addressing learning outcomes and facilitating easier credit transfer and recognition of skills acquired **internationally**.
- Ensuring **transferable and adaptable** elements across various educational settings to **guarantee uniformity in learning outcomes** and simplify the process of credit transfer and international recognition of acquired skills.

Using **industry-standard tools and methodologies** during these WBL sessions, students could become proficient with the technologies and practices they will encounter in their **careers**.

### 1.15. Conclusions

As an overall analysis, the ARISA WBL examples indicate a **strong emphasis on practical, hands-on learning experiences** across various domains of **data science, machine learning, and artificial intelligence**.

Within this practical WBL Components, participants, whether students, workers or new trainees **immediately begin executing projects that are valuable and productive for the organisation**. Unlike traditional training programs where participants often require a significant learning curve before becoming productive, **WBL participants can contribute to the organisation's goals and projects right from the start of their training**.

Moreover, the value that participants bring to host employers rapidly increases as they gain authentic skills through hands-on experience in practice-based projects. As participants engage in these projects, they acquire real-world skills and knowledge directly applicable to different AI roles within their organisation.

This not only enhances their own skill development but also adds immediate value to the host employer/organisation by addressing real business needs.

Furthermore, the dynamic nature of WBL projects ensures that participants are constantly exposed to **new challenges and learning opportunities**. This fosters a **culture of innovation** and growth within the organisation, as participants bring fresh perspectives and ideas to the table while working on projects that are aligned with the organisation's and educational institution's objectives, **enhancing learners' career readiness** and preparing them to thrive in a globalised labour market.

## 2. Annexes

### 2.1. Annex 1. WBL Template Example

A. ORGANIZATION	B - ROLE (i.e.: Data Analyst)	C - EQF (i.e.: EQF 6)	D - TARGET GROUP	E - DIDACTICAL APPROACH	F - WBL ACTIVITY NAME (i.e.: "EQF7: Data Engineer- Implementation of Industry AI Projects")	G - WBL DESCRIPTION (manual input)	H - WBL OUTPUT FORMAT (manual input)	I - TIME ESTIMATION (in hours of study and in ECTS credits, where possible)	J - RELATED LEARNING UNIT(S) provide a list of the PLOs and ULOs addressed by the WBL	K - ASSESSMENT CRITERIA (manual input)



## 2.2. Annex 2. WBL Data Analysts EQF 4/5\_ UNIPISA

<b>WBL Title</b>	<b>Project: Dataset Analysis</b>
<b>AI Role</b>	Data Analyst
<b>EQF level</b>	4/5
<b>Target Group</b>	Students
<b>Didactical Approach</b>	Blended
<b>WBL Description</b>	Students will be engaged in a group project focused on applying basic data analysis techniques to a real-world problem. They will be provided with a dataset concerning a practical scenario, and they should clean relevant data, perform exploratory data analysis, and create visualizations using Python libraries. The project will culminate in generating insights from the data and presenting their findings through a detailed report and presentation.
<b>Related Learning Unit(s)</b>	<ol style="list-style-type: none"> <li>1. PLO AI Technologies</li> <li>2. PLO Big Data &amp; Data Analytics</li> <li>3. PLO Soft Skills</li> </ol>
<b>WBL Output Format</b>	Presentation and written Report
<b>Time Estimation</b>	20 hours
<b>Assessment Criteria</b>	The assessment considers the written report and the presentation and focuses on the correct Python implementation and on the creativity, innovation, and results demonstrated in the presented outcomes and methodology.

### 2.3. Annex 3. WBL Data Analysts EQF 4/5\_ UNIPISA

<b>WBL Title</b> Project: Dataset Analysis
<b>AI Role</b> Data Analyst
<b>EQF level</b> 4/5
<b>Target Group</b> Students
<b>Didactical Approach</b> Blended
<b>WBL Description</b> Students will be assessed through a written exam focusing on fundamental concepts in data science. The exam will include questions on topics such as data collection and cleaning, statistical analysis, data visualization, machine learning basics, and the ethical implications of data science. This exam will evaluate students' understanding of the core principles and methodologies in data science, as well as their ability to apply these concepts to real-world scenarios.
<b>Related Learning Unit(s)</b> <ol style="list-style-type: none"> <li>1. PLO Big Data &amp; Data Analytics</li> <li>2. PLO AI Ethics</li> <li>3. PLO AI Awareness</li> </ol>
<b>WBL Output Format</b> Oral examination
<b>Time Estimation</b> 26 hours (1 ECTS)
<b>Assessment Criteria</b> Graded oral exam.

## 2.4. Annex 4. WBL Data Analysts EQF 6\_BCS

<b>WBL Title</b>	Data visualisation based on real-world data, dashboard and reports creation
<b>AI Role</b>	Data Analyst
<b>EQF level</b>	6
<b>Target Group</b>	Mid-career professionals
<b>Didactical Approach</b>	Blended
<b>WBL Description</b>	In this work-based learning task, students will focus on creating data visualizations based on real-world datasets. The goal is to develop dynamic and interactive dashboards and reports that effectively communicate insights. These deliverables should be designed to cater to various target audiences, ranging from beginners to experts, ensuring that the information is accessible and understandable at different levels of knowledge. Students will utilize advanced visualization tools to create clear and engaging charts, graphs, and other visual elements. By the end of this task, students will have practical experience in transforming raw data into actionable insights, preparing them for real-world data analytics challenges.
<b>Related Learning Unit(s)</b>	<ol style="list-style-type: none"> <li>1. PLO Big Data &amp; Data Analytics</li> <li>2. PLO Business Intelligence</li> </ol>
<b>WBL Output Format</b>	Dashboard/reports
<b>Time Estimation</b>	8 hours
<b>Assessment Criteria</b>	Creating and using different visuals, creating reports for different target groups

## 2.5. Annex 5. WBL Data Analysts EQF 6\_BCS

<b>WBL Title</b>	Mentoring session with a data analyst
<b>AI Role</b>	Data Analyst
<b>EQF level</b>	6
<b>Target Group</b>	Mid-career professionals
<b>Didactical Approach</b>	Blended
<b>WBL Description</b>	In this work-based learning task, students will participate in a mentoring session with a professional data analyst from a company. During this session, the data analyst will introduce a task, and students will engage in brainstorming and problem-solving activities in teams. The task involves implementing the solutions discussed and receiving feedback from the data analyst. This experience will provide students with valuable insights into real-world data analytics practices and enhance their collaborative and problem-solving skills.
<b>Related Learning Unit(s)</b>	Can be developed in connection with different PLOs
<b>WBL Output Format</b>	Solved task
<b>Time Estimation</b>	8 hours
<b>Assessment Criteria</b>	Assignment done.

## 2.6. Annex 6. WBL Data Analysts EQF 6\_UL

<b>WBL Title</b>	Machine learning and data science methods and applications
<b>AI Role</b>	Data Analyst
<b>EQF level</b>	6
<b>Target Group</b>	Early career professionals
<b>Didactical Approach</b>	Presence Classroom
<b>WBL Description</b>	Participants will gain an intuitive and algorithmic understanding of machine learning, including clustering and classification, through hands-on analysis of real-world data sets. They will learn how to represent data for machine learning, use basic computational blocks for data analysis, modeling, and model evaluation. No programming experience is required. The training is project-based and problem-solving oriented, focusing on data and data analysis, and intuitive understanding of machine learning and AI concepts.
<b>Related Learning Unit(s)</b>	<ol style="list-style-type: none"> <li>1. PLO Privacy by design</li> <li>2. PLO Value Sensitive Design</li> </ol>
<b>WBL Output Format</b>	Homework assignments and quizzes
<b>Time Estimation</b>	26 hours (1 ECTS)
<b>Assessment Criteria</b>	Graded assignments (quizzes).

## 2.7. Annex 7. WBL Data Scientists EQF 6\_UNIR

<b>WBL Title</b>	Classification of Medical Images
<b>AI Role</b>	Data scientist
<b>EQF level</b>	6
<b>Target Group</b>	Students
<b>Didactical Approach</b>	Virtual Classroom
<b>WBL Description</b>	Application of Machine Learning and Deep Learning techniques to classify and/or segment medical images. Segmentation will identify the element to focus and classification the nature (positive or negative). Possibility of doing it by groups of students.
<b>Related Learning Unit(s)</b>	<ol style="list-style-type: none"> <li>1. PLO Deep learning</li> <li>2. PLO AI Technologies</li> <li>3. PLO Machine Learning</li> <li>4. PLO Explainable AI</li> <li>5. PLO Human-Centered AI</li> <li>6. PLO 8 AI Futures and Innovation</li> <li>7. PLO Soft Skills</li> </ol>
<b>WBL Output Format</b>	Code Repository + Results + Presentation
<b>Time Estimation</b>	40 hours
<b>Assessment Criteria</b>	Variety of techniques tested. Variety of preprocessing techniques applied. Metrics. Presentation.

## 2.8. Annex 8. WBL Data Scientists EQF 6\_UNIR

<b>WBL Title</b>	Prediction of COVID-19 Cases
<b>AI Role</b>	Data scientist
<b>EQF level</b>	6
<b>Target Group</b>	Students
<b>Didactical Approach</b>	Virtual Classroom
<b>WBL Description</b>	Application of Machine Learning and Deep Learning techniques to predict number of COVID cases based on historical data. Possibility of doing it by groups of students.
<b>Related Learning Unit(s)</b>	<ol style="list-style-type: none"> <li>1. PLO Deep learning</li> <li>2. PLO AI Technologies</li> <li>3. PLO Machine Learning</li> <li>4. PLO Explainable AI</li> <li>5. PLO Human-Centered AI</li> <li>6. PLO Soft Skills</li> </ol>
<b>WBL Output Format</b>	Code Repository + Results + Presentation
<b>Time Estimation</b>	20 hours
<b>Assessment Criteria</b>	Variety of techniques tested. Variety of preprocessing techniques applied. Metrics. Presentation.

## 2.9. Annex 9. WBL Data Scientists EQF 7\_ UNIPISA

<b>WBL Title</b>	Legal Issues for Data Science
<b>AI Role</b>	Data Scientist
<b>EQF level</b>	7
<b>Target Group</b>	Students
<b>Didactical Approach</b>	Blended
<b>WBL Description</b>	Students will follow a series of lectures focusing on AI ethics and legal issues. The lessons will cover key topics such as data privacy, bias in AI systems, intellectual property rights, accountability in AI decision-making, and the societal impacts of AI technologies. Students will be engaged through brainstorming sessions about ethical implications of the most recent AI technologies. The course will end with a final exam, to evaluate students' understanding of ethical considerations and legal frameworks essential for responsible AI development and deployment.
<b>Related Learning Unit(s)</b>	<ol style="list-style-type: none"> <li>1. PLO AI Ethics</li> <li>2. PLO AI Futures and Innovation</li> <li>3. PLO AI Awareness</li> </ol>
<b>WBL Output Format</b>	Oral Examination
<b>Time Estimation</b>	26 hours (1 ECTS)
<b>Assessment Criteria</b>	Graded oral exam.



## 2.10. Annex 10. WBL Data Scientists EQF 7\_ UNIPISA

<b>WBL Title</b>	Advanced Data Science and Machine Learning
<b>AI Role</b>	Data Scientist
<b>EQF level</b>	7
<b>Target Group</b>	Students
<b>Didactical Approach</b>	Blended
<b>WBL Description</b>	Students will be assessed through a written exam focusing on advanced topics in data science. The exam will include questions on machine learning algorithms, deep learning, big data analytics, natural language processing, data mining techniques, and advanced statistical methods. Additionally, the exam will cover ethical considerations and the latest trends in data science. This assessment will evaluate students' mastery of advanced data science concepts and their ability to apply these techniques to complex problems
<b>Related Learning Unit(s)</b>	<ol style="list-style-type: none"> <li>1. PLO Deep Learning</li> <li>2. PLO AI Technologies</li> <li>3. PLO Machine Learning</li> <li>4. PLO Big Data &amp; Data Analytics</li> <li>5. PLO Generative AI</li> </ol>
<b>WBL Output Format</b>	Written and Oral Examination
<b>Time Estimation</b>	26 hours (1 ECTS)
<b>Assessment Criteria</b>	Graded written exam (quiz and open questions) and oral exam.

## 2.11. Annex 11. WBL MLE EQF 7 \_WSCS

<b>WBL Title</b>	<b>ML Engineer: Implementation of Business/Industry Projects</b>
<b>AI Role</b>	Machine Learning Engineer
<b>EQF level</b>	7
<b>Target Group</b>	Early career professionals
<b>Didactical Approach</b>	Blended
<b>WBL Description</b>	Students will be engaged in projects conducted in collaboration with IT companies and/or their clients. Their task will involve working on specific ML application projects, from design to deployment. They will collaborate in teams, analyze client requirements, design and deliver ML solutions. Throughout the project, students will need to consider real-world constraints and business challenges.
<b>Related Learning Unit(s)</b>	<ol style="list-style-type: none"> <li>1. PLO Deep Learning</li> <li>2. PLO AI Technologies</li> <li>3. PLO HPC and Cloud services</li> <li>4. PLO AI Ethics</li> <li>5. PLO Change Management</li> </ol>
<b>WBL Output Format</b>	Project report, code/design artifacts, technical documentation, project presentation.
<b>Time Estimation</b>	80 hours
<b>Assessment Criteria</b>	Technology understanding, design and implementation, functionality/performance, professional collaboration, quality of documentation and report.

## 2.12. Annex 12. WBL MLE EQF 7 \_WSCS

### WBL Title

ML Engineer: Industry practitioner-led sessions

### AI Role

Machine Learning Engineer

### EQF level

7

### Target Group

Early career professionals

### Didactical Approach

Blended

### WBL Description

In this task, students will have the opportunity to participate in sessions led by industry practitioners who are experts in building ML applications. These sessions will involve presentations, discussions, and interactive Q&A sessions, allowing students to directly learn from professionals actively working in the field. Industry practitioners will share their insights, experiences, and the latest trends, providing valuable real-world perspectives on the application of ML in various projects.

### Related Learning Unit(s)

1. PLO Deep Learning
2. PLO AI Technologies
3. PLO ML Ops
4. PLO PC and Cloud services
5. PLO Machine Learning
6. PLO Explainable AI
7. PLO Big Data and data Analythis
8. PLO Human Centered AI
9. PLO AI Ethics
10. PLO AI Awareness
11. PLO Cyber and Data Security
12. PLO Generative AI
13. Soft Skills

### WBL Output Format

Session Notes and Summaries, reflective write ups linking practice to course content.

### Time Estimation

15 hours

**Assessment Criteria**

Participation, comprehension of insights, application to studies, critical reflection, professional interaction.

## 2.13. Annex 13. WBL MLE EQF 7 \_BME

<b>WBL Title</b>	AI application development
<b>AI Role</b>	Machine Learning Engineer
<b>EQF level</b>	7
<b>Target Group</b>	Students
<b>Didactical Approach</b>	Blended
<b>WBL Description</b>	This WBL is organized as a project that students will assess individually or in groups. They have to pick a task and apply high-level AI modules to develop an AI-based application. The students have to explore the available AI models that solves the chosen task, integrate the model into an application and demonstrate how it works.
<b>Related Learning Unit(s)</b>	<ol style="list-style-type: none"> <li>1. PLO Deep Learning</li> <li>2. PLO AI Technologies</li> <li>3. PLO Explainable AI</li> <li>4. PLO Human-Centered AI</li> <li>5. PLO AI Awareness</li> <li>6. PLO Generative AI</li> <li>7. PLO Soft Skills</li> </ol>
<b>WBL Output Format</b>	Source /design artifacts, technical documentation
<b>Time Estimation</b>	26 hours (1 ECTS)
<b>Assessment Criteria</b>	The assessment considers the source code, written report and the presentation, and focuses on the correct implementation and on the creativity, innovation, and results demonstrated in the presented outcomes and methodology.

## 2.14. Annex 14. WBL MLE EQF 7 \_BME

<b>WBL Title</b>	AI model development
<b>AI Role</b>	Machine Learning Engineer
<b>EQF level</b>	7
<b>Target Group</b>	Students
<b>Didactical Approach</b>	Blended
<b>WBL Description</b>	This WBL is organized as a project that students will assess in groups. They will be asked to start from a provided dataset, perform the typical Data Modeling workflow and train a Machine Learning / Deep Learning model able to learn from data how to correctly predict the target variable. Students have to put focus on incremental model development and precise evaluation of the developed model. They will need to deepen these topics in order to be prepared to choose and implement the right model and algorithms.
<b>Related Learning Unit(s)</b>	PLO Deep Learning <ol style="list-style-type: none"> <li>1. PLO AI Technologies</li> <li>2. PLO ML Ops</li> <li>3. PLO Machine Learning</li> <li>4. PLO Soft Skills</li> </ol>
<b>WBL Output Format</b>	Source code, written report and presentation
<b>Time Estimation</b>	26 hours (1 ECTS)
<b>Assessment Criteria</b>	The assessment considers the source code, written report and the presentation, and focuses on the correct Python implementation and on the creativity, innovation, and results demonstrated in the presented outcomes and methodology.

## 2.15. Annex 15. WBL NLP Engineers EQF 6\_UNIPISA

<b>WBL Title</b>	Text Mining Course
<b>AI Role</b>	NLP Engineer
<b>EQF level</b>	6
<b>Target Group</b>	Students
<b>Didactical Approach</b>	Blended
<b>WBL Description</b>	<p>Students will participate in an intermediate Natural Language Processing (NLP) Engineering course that covers essential techniques and practical applications in the field. The course will cover topics such as traditional machine learning methods for NLP, introductory deep learning models, text classification, sentiment analysis, part-of-speech tagging, and basic named entity recognition.</p> <p>The course will include hands-on workshops where students will work with real-world datasets to build and evaluate NLP models. These workshops will provide practical experience in data preprocessing, feature extraction, model training, and evaluation.</p>
<b>Related Learning Unit(s)</b>	<ol style="list-style-type: none"> <li>1. PLO Machine Learning</li> <li>2. PLO NLP</li> </ol>
<b>WBL Output Format</b>	Written and Oral Examination
<b>Time Estimation</b>	26 hours (1 ECTS)
<b>Assessment Criteria</b>	Graded written exam (quiz and open questions) and oral exam.

## 2.16. Annex 16. WBL NLP Engineers EQF 6\_UNIPISA

<b>WBL Title</b>	NLP project for corpora exploration and analysis
<b>AI Role</b>	NLP Engineer
<b>EQF level</b>	6
<b>Target Group</b>	Students
<b>Didactical Approach</b>	Blended
<b>WBL Description</b>	Students will be involved in a group project concerning the application of the main NLP techniques. The project will be composed on a first training module, where students will be provided with a collection of textual documents and will be asked to implement a pipeline of NLP phases (Data Understanding, Cleaning, Lemmatization, POS Tagging, Clustering) in Python. In the second module, students will be asked to innovate: by exploring their dataset, they should ideate and implement more domain-specific analysis on the data (e.g., performing Sentiment Analysis for marketing-related documents, spam detection for e-mail/social media documents, etc.)
<b>Related Learning Unit(s)</b>	<ol style="list-style-type: none"> <li>1. PLO AI Technologies</li> <li>2. PLO NLP</li> <li>3. PLO Soft Skills</li> </ol>
<b>WBL Output Format</b>	Presentation and written Report
<b>Time Estimation</b>	26 hours (1 ECTS)
<b>Assessment Criteria</b>	The assessment considers the written report and the presentation and focuses on the correct Python implementation of the first module, and on the creativity, innovation, and results demonstrated in the second module of the project.



## 2.17. Annex 17. WBL NLP Engineers EQF 7\_UNIPISA

<b>WBL Title</b>	Advanced Natural Language Processing and Gen AI
<b>AI Role</b>	NLP Engineer
<b>EQF level</b>	7
<b>Target Group</b>	Students
<b>Didactical Approach</b>	Blended
<b>WBL Description</b>	Students will engage in an advanced Natural Language Processing (NLP) Engineering course that delves into the latest techniques and applications in the field. The course will cover topics such as transformer models, deep learning for NLP, text generation, sentiment analysis, named entity recognition, and machine translation. Students will also explore advanced concepts in language model fine-tuning, transfer learning, and prompt engineering.
<b>Related Learning Unit(s)</b>	<ol style="list-style-type: none"> <li>1. PLO Deep Learning</li> <li>2. PLO AI Technologies</li> <li>3. PLO Machine Learning</li> <li>4. PLO NLP</li> <li>5. PLO Generative AI</li> </ol>
<b>WBL Output Format</b>	Written and Oral Examination
<b>Time Estimation</b>	26 hours (1 ECTS)
<b>Assessment Criteria</b>	Graded written exam (quiz and open questions) and oral exam.

## 2.18. Annex 18. WBL\_NLP Engineer\_EQF7\_UNIPISA

<b>WBL Title</b>	Generative AI Project
<b>AI Role</b>	NLP Engineer
<b>EQF level</b>	7
<b>Target Group</b>	Students
<b>Didactical Approach</b>	Blended
<b>WBL Description</b>	Students will be engaged in a group project concerning the employment of a open-source Large Language Model for a text generation task. They will be asked to ideate a case of application for a LLM, collect and annotate data, select a suitable model, deploy it through Prompt Engineering, perform fine-tuning and evaluate its outcomes.
<b>Related Learning Unit(s)</b>	<ol style="list-style-type: none"> <li>1. PLO Deep Learning</li> <li>2. PLO AI Technologies</li> <li>3. PLO Machine Learning</li> <li>4. PLO NLP</li> <li>5. PLO Generative AI</li> <li>6. PLO Soft Skills</li> </ol>
<b>WBL Output Format</b>	Presentation and written Report
<b>Time Estimation</b>	26 hours (1 ECTS)
<b>Assessment Criteria</b>	The assessment considers the written report and the presentation and focuses on the correct Python implementation and on the creativity, innovation, and results demonstrated in the presented outcomes and methodology.

## 2.19. Annex 19. WBL Decision Makers EQF 6 \_ UL

<b>WBL Title</b>	Recognize opportunities and challenges
<b>AI Role</b>	Decision maker
<b>EQF level</b>	6
<b>Target Group</b>	Early, mid- career and senior professionals
<b>Didactical Approach</b>	Presence Classroom
<b>WBL Description</b>	Participants will gain an intuitive understanding of machine learning, including clustering and classification, through hands-on analysis of real-world data sets. They will learn how to build models that support business decisions and apply them to tasks they can customize for their data-driven solutions in their organization.
<b>Related Learning Unit(s)</b>	1. PLO AI Fundamentals
<b>WBL Output Format</b>	Homework assignments and quizzes
<b>Time Estimation</b>	26 hours (1 ECTS)
<b>Assessment Criteria</b>	Graded assignments (quizzes).

## 2.20. Annex 20. WBL Decision Makers EQF 7 \_ ADECCO

<b>WBL Title</b>	AI regulations & business operations
<b>AI Role</b>	Decision maker
<b>EQF level</b>	7
<b>Target Group</b>	Senior professionals
<b>Didactical Approach</b>	Blended
<b>WBL Description</b>	This WBL Component is designed to address AI laws and regulations and business integration. It can be addressed to several organisational roles, particularly those involved in high-level decision-making, strategic planning, compliance, and AI implementation, such as Legal Compliance Officer or Data Protection Officer (DPO) that deal with data governance in AI, and risk management. Its objective is to apply knowledge of AI regulations as EU AI Act, GDPR, sectoral frameworks, IP laws, anti-trust laws, consumer protection laws, in practical scenarios and understand their implications in practical applications, within strategic business operations.
<b>Related Learning Unit(s)</b>	1. PLO Organisational decision-making on AI
<b>WBL Output Format</b>	Presentation and written Report
<b>Time Estimation</b>	8 hours
<b>Assessment Criteria</b>	Assignments, report (real life case covering multiple AI aspects)- Some criteria: Application of AI Regulations and Risk management ability to identify and mitigate risks in AI projects and creating a compliance checklist regarding IP or Consumer protection laws.

## 2.21. Annex 21. WBL Decision Makers EQF 7 \_ ADECCO

<b>WBL Title</b>	AI Tools for Organizational Decision-Making
<b>AI Role</b>	Decision maker
<b>EQF level</b>	7
<b>Target Group</b>	Mid-career professionals
<b>Didactical Approach</b>	Blended
<b>WBL Description</b>	<p>This WBL Component has been designed for mid-career professionals who hold decision-making roles in future organisation AI-related initiatives. Its objective is to enhance their competencies in leading AI-driven process and product innovation within their organisations. Learners will be asked to: Analyze case studies of businesses successfully integrating AI into their strategies.</p> <p>Identify common themes and strategies for leveraging AI and deploying AI Tools to achieve corporate objectives. Develop recommendations for incorporating AI into the organisation's business strategy.</p>
<b>Related Learning Unit(s)</b>	1. PLO Organisational decision-making on AI
<b>WBL Output Format</b>	Presentation and written Report
<b>Time Estimation</b>	24 hours
<b>Assessment Criteria</b>	<p>Assignments, report (real life case covering multiple AI aspects)- Some criteria: Clarity and coherence in explaining how AI can create value and drive business strategy.</p> <p>Ability to provide examples and case studies illustrating the relationship between AI and business strategy.</p>

## 2.22. Annex 22. WBL Decision Makers EQF 7 \_ HU

<b>WBL Title</b>	Decision maker - hackathon assignment for a real client
<b>AI Role</b>	Decision maker
<b>EQF level</b>	7
<b>Target Group</b>	Students
<b>Didactical Approach</b>	Presence Classroom
<b>WBL Description</b>	Hackathon assignment for a real client - students will answer a data and design issue for a real client.
<b>Related Learning Unit(s)</b>	PLO Organisational decision-making on AI
<b>WBL Output Format</b>	Project report, portfolio and presentation
<b>Time Estimation</b>	24 hours
<b>Assessment Criteria</b>	Rubric based on the learning outcomes

## 2.23. Annex 23. WBL Policy Maker EQF 7\_ HU

<b>WBL Title</b>	Policy maker AI consultant- project for a government unit
<b>AI Role</b>	Policy maker
<b>EQF level</b>	7
<b>Target Group</b>	Early career professionals
<b>Didactical Approach</b>	Presence Classroom
<b>WBL Description</b>	<p>AI fundamental hackathon: a case is presented and the participants are divided into groups. Each group is assigned a different type of algorithm, the goal is to create the best possible model within time to solve the problem (classification is now the idea).</p> <p>For this purpose, a Jupyter notebook is prepared so that the standard steps that are not important for the lesson have already been done (loading packages and data, initializing the model, testing pipeline).</p>
<b>Related Learning Unit(s)</b>	<p>1 - PLO AI Strategy</p> <p>2 - PLO AI implementation</p>
<b>WBL Output Format</b>	Presentation and written Report
<b>Time Estimation</b>	Around 90 hours (estimation)
<b>Assessment Criteria</b>	Rubric based on the learning outcomes.

## 2.24. Annex 24. WBL Policy Maker EQF 7\_ HU

<b>WBL Title</b>	Policy maker AI consultant- hackathons
<b>AI Role</b>	Policymaker
<b>EQF level</b>	7
<b>Target Group</b>	Early career professionals
<b>Didactical Approach</b>	Presence Classroom
<b>WBL Description</b>	Hackathons: cases are presented and the participants are divided into groups - after each master class there will be a hackathon
<b>Related Learning Unit(s)</b>	<ol style="list-style-type: none"> <li>1. PLO AI fundamentals (EQF 6)</li> <li>2. PLO Impact of AI</li> <li>3. PLO AI Ethics advanced</li> </ol>
<b>WBL Output Format</b>	Presentation and written Report
<b>Time Estimation</b>	12 hours
<b>Assessment Criteria</b>	Rubric based on the learning outcomes.





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