



D4.2 Specific Curriculum



DECISIONMAKER AND POLICYMAKER-AI FUNDAMENTALS EQF 6



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Project information

The Artificial Intelligence Skills Alliance (ARISA) fast-tracks the upskilling and reskilling of employees, job seekers, business leaders, and policymakers into AI-related professions to open Europe to new business opportunities. It is a four-year transnational project funded under the EU's Erasmus+ programme. For more information, contact info@aiskills.eu | aiskills.eu

Project Partners



List of abbreviations

AI	Artificial Intelligence
ARISA	Artificial Intelligence Skills Alliance
EQF	European Qualification Framework
EU	European Union

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1. General information

Name	Decisionmaker and Policymaker - AI Fundamentals
EQF level	EQF 6
Goals	<ol style="list-style-type: none"> 1. Comprehend AI Fundamentals: Equip learners with a solid understanding of common AI technical terms and concepts, including key machine learning methodologies and the differences between narrow and broad AI. 2. Evaluate AI Applications and Performance: Enable learners to identify and assess the impact and effectiveness of AI applications across various fields, including data analysis, predictive analytics, and decision support. 3. Understand AI Explainability, Interpretability, and Ethics: Foster a solid understanding of the principles of AI explainability, ethical considerations, and the regulatory landscape governing AI and data privacy. 4. Analyse Economic and Social Impacts of AI: Develop the ability to critically evaluate the economic and social implications of AI technologies, recognizing potential risks and the importance of robust data governance. 5. Integrate AI Strategically and Lead Ethically: Provide learners with the skills to integrate AI into organizational strategies effectively, promote collaboration between technical and non-technical teams, and lead AI initiatives with a strong ethical foundation.
Scope	<p>Scope of the Curriculum: The curriculum provides a comprehensive and practical education in AI for decision and policy makers, covering a broad range of topics from foundational AI concepts to the strategic integration of AI into organisational frameworks. It encompasses technical terms and concepts, applications and evaluation methods, principles of explainability and ethics, economic and social impacts, and guidelines for ethical leadership in AI. Designed for non-technical professionals, the training employs advanced pedagogical techniques and modern tools to facilitate rapid and effective learning.</p> <p>Target Groups: The curriculum is tailored for decision makers, policy makers, and senior management in both the industry and public sector who aim to understand and leverage AI technologies in their strategic initiatives. It is ideal for leaders seeking to enhance their knowledge of AI applications, ethical considerations, and integration strategies to make informed decisions and foster ethical AI practices within their organizations and in society. The curriculum ensures that learners can quickly grasp complex concepts using advanced training techniques and</p>

	state-of-the-art tools, enabling them to achieve competency efficiently and effectively.
Entry requirements	No prior knowledge of mathematics, statistics, computer science, or programming is required.
Programme learning outcomes (PLOs)	1 - AI Fundamentals (EQF 6)

2. Description of the structure

The curriculum is organized into separate but interconnected learning units, each focusing on a specific aspect of AI and emphasizing a modular approach for comprehensive understanding.

The AI Fundamentals for Decision Makers unit establishes a foundation for understanding common technical terms and concepts, such as supervised and unsupervised machine learning, generative models, and the distinction between narrow and broad AI. This unit ensures that learners grasp AI's essential principles and terminology, forming the basis for more advanced topics.

Complementing this is the AI Applications and Evaluation unit, which explores various fields of AI applications like data analysis, predictive analytics, decision support, computer vision, and NLP. It also includes methods for evaluating the performance and impact of AI models, offering a detailed study of practical AI applications and the metrics used to assess their effectiveness and outcomes.

The Explainability, Interpretability, and Ethics unit extends knowledge to AI explainability and interpretability principles, ethical issues such as fairness, bias, transparency, and accountability, and the current regulatory landscape for AI and data privacy laws. This unit emphasizes understanding and addressing the ethical dimensions of AI, ensuring learners can deploy AI responsibly and transparently.

While the first three units emphasize an intuitive and practical understanding of AI concepts and applications, the Economic, Social Impact, and Governance unit discusses AI's broader economic and social impacts, concerns, risks, and pitfalls associated with AI. It highlights the importance of data quality and governance in AI projects, providing a comprehensive view of the implications of AI technologies on society and the economy.

The curriculum concludes with the unit AI Integration and Ethical Leadership, which offers frameworks for integrating AI into organizational strategy, encourages collaboration between technical and non-technical teams, and provides ethical leadership and decision-making guidelines in AI projects. This unit ensures participants are equipped to lead AI initiatives within their organizations, fostering an environment of ethical AI practice and strategic alignment.

Each unit in the curriculum builds on the previous units, ensuring a smooth transition from foundational to advanced topics while emphasizing the practical connections and applications of the concepts learned. The training includes examples, case studies, and hands-on work, ensuring learners can apply their knowledge effectively and responsibly in real-world scenarios.

3. Overview of Learning Units

Learning unit title	Hours/ECTS	EQF level	Assessment(s)
AI Fundamentals for Decision and Policymakers	25 h / 1 ECTS	EQF 6	Quizzes
AI Applications and Evaluation	25 h / 1 ECTS	EQF 6	Quizzes
Explainability, Interpretability, and Ethics	25 h / 1 ECTS	EQF 6	Quizzes
Economic, Social Impact, and Governance	25 h / 1 ECTS	EQF 6	Quizzes
AI Integration and Ethical Leadership	25 h / 1 ECTS	EQF 6	Quizzes

4. Details of Learning Units

4.1. AI Fundamentals for Decision and Policymakers

Description

The learning unit AI Fundamentals for Decision and Policymakers covers common technical terms and concepts, including supervised and unsupervised machine learning, generative models, and the distinction between narrow and broad AI. Trainees learn about data representation, data clustering, dimensionality reduction, classification, evaluation of machine learning models, and intuitively understand a transition to more complex machine learning models such as deep neural networks. The utility of deep neural networks is illustrated on the analysis of images and text.

No prior knowledge of statistics or computer science is required to take this course.

Related Programme Learning Outcome(s)

1 - AI Fundamentals (EQF 6)

Unit learning outcomes

- Explains common technical terms and concepts (supervised and unsupervised machine learning, generative models, narrow and broad AI).
- Explains generative AI.
- Explains the need for development and use of foundation models.

Delivery method(s)

- On-site lectures with practical demonstrations of methods, tools, and cases
- Self-study assisted with pre-recorded video material and interactive lecture notes with quizzes and challenges
- On-line discussion and quizzes
- On-line forum, discussions and assistance on Discord channel

Materials

- Lecture notes with practical examples, cases, and demonstrations with the data mining tool Orange, delivered electronically to in-class participants
- Quizzes and interactive lecture notes in a mini-MOOC environment
- A set of short educational videos
- Rescha S (2024): Machine Learning Q & AI: 30 Essential Questions and Answers on Machine Learning and AI, No Starch Press (optional reading, selected chapters)
- Kneusel RT (2023): How AI Works, No Starch Press (optional reading, selected chapters)

4.2. AI Applications and Evaluation

Description

The learning unit AI Applications and Evaluation explores various fields of AI applications such as data analysis, predictive analytics, decision support, and recommender systems. It provides intuitive introduction to image analysis and natural language processing. The unit also introduces the concepts of accuracy and discusses the effects of overfitting or lack of training data.

No prior knowledge of statistics or computer science is required to take this course. However, completion of the learning unit "AI Fundamentals for Decision Makers" unit is strongly recommended.

Related Programme Learning Outcome(s)

1 - AI Fundamentals (EQF 6)

Unit learning outcomes

- Explains common fields of machine learning and AI applications (such as exploratory data analysis, predictive analytics, decision support, computer vision, natural language processing, autonomous systems).
- Explains methods for evaluating the performance and impact of AI models.

Delivery method(s)

- On-site lectures with practical demonstrations of methods, tools, and cases
- Self-study assisted with pre-recorded video material and interactive lecture notes with quizzes and challenges
- On-line discussion of quizzes
- On-line forum, discussions and assistance on Discord channel

Materials

- Lecture notes with practical examples, cases, and demonstrations with the data mining tool Orange, delivered electronically to in-class participants
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- Kneusel RT (2023): How AI Works, No Starch Press (optional reading, selected chapters)

4.3. Explainability, Interpretability, and Ethics

Description

The learning unit Explainability, Interpretability, and Ethics focuses on the principles of AI explainability and interpretability, ethical issues like fairness, bias, transparency, and accountability, and the current regulatory landscape for AI and data privacy laws.

No prior knowledge of statistics or computer science is required to take this course. Completion of the learning units "AI Fundamentals for Decision Makers" and "AI Applications and Evaluation" are strongly advised prior to enrolling in this course.

Related Programme Learning Outcome(s)

1 - AI Fundamentals (EQF 6)

Unit learning outcomes

- Explains the principles of explainability and interpretability in AI models.
- Explains ethical issues such as fairness, bias, transparency, and accountability raised by AI.
- Explains the current regulatory landscape for AI and data privacy laws.

Delivery method(s)

- On-site lectures with practical demonstrations of methods, tools, and cases
- Self-study assisted with pre-recorded video material and interactive lecture notes with quizzes and challenges
- On-line discussion of quizzes
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- Kneusel RT (2023): How AI Works, No Starch Press (optional reading, selected chapters)

4.4. Economic, Social Impact, and Governance

Description

The learning unit Economic, Social Impact, and Governance discusses the economic and social impacts of AI, concerns, risks, and pitfalls associated with AI, and highlights the importance of data quality and governance in AI projects.

No prior knowledge of statistics or computer science is required to take this course.

Related Programme Learning Outcome(s)

1 - AI Fundamentals (EQF 6)

Unit learning outcomes

- Discusses the economic and social impact of AI.
- Describes general concerns, opportunities, risks, and pitfalls commonly associated with AI.
- Highlights the importance of data quality and data governance in AI projects.

Delivery method(s)

- On-site lectures with practical demonstrations of methods, tools, and cases
- Self-study assisted with pre-recorded video material and interactive lecture notes with quizzes and challenges
- On-line discussion of quizzes
- On-line forum, discussions and assistance on Discord channel

Materials

- Lecture notes with practical examples and cases delivered electronically to in-class participants
- Quizzes and interactive lecture notes in a mini-MOOC environment
- A set of short educational videos
- Rescha S (2024): Machine Learning Q & AI: 30 Essential Questions and Answers on Machine Learning and AI, No Starch Press (optional reading, selected chapters)
- Kneusel RT (2023): How AI Works, No Starch Press (optional reading, selected chapters)

4.5. AI Integration and Ethical Leadership

Description

The learning unit AI Integration and Ethical Leadership provides frameworks for integrating AI into organizational strategy, proposes the means of collaboration between technical and non-technical teams, and offers guidelines for ethical leadership and decision-making in AI projects.

No prior knowledge of statistics or computer science is required to take this course.

Related Programme Learning Outcome(s)

1 - AI Fundamentals (EQF 6)

Unit learning outcomes

- Provides frameworks for integrating AI into organizational strategy.
- Explains the lifecycle of AI projects, including data collection, model training, deployment, and maintenance.
- Encourages collaboration between technical and non-technical teams.
- Provides guidelines for ethical leadership and decision-making in AI.

Delivery method(s)

- On-site lectures with practical demonstrations of methods, tools, and cases
- Self-study assisted with pre-recorded video material and interactive lecture notes with quizzes and challenges
- On-line discussion of quizzes
- On-line forum, discussions and assistance on Discord channel

Materials

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