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Appendices for the Bachelor's degree programme in Artificial Intelligence 2025 – 2026

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Appendix I Learning outcomes of the Bachelor's degree programme (art. 3.1)

The bachelor demonstrates knowledge, understanding, and the ability to evaluate, analyse and interpret relevant data in the field of…

1. the symbolic approach to Artificial Intelligence and has the ability to apply this.
2. the numerical, non-symbolic approach to Artificial Intelligence and has the ability to apply this.
3. computational models of cognitive processes and has expertise in constructing and applying this.
4. autonomous systems and robotics and has the ability to apply this.
5. linguistics and language technology and has the ability to apply this.
6. knowledge and agent systems and has expertise in designing, implementing and applying these.

The bachelor has knowledge and understanding of…

7. the most important philosophical theories developed in the areas of Artificial Intelligence and cognition.
8. relevant theories developed in the area of empirical sciences, psychology, biology and physics and has experience applying and analysing results thereof.

The bachelor has relevant knowledge and ability

9. to apply methods and techniques from mathematics and logic used in Artificial Intelligence.
10. to use algorithms, data structures and important programming languages used in Artificial Intelligence.

The bachelor has the ability…

11. on an academic level, to analyse problems, critically review scientific results and communicate about this both individually as well as in a group, both oral and in written form, also in a broader societal context.
12. to critically reflect on one's own working method and to recognize the need for continued learning on a high degree of autonomy, also in the context of a master or a specialist profession.

Appendix II Majors and Minors (Article 3.7 and 7.1.3)

The degree programme has the following **Major**:

- Artificial Intelligence

Students can fill in their **Minor** component with one of the following:

- Specialisation course units (Table 5) combined with additional elective course units (Table 6 and 7) or practicals (Table 4), see Appendix IV for details
- University Minor (Article 8.2), Faculty Minor (Article 8.3), or Personal Minor (Article 8.4)
- Teacher Training Minor (Article 8.7)
- Research traineeship
- Internship

As stated in Article 8.2.2, students are free to take any University Minor as a broadening module without explicit permission from the Board of Examiners. An exception to this rule is the Minor Data Wise: Data Science in Society, organized by the Faculty of Behavioural and Social Sciences, as the contents significantly overlap with the Artificial Intelligence BSc programme. It is also not possible to include a course from a University Minor if an equivalent or similar course is already taught in the Artificial Intelligence BSc programme.

The degree programme does not offer any University/Faculty **Minors** to students from other programmes.

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Appendix III Course units in the first year of the degree programme

- **List of course units (art. 4.1.1)**
- **Compulsory order of examinations (art. 9.3)**

List of course units (art. 4.1.1)

The first year consists of twelve mandatory course units (60 ECTS; Table 1). Course details including entry requirements, modes of instruction, modes of assessment and examination are described in OCASYS.

Table 1. Mandatory course units - Year 1

Course code	Course unit name	ECTS
WBAI018-05	Algorithms and Data Structures	5
WBAI002-05	Autonomous Systems	5
WBAI048-05	Calculus for Artificial Intelligence	5
WBAI021-05	Cognitive Psychology	5
WBAI063-05	Fundamental Artificial Intelligence	5
WBAI022-05	General Linguistics	5
WBAI003-05	Imperative Programming	5
WBAI004-05	Introduction to Artificial Intelligence	5
WBAI012-05	Introduction to Logic	5
WBAI074-05	Introduction to Neuroscience	5
WBAI050-05	Linear Algebra and Multivariable Calculus	5
WBAI049-05	Statistics	5

There is no formal order of examinations for any of the course units in the first year.

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Appendix IV Course units in the second and third years of the degree programme

- **List of course units (art. 7.1.1)**
- **Compulsory order of examinations (art. 9.3)**

List of course units (art. 7.1.1)

Second year

The second year consists of twelve mandatory course units (60 ECTS; Table 2). Course details including entry requirements, modes of instruction, modes of assessment and examination are described in OCASYS.

Table 2. Mandatory course units - Year 2

Course code	Course unit name	ECTS
WBAI017-05	Advanced Logic	5
WBAI009-05	Architectures of Intelligence	5
WBAI011-05	Data Analytics and Communication	5
WBAI040-05	Ethics in Artificial Intelligence	5
WBAI056-05	Introduction to Machine Learning (for AI)	5
WBAI057-05	Knowledge and Agent Systems	5
WBAI065-05	Applied Machine Learning	5
WBAI059-05	Natural Language Processing	5
WBAI045-05	Object-Oriented Programming (for AI)	5
FI203AI	Philosophy of AI and Cognition	5
WBAI076-05	Scientific Skills	5
WBAI016-05	Signals and Systems (for AI)	5

Third year

The third year consists of:

- The Bachelor's Project (15 ECTS)
- Practical course units (10 ECTS; Table 4).
- One elective course unit from the Artificial Intelligence programme from Table 6 (5 ECTS).
- Minor component (30 ECTS), consisting of one of the following:
    - Specialisation course units (Table 5) combined with additional elective course units (Table 6 and 7) or practicals (Table 4), see Appendix IV for details
    - University Minor (Article 8.2)
    - Faculty Minor (Article 8.3)
    - Personal Minor (Article 8.4)
    - Teacher Training Minor (Article 8.7)
    - Research traineeship
    - Internship

Table 3. Mandatory course units - Year 3

Course code	Course unit name	ECTS
WBAI901-15	Bachelor's Project	15

Students must choose at least 10 ECTS of Practical course units from Table 4.

Table 4. Practical course units

Course code	Course unit name	ECTS
WBAI046-05	Agent Technology Practical	5
WBAI080-10	AI Engineering Practical	10
WBAI020-05	Cognitive Modelling Practical	5
WBAI077-05	Computational Methods in Neuroscience Practical	5
WBAI075-05	Interaction Design Practical	5
WBAI014-05	Knowledge Technology Practical	5
WBAI027-05	Language Technology Practical	5
WBAI015-05	Reinforcement Learning Practical	5
WBAI066-05	Robotics Practical	5
WBAI062-05	Social Robotics Practical	5

Note: It is possible to take more than 10 ECTS worth practical course units. In this case, additional practicals count as electives.

The Artificial Intelligence BSc Programme has five specialisations that can be taken in the minor component. These specialisations are coherent sets of elective courses that cover a particular subfield of Artificial Intelligence. Students are recommended to choose one of the following specialisations (see Table 5 for details):

- Computational Neuroscience
- Hybrid Intelligence
- Language and AI
- Machine Learning
- Robotics

Table 5. Specialisations

Computational Neuroscience

Course code	Course unit name	ECTS
TBD	Cognitive Neuroscience [1]	5
WBAI079-05	Computational Modelling of the Brain	5
WBAI078-05	Neural Computation	5

[1] *This course will be offered from 2027/2028 onwards.*

Hybrid Intelligence

Course code	Course unit name	ECTS
WBAI055-05	Human Factors	5
WBAI069-05	Hybrid Intelligence	5
WBAI071-05	Social Robotics	5

Language and AI

Course code	Course unit name	ECTS
LIX029B05	Conversational Interfaces	5
WBAI072-05	Human Language Learning	5
WBAI068-05	Large Language Models	5

Machine Learning

Course code	Course unit name	ECTS
WBAI028-05	Neural Networks	5
WBAI061-05	Reinforcement Learning	5
WBAI054-05	Uncertainty in Machine Learning	5

Robotics

Course code	Course unit name	ECTS
WBAI067-05	Introduction to Robotics	5
WBAI028-05	Neural Networks	5
WBAI071-05	Social Robotics	5

Electives can be chosen from the list of (pre-approved) electives (Table 6 and 7) or free electives (electives that have not been pre-approved). Students must request formal approval from the Board of Examiners to include free electives.

Table 6. Elective course units from AI

Course code	Course unit name	ECTS
WBAI079-05	Computational Modelling of the Brain	5
WBAI055-05	Human Factors	5
WBAI072-05	Human Language Learning	5
WBAI069-05	Hybrid Intelligence	5
WBAI067-05	Introduction to Robotics	5
WBAI068-05	Large Language Models	5
WBAI028-05	Neural Networks	5
WBAI078-05	Neural Computation	5
WBAI061-05	Reinforcement Learning	5
WBAI071-05	Social Robotics	5
WBAI052-05	Structural Analysis of Language for Cognitive Modelling	5
WBAI054-05	Uncertainty in Machine Learning	5
	Additional practical course units from the list of practical course units in Table 4.	

Table 7. Pre-approved elective course units from other degree programmes

Course code	Course unit name	ECTS
WBCS052-05	Advanced Algorithms	5
WBCS053-05	Advanced Programming	5
WBCS033-05	C++ Fundamentals	5
WBCS044-05	Computational Complexity	5
LIX025B05	Computational Grammar	5

WBCS019-05	Computer Graphics	5
LIX029B05	Conversational Interfaces	5
WBCS004-05	Information Security	5
WBEC002-05	Introduction to Science Education [2]	5
RGARI70210	IT Law for non-law Students [2]	10
WBCS027-05	Languages and Machines	5
PSB3E-CP09	Learning and memory	5
LIX003B05	Logic Programming	5
LIX032B05	Machine Translation	5
FI202LBG	Philosophy of Mind: Body, Brain, Mind [2]	7
WBCS034-05	Programming in C++	5
PSB3E-CP08	Thinking and deciding	5
WBCS008-05	Web Engineering	5

[2] *This course unit is taught in Dutch*

Compulsory order of examinations (Article 9.3)

The examinations for the course units listed in Table 8, may not be taken before the examinations for the courses listed in the Entry Requirements column have been passed.

Table 8. Entry requirements

Course unit name and code	**Entry requirements** [3]
Advanced Logic [WBAI017-05]	Introduction to Logic [WBAI012-05]
AI Engineering Practical [WBAI080-10]	Introduction to Machine Learning (for AI) [WBAI056-05]
Applied Machine Learning [WBAI065-05]	Introduction to Machine Learning (for AI) [WBAI056-05]
Bachelor's Project [WBAI901-15]	Completion of all first-year course units Completion of at least 135 ECTS credit points from the AI bachelor's programme Submission of study programme in Progress Portal Data Analytics and Communication [WBAI011-05]
Cognitive Modelling Practical [WBAI020-05]	Architectures of Intelligence [WBAI009-05]
Data Analytics and Communication [WBAI011-05]	Statistics [WBAI049-05]
Human Language Learning [WBAI072-05]	General Linguistics [WBAI022-05]
Hybrid Intelligence [WBAI069-05]	Knowledge and Agent Systems [WBAI057-05]
Interaction Design Practical [WBAI075-05]	Cognitive Psychology [WBAI021-05]
Introduction to Machine Learning (for AI) [WBAI056-05]	Linear Algebra and Multivariable Calculus [WBAI050-05]
Language Technology Practical [WBAI027-05]	Natural Language Processing [WBAI059-05] *or* Language and Speech Technology [WBAI007-05] *or* Participation in the course Large Language Models [WBAI068-05]
Neural Networks [WBAI028-05]	Introduction to Machine Learning (for AI) [WBAI056-05]
Signals and Systems (for AI) [WBAI016-05]	Calculus for AI [WBAI048-05]
Structural Analysis of Language for Cognitive Modelling [WBAI052-05]	General Linguistics [WBAI022-05]
Uncertainty in Machine Learning [WBAI054-05]	Introduction to Machine Learning (for AI) [WBAI056-05] *or* Neural Networks [WBAI028-05]

[3] In the event that a student has applied for a course to count as a course replacement, this replacement course also counts as a valid alternative for the course entry requirement in question.

Appendix V Contact hours (art. 3.6)

Table 9.1

Degree programme year 1	
Type of contact hour	**Contact hours per year (approx. 637)**
Lectures	Approx. 270
Tutorial	Approx. 180
Practicals	Approx. 90
Tutoring / Mentor Hours	Approx. 10
Final Examinations and Re-examinations	Approx. 30
Mid-term Examinations	Approx. 15
Miscellaneous Sessions (e.g. Q&A)	Approx. 42

Table 9.2

Degree programme year 2 and 3	
Type of contact hour	**Contact hours (approx. 1168)**
Lectures	Approx. 520
Tutorial	Approx. 120
Practicals	Approx. 420
Supervision during an internship or project	Approx. 8
Final Examinations and Re-examinations	Approx. 60
Miscellaneous Sessions (e.g. Q&A)	Approx. 40

Appendix VI Additional requirements Open degree programmes (Art. 7.3)

Students are permitted to obtain a diploma in the Artificial Intelligence BSc programme without fully fitting the curriculum set out in Appendix III and Appendix IV. This can only happen in consultation with and after approval of the Board of Examiners of the degree programme. Students are required to finish a BSc Project in the field of Artificial Intelligence, to guarantee they are able to function as a BSc-level researcher in line with the Dublin level descriptors / Framework for Qualifications of the European Higher Education Area, and are required to fit the Learning Outcomes of the programme (set out in Appendix I). These Learning Outcomes have been established in accordance with the AI BSc Framework of Reference of the Netherlands.

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Appendix VII Transitional provisions (art. 12.1)

For students who were registered in the programme before 2025-2026, the transitional provisions below apply. The provisions are listed in reverse-chronological order. General provisions are described through text. Course units that are a direct replacement for discontinued course units are listed in table format.

Students who have completed a discontinued course are excluded from taking the respective replacement course.

Any cases not listed in the Teaching and Examination Regulations, through either the current curriculum or the transitional provisions, are to be handled by the Board of Examiners.

Students who started in 2024-2025 or before:

Table 10.1

Discontinued course unit			**Replacement course unit**		
Course Code	**Course Name**	**ECTS**	**Course Code**	**Course Name**	**ECTS**
WBAI010-05	Basic Scientific Skills	5	WBAI076-05	Scientific Skills	5
WBAI025-05	Cognitive Ergonomics Practical	5	WBAI075-05	Interaction Design Practical	5
WBAI064-05	Data Science	5	WBAI011-05	Data Analytics and Communication	5
WBAI026-05	Introduction to the Brain	5	WBAI074-05	Introduction to Neuroscience	5
WBAI070-05	Machine Learning for Industry Practical	5	WBAI080-10	AI Engineering Practical	10

From 2025-2026 onwards Domain Analysis [WBAI058-05] is no longer offered. Students who started in 24-25 or before are still allowed to count this course as an elective.

From 2025-2026 onwards, Introduction to the Brain [WBAI026-05] is no longer offered. Students who started in 24-25 or before are still allowed to count this course as part of their mandatory programme.

For students who started in 2024-2025 or before, the specialisation Computational Neuroscience consists of two courses (10 ECTS). Students still need to obtain a total of 180 ECTS in their BSc AI programme.

Students who started in 2023-2024 or before:

Table 10.2

Discontinued course unit			**Replacement course unit**		
Course Code	**Course Name**	**ECTS**	**Course Code**	**Course Name**	**ECTS**
WBAI023-05	Artificial Intelligence 1	5	WBAI063-05	Fundamental Artificial Intelligence	5
WBAI011-05	Data Analytics and Communication	5	WBAI064-05	Data Science	5
WBAI007-05	Language and Speech Technology	5	WBAI073-05	Speech Technology	5
WBAI060-05	Machine Learning Practical	5	WBAI065-05	Applied Machine Learning	5
WBAI029-05	Robotics Practical 1	5	WBAI066-05	Robotics Practical	5

Students are allowed to count Language and Speech Technology [WBAI007-05] instead of Natural Language Processing [WBAI059-05] as part of their mandatory programme. If they choose to do so, Natural Language Processing [WBAI059-05] may be used as an elective option instead.

Students are allowed to take Neural Networks [WBAI028-05] instead of Applied Machine Learning [WBAI065-05] as part of their mandatory programme. If they choose to do so, Applied Machine Learning [WBAI065-05] may be used as a pre-approved elective option instead.

Students who passed the course Machine Learning Practical [WBAI060-05] can choose to either:

1. use the course towards the required 10 ECTS in practicals. If they choose to do so, they are not allowed to follow Applied Machine Learning [WBAI065-05] and must take the previously mandatory course Neural Networks [WBAI028-05].
2. use the course as a replacement course for Applied Machine Learning [WBAI065-05] as part of their mandatory programme. If they choose to do so, they are not allowed to follow Applied Machine Learning [WBAI065-05] and must take an additional 5 ECTS practical.

From 24-25 onwards, Robotics Practical 2 [WBAI030-05] is no longer offered. Students who started in 23-24 or before are still allowed to include this course as a valid practical.

Students who started in 2021-2022 or before:

Discontinued course unit			**Replacement course unit**		
Course Code	**Course Name**	**ECTS**	**Course Code**	**Course Name**	**ECTS**
WBAI006-05	Knowledge and Agent Technology	5	WBAI057-05	Knowledge and Agent Systems	5