## CURRICULUM M.SC. MACHINE LEARNING

### DISTANCE LEARNING, 120 ECTS

| Semester | | | Module | Course Code | Course | ECTS | Type of Exam |
|---|---|---|---|---|---|---|---|
| FT | PT I | PT II | | | | | |
| 1. Semester | 1. Semester | 1. Semester | Programming with Python | DLMDSPWP01 | Programming with Python | 5 | Written Assignment |
| | | | Advanced Mathematics | DLMDSAM01 | Advanced Mathematics | 5 | Exam |
| | | | Machine Learning | DLMDSML01 | Machine Learning | 5 | Exam |
| | 2. Semester | 2. Semester | Advanced Statistics | DLMDSAS01 | Advanced Statistics | 5 | Advanced Workbook |
| | | | Deep Learning | DLMDSDL01 | Deep Learning | 5 | Oral Assignment |
| | | | Project: Machine Learning Libraries | DLMMLPMLL01 | Project: Machine Learning Libraries | 5 | Portfolio |
| 2. Semester | 3. Semester | 3. Semester | Advanced Research Methods | DLMARM01 | Advanced Research Methods | 5 | Written Assignment |
| | | | Big Data Technologies | DLMDSBDT01 | Big Data Technologies | 5 | Oral Assignment |
| | | | Data Modeling and Reporting | DLMBIDMR01 | Data Modeling and Reporting | 5 | Exam |
| | | 4. Semester | Seminar: Sustainability, Ethics, and Law in Machine Learning | DLMMLSSELML01 | Seminar: Sustainability, Ethics, and Law in Machine Learning | 5 | Research Essay |
| | 4. Semester | | ELECTIVE A* | | e.g.<br>Embedded Systems Engineering | 5 | |
| | | 5. Semester | ELECTIVE A* | | e.g.<br>Project: Embedded Systems | 5 | |
| 3. Semester | | | ELECTIVE B* | | e.g.<br>Data Engineering | 5 | |
| | | 6. Semester | ELECTIVE B* | | e.g.<br>Project: Data Engineering | 5 | |
| | 5. Semester | | ELECTIVE C* | | e.g.<br>Internship: Master AI, Machine Learning and Data Science[1] | 20 | |
| 4. | 6. | 7. | | | | | |
| | | 8. | Master Thesis | | Master Thesis<br>Thesis Defense | 27<br>3 | Master Thesis<br>Presentation: Colloquium |
| Total<br>120 ECTS | | | | | | | |

| | Elective A | Elective B |
|---|---|---|
| **NLP/LLM** | NLP and LLM | Voice Assistants |
| | Natural Language Processing | Project: Prompt Engineering |
| **Computer Vision** | Reinforcement Learning | Mid-Level Vision and Video |
| | Image Processing and Low Level Vision | Computer Vision for Autonomous Systems |
| **ML Management** | Corporate Governance of IT, Compliance, and Law | Seminar: Legal Framework for IT-Security |
| | International IT Law | Cyber Security and Data Protection |
| **Data Methodologies** | Data Query Languages | Extract, Transform and Load Technologies |
| | Business Intelligence I | Project: Extract, Transform and Load Technologies |
| **Modelling Basics and Trends** | Case Study: Model Engineering | DevOps |
| | Explainable and Interpretable Machine Learning Models | Project: Machine Learning Model Building |
| **Additional Electives** | | Artificial Intelligence |
| | | Project: AI Excellence with Creative Prompting Techniques |

**Elective C**

Internship: Master AI, Machine Learning and Data Science
**or:**
Business Communication and Storytelling
Design, Lean and Game: Social and creative methods
Start Up Lab

INTERNATIONAL UNIVERSITY OF APPLIED SCIENCES

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You've already planned out exactly how your course schedule should look? Wonderful!
The IU International University of Applied Sciences offers you the flexibility to choose any available module you like from any semester. You can work on a number of modules at the same time or one by one.

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* Electives: Choose two modules, every elective module can only be chosen once.

FT: Full-Time, 24 months
PT I: Part-Time I, 36 months
PT II: Part-Time II, 48 months

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You can find more information about your degree program in the module handbook on our website.

[1] **Internship:** ◙
Decide at the beginning between an internship at a company or modules from compulsory elective C. You complete the internship with a practical reflection. If you decide on the modules from compulsory elective C, all modules from this area must be completed. Mixed forms of internship and compulsory elective C are not possible.