

## CURRICULUM M.Sc. ARTIFICIAL INTELLIGENCE

myStudies, 120 ECTS Credits

Month	Model 1: Programme Start October			Model 2: Programme Start April				
	Courses			Courses				
Oct	Artificial Intelligence Advanced Mathematics Programming with Python							
Nov								
Dec								
Jan								
Feb	Seminar: AI and Society Advanced Statistics*			Machine Learning*				
Mar								
Apr	Use Case and Evaluation <sup>1</sup> Project: AI Use Case			Inference and Causality*	Artificial Intelligence	Advanced Mathematics		
May				Programming with Python				
Jun	Lecture-Free Period							
Jul	Deep Learning*			NLP and Computer Vision*	Software Engineering for Data Intensive Sciences*	Seminar: AI and Society		
Aug				Advanced Statistics*				
Sep	Lecture-Free Period							
Oct								
Nov								
Dec								
Jan	Elective A Course a			Elective A Course b	Deep Learning*	NLP and Computer Vision*		
Feb				Software Engineering for Data Intensive Sciences*				
Mar								
Apr	Elective B Course c			Elective B Course d	Reinforcement Learning*			
May				Seminar: Current Topics in AI				
Jun	Lecture-Free Period							
Jul	Master Thesis			Elective A Course a	Elective A Course b			
Aug	Lecture-Free Period							
Sep								
Oct				Elective B Course c	Elective B Course d			
Nov								
Dec								
Jan				Master Thesis				
Feb								
Mar								

### Elective A-

UI/UX Expert	Artificial Intelligence in FinTech*	AI in E-Commerce, Marketing and Demand Forecast*
a) User Interface and Experience	a) Concepts of FinTechs and Artificial Intelligence	a) Introduction to AI in E-Commerce and Marketing*
b) Project: Human Computer Interaction*	b) Fraud Detection FinTechs*	b) Demand Forecast and Inventory Control*
Technical Project Lead	Applied Autonomous Driving	Industrial AI*
a) IT Project Management	a) Architectures of Self-Driving Vehicles	a) AI in Production*
b) Project: Technical Project Planning*	b) Case Study: Localization, Motion Planning and Sensor Fusion	b) Project: Industrial Internet of Things*
AI Specialist	Artificial Intelligence in Supply Chain Management*	Natural Language Processing and Voice Assistants*
a) Advanced NLP and Computer Vision*	a) Concepts of Artificial Intelligence in Supply Chain Management*	a) Natural Language Processing*
b) Project: NLP and Computer Vision*	b) Multi-Agent Systems*	b) Voice Assistants*
Data Engineer	AI in Healthcare and Medical Imaging*	Foundational Computer Vision*
a) Data Engineering	a) AI in Healthcare*	a) Image Processing and Low Level Vision*
b) Project: Data Engineering*	b) AI in Medical Imaging and Diagnostics*	b) Mid-Level Vision and Video*
		Internship

### Elective B-

Management	Advanced Robotics 4.0	AI for Analytics, Personalization and Recommender Systems*
c) Leadership	c) Industrial and Mobile Robotics	c) AI in Marketing and Analytics*
d) Strategic Management	d) Project: Collaborative Robotics	d) Personalization and Recommender Systems*
Sales, Pricing and Brand Management	RoboAdvisory and AI in FinTech*	Industrial Automation & Computer Vision for Autonomous Systems*
c) Global Brand Management	c) Robo Advisory*	c) Industrial Automation
d) Sales and Pricing	d) AI in FinTech*	d) Computer Vision for Autonomous Systems
Consumer Behaviour and Research	Functional Security and Computer Vision for Autonomous Systems*	NLP and Innovative Technologies in Education*
c) International Consumer Behavior	c) Functional Security	c) NLP in Education*
d) Applied Marketing Research	d) Computer Vision for Autonomous Systems	d) NLP for Accessibility*
Corporate Finance	AI and its Application in Demand Forecast and Procurement*	Cognitive Computer Vision*
c) Corporate Finance	c) Demand Forecast and Inventory Control*	c) High-Level Vision*
d) Advanced Corporate Finance	d) Artificial Intelligence in Procurement*	d) Project: Computer Vision*
Innovate and Change	Medical NLP and Medical Robotics*	Internship
c) Change Management	c) Medical NLP*	
d) Innovation and Entrepreneurship	d) Medical Robotics and Devices*	

### Course Information

Module	Course Code	Course	ECTS Credits	Type of Exam
Artificial Intelligence	DLMAIA01	Artificial Intelligence	5	Exam
Advanced Mathematics	DLMDSAM01-01	Advanced Mathematics	5	Exam
Programming with Python	DLMDSPWP01	Programming with Python	5	Written Assessment: Written Assignment
Seminar: AI and Society	DLMAISAS01	Seminar: AI and Society	5	Written Assessment: Research Essay
Advanced Statistics*	DLMDSAS01	Advanced Statistics*	5	Advanced Workbook
Machine Learning*	DLMDSM01	Machine Learning*	5	Exam
Use Case and Evaluation	DLMDSUCE01	Use Case and Evaluation	5	Oral Assignment
Project: AI Use Case	DLMAIPAU01C01	Project: AI Use Case	5	Portfolio
Inference and Causality*	DLMAIAC01	Inference and Causality*	5	Advanced Workbook
Deep Learning*	DLMDSDL01	Deep Learning*	5	Oral Assignment
NLP and Computer Vision*	DLMAINLPCV01	NLP and Computer Vision*	5	Oral Assignment
Software Engineering for Data Intensive Sciences*	DLMDSESDIS01	Software Engineering for Data Intensive Sciences*	5	Oral Assignment
Reinforcement Learning*	DLMAIRIL01	Reinforcement Learning*	5	Written Assessment: Written Assignment
Seminar: Current Topics in AI	DLMAISCTA01	Seminar: Current Topics in AI	5	Written Assessment: Research Essay
ELECTIVE A-	e.g. UI/UX Expert		10	
ELECTIVE B-	e.g. Robo Advisory and AI in FinTech		10	
Master Thesis	Master Thesis		27	Master Thesis
	Thesis Defense		3	Presentation: Colloquium



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Here you see the order in which you study your courses in presence depending on your personal study start in October or April. Each semester consists of two blocks. In each block, you attend classes on campus for usually three courses to deepen the content in direct exchange with your fellow students and lecturers.

You have lecture-free periods in both June and September, which you can spend reviewing and preparing for exams. Attending the courses on campus is mandatory and will be verified due to Visa regulations (not valid for DACH students).

Each block concludes with a two-week exam preparation phase. You can defer those exams to a later date that you do not want to take during this period. This way, your exam phases are always spread evenly over the year. Exceptions to this are courses that count as admission requirements for other courses.

Note: You can already start with your thesis earlier than the designated block, once you have met the minimum amount of credit points required to enter.



- Electives: Choose one module from the Elective A and one module from the Elective B.

Note: Those elective modules where the minimum number of participants is not reached will only be offered online (distance learning). However, IU ensures that there are always electives on campus.



Attention: Attendance times may vary slightly depending on public holidays and the federal state holidays the campus is located in.



\* This course comes with admissions requirements. Please consult the module handbook for more information.

1 These courses take place one after another within the same quarter.