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FH | JOANNEUM
Data Science and
Artificial Intelligence

Graz, January 2026

Dear Sir or Madam,

the demand for **specialists in data science and AI** continues to rise worldwide. Our sophisticated master's programme **Data Science and Artificial Intelligence**, prepares students at the highest academic level and offers three specialised tracks:

1 INDUSTRIAL DATA SCIENCE AND AI-BASED OPTIMISATION

- Optimisation
- Predictive Maintenance
- Signal Processing

2 BIG DATA AND BUSINESS INTELLIGENCE

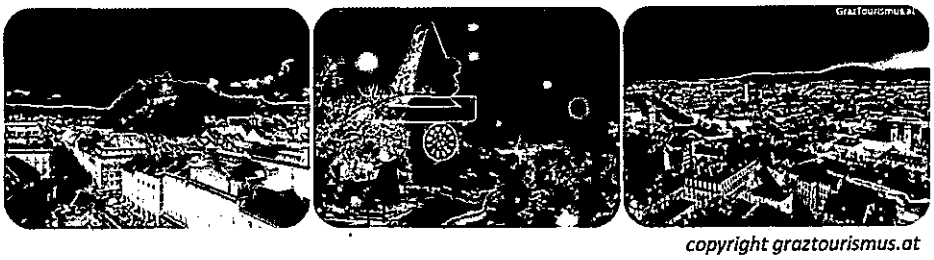
- Databases
- Business and Research
- Reports and Dashboards

3 MACHINE LEARNING AND GENERATIVE AI

- Large Language Models
- Gaming AI
- HPC and MLOps

4 SEMESTERS | 120 ECTS | ENGLISH | GRAZ, AUSTRIA

Austria is well known for its strong **high-education quality, innovative research environment**, and **excellent living standards.** Studying at **FH JOANNEUM** allows students to combine **advanced technical education** with **valuable international experience** in one of Europe's most student-friendly cities. The lectures are tailored to the needs of international students, while our **curriculum**, including its **three study tracks**, is designed to provide **state-of-the-art education.**



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We kindly ask you to **forward this information** to anybody in your network who might be interested to enroll full-time in our master's degree program. **Applications are open, with a limited number of places.**

Many thanks for your interest and best regards to your team!

Yours sincerely,

DDr. Wolfgang Granigg
Head of the Degree Programme "Data Science and Artificial Intelligence"
FH JOANNEUM

Master´s Degree Programme

INDUSTRIAL DATA SCIENCE AND AI-BASED OPTIMISATION

Study track of the Master's degree programme in Data Science and Artificial Intelligence

Utilize AI algorithms and intelligent analysis methods to optimise complex industrial processes. The study track 'Industrial Data Science and AI-based Optimisation' equips you with cutting-edge frameworks, tools, and methods to unlock unprecedented potential in industrial robotics, logistics, and production.

Core topics in this study programme:

Industrial Data Science and Robotics
Understanding the fundamentals of control engineering, digital signal processing, and inferential statistics is crucial for conducting sophisticated time series analyses and making accurate predictive maintenance forecasts.

AI-based Optimisation and Reinforcement Learning
Modern AI-based optimisation techniques and metaheuristics allow for the optimisation of highly complex systems and discrete problems. Agent-based modelling can be efficiently used for the practical simulation of various scenarios and the optimisation of appropriate reinforcement learning algorithms.

Computational Intelligence
Discovering hidden patterns and relationships in data is central to data mining. Using numerical and statistical methods, as well as the fundamentals of machine learning and neural networks, custom algorithms can be implemented and optimized for these purposes.

Data Storage and Processing
Proficiency in relevant and current scripting languages is an essential qualification in the fields of data science and AI. Additionally, skilled use of query languages and a deep understanding of data storage and transformation are crucial competencies for efficient data processing and storage.

FACTS

- Master of Science in Engineering (MSc)
- Work-friendly
- 4 semesters / 120 ECTS
- FH JOANNEUM Graz
- Language of instruction: English
- 36 student placements each year
- Head of degree programme: **MMMMag. Dr. Dr. Wolfgang Granigg**
- Tuition fee: no fees for students from the European Union, the European Economic Area (EEA) and Switzerland
- Further information regarding deadlines, requirements, applications and the application-procedure are available online.
- **www.fh-joanneum.at/din**

Did you know,
...that the programme enhances research and project management skills? It allows for specialisation in cutting-edge areas and highlights practical applicability through case studies, company visits, and student projects.

Organisation

In the 1st semester the programme there is a special emphasis on advanced prerequisites for data science and AI. In the 2nd semester the applications of theoretical knowledge in various settings, with a focus on the chosen study track, are the focal points. In the 3rd semester students will further deepen their understanding of the study track and will also conduct applied project work. In the 4th semester the programme starts with partly blocked courses followed by reduced classroom-teaching to allow students to focus on their master's thesis and master's exam preparation.

Career Prospects

The occupational field of graduates generally covers the entire spectrum of data science and artificial intelligence, for example in the areas of statistics, modelling, simulation and optimisation, database management, scripting, data mining, artificial intelligence and machine learning, etc. Graduates of 'Data Science and Artificial Intelligence' with the specialisation in 'Industrial Data Science and AI-based Optimisation' are highly qualified for industrial companies and their operational requirements.

„Students of Industrial Data Science and AI-based Optimisation are provided with the state-of-the-art tools and knowledge to face data-driven challenges of tomorrow's industry."

MMMMag. DDr. Wolfgang Granigg, Head of degree programme

CURRICULUM: 120 ECTS (30 ECTS per semester)

1st semester	LV-Typ	SWS	ECTS
Introduction to Data Science and Artificial Intelligence	VO	1,5	2,5
Quick Guide to Machine Learning	UE	1,5	2,5
Probability Theory and Descriptive Statistics	ILV	3	5
Modelling and Numerical Simulations	ILV	3	5
Databases and Query Languages	ILV	3	5
Programming and Data Processing	UE	3	5
Refresher of Foundations (2 out of 3)			
Refresher on Mathematics	ILV	1,5	2,5
Refresher on Unix Shells and LaTex	ILV	1,5	2,5
Refresher on Information Technology	ILV	1,5	2,5
		18	**30**

2nd semester	LV-Typ	SWS	ECTS
Data Quality and Data Fusion	ILV	3	5
Data Mining and Statistical Learning	ILV	3	5
Numerics and Computational Optimisation	ILV	1,5	2,5
Machine Learning with Artificial Neural Networks	ILV	3	5
Project Management and Scientific Writing	ILV	1,5	2,5
Industrial Data Science and AI-Based Optimisation			
Industrial Robotics and Control Engineering	ILV	3	5
Digital Signal Processing	ILV	1,5	2,5
Time Series Analysis and Inferential Statistics	ILV	1,5	2,5
		18	**30**

3rd semester	LV-Typ	SWS	ECTS
Master's Thesis Exposé	SE	1	5
Industrial Data Science and AI-Based Optimisation			
Advanced Prediction Methods	ILV	1,5	2,5
Agent-based Programming and Reinforcement Learning	ILV	3	5
Process Optimisation and AI-based Operations Research	ILV	1,5	2,5
Biologically Inspired Approaches to Optimisation	ILV	1,5	2,5
MLOps and Continuous Monitoring	ILV	1,5	2,5
Project Work in Industrial Data Science and AI-based Optimisation	PT	2	5
Elective Lab Course (1 out of 3)			
Distributed Computing and Federated Learning	PT	2	5
Tangible UI/UX Lab	PT	2	5
Augmented and Virtual Reality Lab	PT	2	5
		14	**30**

4th semester	LV-Typ	SWS	ECTS
Ethics, Compliance and Data Protection	ILV	1,5	2,5
Business Dialogue and Case Studies	SE	1,5	2,5
Master's Thesis Seminar	SE	1,5	2,5
Master's Thesis	MA	0,5	20
Master's Examination	FA	0	2,5
		5	**30**

MA = Master's Thesis, ILV = Integrated course, PT = Project, SE = Seminar, UE = Tutorial, VO = Lecture, SWS = Hours per week, ECTS = European Credit Transfer and Accumulation System, FA = Master's Examination

Master´s Degree Programme

BIG DATA AND BUSINESS INTELLIGENCE

Study track of the Master's degree programme in Data Science and Artificial Intelligence

Leverage big data to gain new insights in business through modern and intelligent analysis methods and utilize them for decision-making. The study track 'Big Data and Business Intelligence' provides you with cutting-edge tools and techniques to make a significant impact as a data analyst in a business environment.

Core topics in this study programme:

Big Data and Business Reporting
Relational, multidimensional, and NoSQL databases form the essential foundation of highly available and fast big data applications. Based on this, attractive and dynamic reports and dashboards can be automatically created using the latest frameworks.

Business Intelligence and Forecasting
With data mining and inferential statistics, sophisticated and high-dimensional time series analyses and accurate forecasts can be produced. OLAP and self-service BI enable ad-hoc analyses of various data and data streams.

Computational Intelligence
Discovering hidden patterns and relationships in data is central to data mining. Using numerical and statistical methods, as well as the fundamentals of machine learning and neural networks, custom algorithms can be implemented and optimised for these purposes.

Data Storage and Processing
Proficiency in relevant and current scripting languages is an essential qualification in the fields of data science and AI. Additionally, skilled use of query languages and a deep understanding of data storage and transformation are crucial competencies for efficient data processing and storage.

FACTS

- Master of Science in Engineering (MSc)
- Work-friendly
- 4 semesters / 120 ECTS
- FH JOANNEUM Graz
- Language of instruction: English
- 36 student placements each year
- Head of degree programme: **MMMMag. Dr. Dr. Wolfgang Granigg**
- Tuition fee: no fees for students from the European Union, the European Economic Area (EEA) and Switzerland
- Further information regarding deadlines, requirements, applications and the application-procedure are available online.
- **www.fh-joanneum.at/dbi**

Did you know,
...that the programme enhances research and project management skills? It allows for specialisation in cutting-edge areas and highlights practical applicability through case studies, company visits, and student projects.

Organisation

In the 1st semester the programme there is a special emphasis on advanced prerequisites for data science and AI. In the 2nd semester the applications of theoretical knowledge in various settings, with a focus on the chosen study track, are the focal points. In the 3rd semester students will further deepen their understanding of the study track and will also conduct applied project work. In the 4th semester the programme starts with partly blocked courses followed by reduced classroom-teaching to allow students to focus on their master's thesis and master's exam preparation.

Career Prospects

The occupational field of graduates generally covers the entire spectrum of data science and artificial intelligence, for example in the areas of statistics, modelling, simulation and optimisation, database management, scripting, data mining, artificial intelligence and machine learning, etc. Graduates of 'Data Science and Artificial Intelligence' with the specialisation in 'Big Data and Business Intelligence' are highly qualified as data analysts and/or data controllers.

„In this study programme, we provide our students with the tools to face important data science and AI challenges in the context of Big Data and Business Intelligence."

MMMMag. DDr. Wolfgang Granigg, Head of degree programme

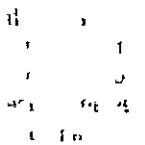
CURRICULUM: 120 ECTS (30 ECTS per semester)

1st semester	LV-Typ	SWS	ECTS
Introduction to Data Science and Artificial Intelligence	VO	1,5	2,5
Quick Guide to Machine Learning	UE	1,5	2,5
Probability Theory and Descriptive Statistics	ILV	3	5
Modelling and Numerical Simulations	ILV	3	5
Databases and Query Languages	ILV	3	5
Programming and Data Processing	UE	3	5
Refresher of Foundations (2 out of 3)			
Refresher on Mathematics	ILV	1,5	2,5
Refresher on Unix Shells and LaTex	ILV	1,5	2,5
Refresher on Information Technology	ILV	1,5	2,5
		18	30

2nd semester	LV-Typ	SWS	ECTS
Data Quality and Data Fusion	ILV	3	5
Data Mining and Statistical Learning	ILV	3	5
Numerics and Computational Optimisation	ILV	1,5	2,5
Machine Learning with Artificial Neural Networks	ILV	3	5
Project Management and Scientific Writing	ILV	1,5	2,5
Big Data and Business Intelligence			
Big Data Storage and Analytical Databases	ILV	3	5
Online Analytical Processing and Self-Service BI	ILV	1,5	2,5
Business Research and Inferential Statistics	ILV	1,5	2,5
		18	30

3rd semester	LV-Typ	SWS	ECTS
Master's Thesis Exposé	SE	1	5
Big Data and Business Intelligence			
Advanced Data Mining Methods	ILV	1,5	2,5
Advanced Time Series Analysis and Forecasting	ILV	1,5	2,5
Business Reports and Dashboards	ILV	3	5
Business Foundations in Management, Strategy and CRM	ILV	1,5	2,5
Business Foundations in Controlling and Risk Management	ILV	1,5	2,5
Project Work in Big Data and Business Intelligence	PT	2	5
Elective Lab Course (1 out of 3)			
Distributed Computing and Federated Learning	PT	2	5
Tangible UI/UX Lab	PT	2	5
Augmented and Virtual Reality Lab	PT	2	5
		14	30

4th semester	LV-Typ	SWS	ECTS
Ethics, Compliance and Data Protection	ILV	1,5	2,5
Business Dialogue and Case Studies	SE	1,5	2,5
Master's Thesis Seminar	SE	1,5	2,5
Master's Thesis	MA	0,5	20
Master's Examination	FA	0	2,5
		5	30



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Master's Degree Programme

MACHINE LEARNING AND GENERATIVE AI

Study track of the Master's degree programme in Data Science and Artificial Intelligence

Develop innovative AI solutions using state-of-the-art frameworks, tools, and methods. In the study track 'Machine Learning and Generative AI' you will learn to design and implement intelligent systems, empowering you to actively shape the digital future as a product and software developer.

Core topics in this study programme:

Machine Learning and Neural Networks
High performance and cloud computing form the basis for modern and computationally intensive machine learning applications. Complex deep learning architectures allow the solving of sophisticated tasks using supervised or unsupervised learning, as well as reinforcement learning (RL) and multi-agent reinforcement learning (MARL).

Generative AI and LLMs
Large intelligent language models deliver impressive results and are indispensable in today's world. A deep understanding of probabilistic and generative AI algorithms, as well as the structure and functionality of large language models (LLMs), is essential for their secure use and successful integration within companies.

Computational Intelligence
Discovering hidden patterns and relationships in data is central to data mining. Using numerical and statistical methods, as well as the fundamentals of machine learning and neural networks, custom algorithms can be implemented and optimized for these purposes.

Data Storage and Processing
Proficiency in future-oriented and efficient scripting languages is an essential qualification in the fields of data science and AI. Additionally, skilled use of query languages and a deep understanding of data storage and transformation are crucial competencies for efficient data processing and storage.

FACTS

- Master of Science in Engineering (MSc)
- Work-friendly
- 4 semesters / 120 ECTS
- FH JOANNEUM Graz
- Language of instruction: English

- 36 student placements each year
- Head of degree programme: **MMMMag. Dr. Dr. Wolfgang Granigg**
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Career Prospects

The occupational field of graduates generally covers the entire spectrum of data science and artificial intelligence, for example in the areas of statistics, modelling, simulation and optimisation, database management, scripting, data mining, artificial intelligence and machine learning, etc. Graduates of 'Data Science and Artificial Intelligence' with the specialisation in 'Machine Learning and Generative AI' are highly qualified as software developers in the field of artificial intelligence.

„Completing this study programme enables students to create, modify and apply various algorithms and frameworks in the context of Machine Learning and Generative AI."

MMMMag. DDr. Wolfgang Granigg, Head of degree programme

CURRICULUM: 120 ECTS (30 ECTS per semester)

1st semester	LV-Typ	SWS	ECTS
Introduction to Data Science and Artificial Intelligence	VO	1,5	2,5
Quick Guide to Machine Learning	UE	1,5	2,5
Probability Theory and Descriptive Statistics	ILV	3	5
Modelling and Numerical Simulations	ILV	3	5
Databases and Query Languages	ILV	3	5
Programming and Data Processing	UE	3	5
Refresher of Foundations (2 out of 3)			
Refresher on Mathematics	ILV	1,5	2,5
Refresher on Unix Shells and LaTex	ILV	1,5	2,5
Refresher on Information Technology	ILV	1,5	2,5
		18	**30**

2nd semester	LV-Typ	SWS	ECTS
Data Quality and Data Fusion	ILV	3	5
Data Mining and Statistical Learning	ILV	3	5
Numerics and Computational Optimisation	ILV	1,5	2,5
Machine Learning with Artificial Neural Networks	ILV	3	5
Project Management and Scientific Writing	ILV	1,5	2,5
Machine Learning and Generative AI			
High Performance Computing and Cloud Computing	ILV	3	5
Game Theory and Gaming AI	ILV	1,5	2,5
Introduction to Probabilistic and Generative AI	ILV	1,5	2,5
		18	**30**

3rd semester	LV-Typ	SWS	ECTS
Master's Thesis Exposé	SE	1	5
Machine Learning and Generative AI			
Advanced Machine Learning Methods	ILV	1,5	5
Reinforcement Learning and MARL	ILV	1,5	2,5
Advanced Artificial Neural Networks and Deep Learning	ILV	1,5	2,5
Advanced Generative AI Methods and Large Language Models	ILV	3	2,5
DevOps and MLOps	ILV	1,5	2,5
Project Work in Machine Learning and Generative AI	PT	2	5
Elective Lab Course (1 out of 3)			
Distributed Computing and Federated Learning	PT	2	5
Tangible UI/UX Lab	PT	2	5
Augmented and Virtual Reality Lab	PT	2	5
		14	**30**

4th semester	LV-Typ	SWS	ECTS
Ethics, Compliance and Data Protection	ILV	1,5	2,5
Business Dialogue and Case Studies	SE	1,5	2,5
Master's Thesis Seminar	SE	1,5	2,5
Master's Thesis	MA	0,5	20
Master's Examination	FA	0	2,5
		5	**30**

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