CURRICULUM B.Sc. DATA SCIENCE

myStudies, 180 ECTS

Month	Model 1: Programme Start October			Model 2: Programme Start January				Model 3: Programme Start April			Model 4: Programme Start July			
	Courses			Courses				Courses			Courses			
Oct	Introduction to Data Science	Introduction to Academic Work	Agile Project Management											
Nov														
Dec														
Jan	Introduction to Programming with Python	Mathematics: Analysis	Statistics - Probability and Descriptive Statistics	Introduction to Data Science	Introduction to Programming with Python	Mathematics: Analysis	Statistics - Probability and Descriptive Statistics							
Feb														
Mar														
Apr	Object Oriented & Functional Programming with Python	Mathematics: Linear Algebra	Statistics - Inferential Statistics*	Introduction to Academic Work		Agile Project Management		Introduction to Data Science	Introduction to Academic Work	Agile Project Management				
May														
Jun	Semester Break													
Jul	Intercultural and Ethical Decision-Making	Collaborative Work	Introduction to Data Protection & Cyber Security	Intercultural and Ethical Decision-Making	Collaborative Work		Introduction to Data Protection & Cyber Security	Introduction to Programming with Python	Mathematics: Analysis	Statistics - Probability and Descriptive Statistics	Introduction to Data Science	Introduction to Programming with Python	Mathematics: Analysis	Statistics - Probability and Descriptive Statistics
Aug														
Sep	Semester Break													
Oct	Database Modeling and Database Systems	Project: Build a Data Mart in SQL	Cloud Computing	Object Oriented and Functional Programming with Python	Mathematics: Linear Algebra		Statistics - Inferential Statistics*	Object Oriented and Functional Programming with Python	Mathematics: Linear Algebra	Statistics - Inferential Statistics*	Introduction to Academic Work		Agile Project Management	
Nov														
Dec														
Jan	Machine Learning - Supervised Learning*	Machine Learning - Unsupervised Learning and Feature Engineering*	Data Science Software Engineering*	Machine Learning - Supervised Learning*	Machine Learning - Unsupervised Learning and Feature Engineering*		Data Science Software Engineering*	Intercultural and Ethical Decision-Making	Collaborative Work	Introduction to Data Protection & Cyber Security	Intercultural and Ethical Decision-Making	Collaborative Work		Introduction to Data Protection & Cyber Security
Feb														
Mar														
Apr	Business Intelligence[1]	Project: Business Intelligence[1]	Data Quality and Data Wrangling*	Business Intelligence[1]	Project: Business Intelligence[1]		Data Quality and Data Wrangling*	Business Intelligence[1]	Project: Business Intelligence[1]	Data Quality and Data Wrangling*	Object Oriented & Functional Programming with Python	Mathematics: Linear Algebra		Statistics - Inferential Statistics*
May														
Jun	Semester Break													
Jul	Explorative Data Analysis and Visualization*	Time Series Analysis*	Model Engineering	Explorative Data Analysis and Visualization*	Time Series Analysis*		Model Engineering	Explorative Data Analysis and Visualization*	Time Series Analysis*	Model Engineering	Explorative Data Analysis and Visualization*	Time Series Analysis*		Model Engineering
Aug														
Sep	Semester Break													
Oct	Big Data Technologies*	Neural Nets and Deep Learning*	Elective A Course a	Elective A Course b	Database Modeling and Database Systems	Project: Build a Data Mart in SQL		Cloud Computing	Database Modeling and Database Systems	Project: Build a Data Mart in SQL	Cloud Computing	Database Modeling and Database Systems	Project: Build a Data Mart in SQL	Cloud Computing
Nov														
Dec														
Jan	Seminar: Ethical Considerations in Data Science	Elective B Course c		Elective B Course d	Seminar: Ethical Considerations in Data Science	Elective B Course c		Elective B Course d	Machine Learning - Supervised Learning*	Machine Learning - Unsupervised Learning and Feature Engineering*	Data Science Software Engineering*	Machine Learning - Supervised Learning*	Machine Learning - Unsupervised Learning and Feature Engineering*	Data Science Software Engineering*
Feb														
Mar														
Apr	Project: From Model to Production*	Elective C Course e		Elective C Course f	Project: From Model to Production*	Elective C Course e		Elective C Course f	Project: From Model to Production*	Elective C Course e	Elective C Course f	Business Intelligence[1]	Project: Business Intelligence[1]	Data Quality and Data Wrangling*
May														
Jun	Semester Break													
Jul	Bachelor Thesis				Bachelor Thesis				Bachelor Thesis			Bachelor Thesis		
Aug														
Sep	Semester Break													
Oct					Big Data Technologies*	Neural Nets and Deep Learning*	Elective A Course a	Elective A Course b	Big Data Technologies*	Neural Nets and Deep Learning*	Elective A Course a	Elective A Course b	Big Data Technologies*	Neural Nets and Deep Learning*	Elective A Course a	Elective A Course b
Nov																
Dec																
Jan									Seminar: Ethical Considerations in Data Science	Elective B Course c		Elective B Course d	Seminar: Ethical Considerations in Data Science	Elective B Course c		Elective B Course d
Feb																
Mar																
Apr													Project: From Model to Production*	Elective C Course e		Elective C Course f
May																

INTERNATIONAL UNIVERSITY OF APPLIED SCIENCES

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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, January, April or July. 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 semester breaks in June and September. 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.

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

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If you are studying Model 2, 3 or 4 you will have to start your Bachelor Thesis before completing your final courses.

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

Elective A~

Data Engineer
- a) Data Engineering
- b) Project: Data Engineering

Data Analyst
- a) Advanced Data Analysis
- b) Project: Data Analysis

AI Specialist
- a) Artificial Intelligence
- b) Project: Artificial Intelligence

Elective B~

International Marketing and Branding
- c) International Marketing
- d) International Brand Management

Applied Sales
- c) Applied Sales I
- d) Applied Sales II

Supply Chain Management
- c) Supply Chain Management I
- d) Supply Chain Management II

Managerial Economics and Corporate Finance and Investment
- c) Managerial Economics
- d) Corporate Finance and Investment

Smart Factory
- c) Smart Factory I
- d) Smart Factory II

Production Engineering, Automation and Robotics
- c) Production Engineering
- d) Automation and Robotics*

Autonomous Driving
- c) Self-Driving Vehicles
- d) Seminar: Current Topics and Trends in Self-Driving Technology

Elective C~

Data Engineer
- e) Data Engineering
- f) Project: Data Engineering

Data Analyst
- e) Advanced Data Analysis
- f) Project: Data Analysis

AI Specialist
- e) Artificial Intelligence
- f) Project: Artificial Intelligence

International Marketing and Branding
- e) International Marketing
- f) International Brand Management

Applied Sales
- e) Applied Sales I
- f) Applied Sales II

Supply Chain Management
- e) Supply Chain Management I
- f) Supply Chain Management II

Managerial Economics and Corporate Finance and Investment
- e) Managerial Economics
- f) Corporate Finance and Investment

Smart Factory
- e) Smart Factory I
- f) Smart Factory II

Production Engineering, Automation and Robotics
- e) Production Engineering
- f) Automation and Robotics*

Autonomous Driving
- e) Self-Driving Vehicles
- f) Seminar: Current Topics and Trends in Self-Driving Tec

Foreign Language German, Italian, French or Spanish
Studium Generale
Internship

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~ Electives: Choose one module with two courses from the Elective A, one module from the Elective B and one module from the Elective C. Every elective module can only be chosen once.

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

Note: 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.
By choosing the elective "Internship" you cannot qualify for the dual degree with LSBU.

Course Information

Module	Course Code	Course	ECTS	Type of Exam
Introduction to Data Science	DLBDSIDS01	Introduction to Data Science	5	Oral Assignment
Intercultural and Ethical Decision-Making	DLBCSIDM01	Intercultural and Ethical Decision-Making	5	Case Study
Agile Project Management	DLBCSAPM01	Agile Project Management	5	Project Report
Introduction to Programming with Python	DLBDSIPWP01	Introduction to Programming with Python	5	Exam
Mathematics: Analysis	DLBDSMFC01	Mathematics: Analysis	5	Exam
Statistics - Probability and Descriptive Statistics	DLBDSSPDS01-01	Statistics - Probability and Descriptive Statistics	5	Exam
Object Oriented and Functional Programming with Python	DLBDSOOFPP01	Object Oriented and Functional Programming with Python	5	Portfolio
Mathematics: Linear Algebra	DLBDSMFLA01	Mathematics: Linear Algebra	5	Exam
Statistics - Inferential Statistics*	DLBDSSIS01	Statistics - Inferential Statistics*	5	Exam
Introduction to Academic Work	DLBCSIAW01	Introduction to Academic Work	5	Basic Workbook (pass / not pass)
Collaborative Work	DLBCSCW01	Collaborative Work	5	Oral Assignment
Introduction to Data Protection and Cyber Security	DLBCSIDPITS01	Introduction to Data Protection and Cyber Security	5	Exam
Database Modeling and Database Systems	DLBCSDMDS01	Database Modeling and Database Systems	5	Exam
Project: Build a Data Mart in SQL	DLBDSPBDM01	Project: Build a Data Mart in SQL	5	Portfolio
Cloud Computing	DLBDSCC01	Cloud Computing	5	Exam
Machine Learning - Supervised Learning*	DLBDSMLSL01	Machine Learning - Supervised Learning*	5	Exam
Machine Learning - Unsupervised Learning and Feature Engineering*	DLBDSMLUSL01	Machine Learning - Unsupervised Learning and Feature Engineering*	5	Case Study
Data Science Software Engineering*	DLBDSDSSE01	Data Science Software Engineering*	5	Exam
Business Intelligence	DLBCSEBI01	Business Intelligence	5	Exam
Project: Business Intelligence	DLBCSEBI02	Project: Business Intelligence	5	Project Report
Data Quality and Data Wrangling*	DLBDSDQDW01	Data Quality and Data Wrangling*	5	Written Assignment
Explorative Data Analysis and Visualization*	DLBDSEDAV01	Explorative Data Analysis and Visualization*	5	Written Assignment
Time Series Analysis*	DLBDSTSA01	Time Series Analysis*	5	Exam
Model Engineering	DLBDSME01	Model Engineering	5	Case Study
Big Data Technologies*	DLBDSBDT01	Big Data Technologies*	5	Exam
Neural Nets and Deep Learning*	DLBDSNNDL01	Neural Nets and Deep Learning*	5	Oral Assignment
Seminar: Ethical Considerations in Data Science	DLBDSSECDS01	Seminar: Ethical Considerations in Data Science	5	Research Essay
Project: From Model to Production*	DLBDSMTP01	Project: From Model to Production*	5	Oral Project Report
ELECTIVE A~		e.g. Data Analyst	10	
ELECTIVE B~		e.g. International Marketing and Branding	10	
ELECTIVE C~		e.g. Smart Factory	10	
Bachelor Thesis		Bachelor Thesis	9	Bachelor Thesis
		Thesis Defense	1	Presentation: Colloquium