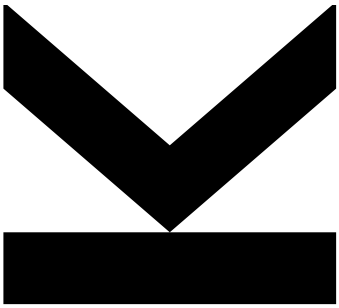
UK 066/951

CURRICULUM FOR THE MASTER'S PROGRAM IN **STATISTICS AND DATA SCIENCE.**



(in English)

Contents

§ 1 Qualification Profile

(1) The Master's program "Statistics and Data Science" at the Faculty of Social Sciences, Economics and Business (SOWI) of the Johannes Kepler University Linz (JKU) provides advanced scientific education in statistics and data science and is based on a profound education in this field in a preceding Bachelor's program.

(2) A graduate from the Master's program "Statistics and Data Science" is able to manage, visualise and analyse data in complex applications and extract information from data to improve decision making or gain more thorough and deeper insights. Due to a profound knowledge of the theoretical foundations in statistics and an in-depth data literacy, the graduate can develop new statistical methods and apply these methods to practical problems. Finally, a graduate from the Master's program "Statistics and Data Science" is well prepared to do a PhD in the field.

(3) A major focus in the Master's program is interdisciplinarity, which is supported by courses in applied statistics and free electives. Graduates from the Master's program "Statistics and Data Science" are able to collaborate with experts from other fields where statistical methods are applied, e.g., social sciences and economics, life sciences and ecology.

(4) Successful completion of the Master's program qualifies for a wide range of professional activity in all areas, where complex data analysis is required, e.g., in

- academic or non-academic research institutions,
- statistics agencies,
- medical research institutions and pharmaceutical industry,
- banks, insurance and business companies,
- manufacturing industry (quality control, reliability analysis),
- market and public opinion research companies.

§ 2 Admissions

(1) In accordance with § 54 (1) UG, the Master's program "Statistics and Data Science" belongs to the category of degree programs in social and economic sciences.

(2) The Master's program "Statistics and Data Science" is based on the Bachelor's program in "Statistics and Data Science" (UK033/551) at JKU. Graduates of this Bachelor's program are admitted to the Master's program "Statistics and Data Science" without any restrictions.

(3) Graduates of different programs at recognized national or international post-secondary educational institutions of at least the same higher education level can be admitted to the Master's program "Statistics and Data Science" if their degree programs are close to the Bachelor's program in Statistics and Data Science at JKU.

(4) In order to compensate for significant subject-related differences, supplementary examinations amounting to a maximum of 40 ECTS points may be prescribed, which must be taken by the end of the second semester of the Master's program.

(5) The Master's program "Statistics and Data Science" is taught in English.

§ 3 Structure and Outline

(1) The Master's program "Statistics and Data Science" covers 4 semesters and consists of 120 ECTS points, which are distributed among the following subjects:

Subjects	ECTS
Mandatory Subjects	81
Master's Thesis (incl. Master's Seminars)	24
Master's Examination	3
Free Electives	12
Total	**120**

(2) For Free Electives students have to pass examinations corresponding to 12 ECTS points, which can be chosen from any recognized national or international post-secondary educational institution. The Free Electives shall provide additional skills beyond Statistics and Data Science and can be taken anytime during the Master's study.

(3) The recommended study plan is listed in Annex 1. This recommendation is based on a full-time program. The study plan is also suitable for students who hold jobs or family care responsibilities (=in part-time), assuming in terms of time, a certain flexible work load or care responsibilities can be arranged. Some of the courses are held at special times such as off-peak hours. In the part-time program fewer courses are taken than are listed in the recommended study plan for the full-time degree program. This results in a longer duration to complete the program. Annex 2 contains a recommended study plan for part-time students amounting to approximately 2/3 of a full-time course load and a duration of approximately 3 years. Annex 3 contains a recommendation for a "part-time plan of studies" with a doubled duration of the studies.

§ 4 Mandatory Subjects/Modules

(1) The following mandatory subjects have to be completed successfully:

Code	Bezeichnung	ECTS
951DASC24	Data Science	18
951MATS14	Mathematical Statistics	24
951RDSD24	Recent Developments in Statistics and Data Science	12
951STME14	Statistical Methods	24
951SOSK17	Soft Skills	3

(2) The subject Statistical Methods is divided into the following subjects:

Code	Name	ECTS
951STCO14	Statistical Concepts	12
951STMO14	Statistical Modelling	12

(3) The subject Data Science is divided into the following subjects:

Code	Name	ECTS
951SMDS17	Statistical Methods in Data Science	6
951DAEN17	Data Engineering	12

(4) If mandatory subject courses with fixed content have already been taken in the Bachelor's program, additional Free Elective courses with equivalent ECTS points have to be taken during the Master's study.

§ 5 Courses

(1) The names and the types of all courses of the mandatory subjects, as well as their ECTS points, their duration in hours per week, their codes, their registration requirements, and their admission procedures (in case of limited availability of places) are described in the study handbook of JKU (studienhandbuch.jku.at).

(2) The possible types of courses as well as the examination regulations are described in §§ 13 and 14 of the JKU statute (Section "Studienrecht").

§ 6 Master's Thesis

(1) Students of the Master's program "Statistics and Data Science" must complete a Master's Thesis according to § 81 UG and § 36 of the JKU statute (Section "Studienrecht").

(2) The Master's Thesis is a written paper corresponding to an effort of 20 ECTS points.

(3) The Master's Thesis serves as a proof that the graduate is able to perform scientific work systematically and independently. The topic of the thesis must be taken from one of the mandatory subjects according to § 4 with the exception of Soft Skills and must permit completion within a period of 6 months.

(4) The Curricular Committee for Statistics may specify guidelines for the formal structure of a Master's Thesis.

(5) In addition to the Master's Thesis, students must pass two Master's Seminars with 2 ECTS points each.

§ 7 Examination Regulations

(1) The regulations for subject examinations and course examinations are described in the study handbook of JKU.

(2) The Master's program "Statistics and Data Science" is concluded by a Master's examination.

(3) The Master's examination consists of two parts: The first part is the successful completion of the mandatory subjects according to § 4.

(4) The second part of the Master's examination is an oral exam (3 ECTS points) conducted by two examiners. Prior to being admitted to the Master's examination, students must complete the first part of the Master's examination, the Master's Thesis, the Master's Seminars, and the Free Electives.

(5) The oral exam covers the subject from which the topic of the Master‘s Thesis was selected and another mandatory subject according to § 4 with the exception of Soft Skills.

§ 8 Academic Degree

(1) Graduates of the Master’s program “Statistics and Data Science” are awarded the academic degree “Master of Science”, abbreviated “MSc” or “MSc (JKU)”.

(2) The certificate about the academic degree is issued in German and in English translation.

§ 9 Legal Validity

(1) This curriculum comes into effect on October 1, 2024.

(2) The curriculum of the Master’s program “Statistics” in the version published in the official newsletter of Johannes Kepler University Linz on March 29, 2023, 13th piece, item 235 expires by the end of September 30, 2024 otherwise specified below. Transitional provisions shall remain in force as long as they still apply in scope and content.

§ 10 Transitional Provisions

Students who were admitted to the Master’s program "Statistics" before the winter semester 2024/25 have the right to complete the Master’s program by September 30, 2027 in accordance with the regulations applicable until September 30, 2024 taking into account the equivalences specified in the study handbook of JKU. After expiry of the deadline specified in sentence 1 the provisions of the present curriculum also apply to these students. Students are entitled to voluntarily submit to the curriculum of the Master’s program "Statistics and Data Science" before this deadline, taking into account the equivalences specified in the study handbook of JKU.

Annex 1: Global map of study subjects- Master's Program Statistics and Data Science (Fulltime study)

1st Semester (WS)		2nd Semester (SS)		3rd Semester (WS)		4th Semester (SS)	
Subject/Course	**ECTS**	**Subject/Course**	**ECTS**	**Subject/Course**	**ECTS**	**Subject/Course**	**ECTS**
Mathematical Statistics Probability Theory (VL)	4	**Mathematical Statistics** Advanced Statistical Inference (VL)	4	**Statistical Concepts** Computational Statistics (KV)	4	**Data Science** Statistical Priciples of Data Science (KV)	6
Mathematical Statistics Probability Theory (UE)	6	**Mathematical Statistics** Advanced Statistical Inference (UE)	6	**Statistical Modelling** Survival Analysis (KV)	4	**Master Thesis Seminar** Master's Seminar (SE)	2
Mathematical Statistics Stochastic Processes (KV)	4	**Statistical Concepts** Experimental Design (KV)	4	**Rec. Developments in Statistics and Data Sc.** Biostatistics (KV)	4	Master's Thesis	20
Statistical Modelling Advanced Regression Analysis (KV)	4	**Statistical Modelling** Statistical Learning (KV)	4	**Data Science** Data Warehousing (VL)	3	Master's Exam	3
Data Science Machine Learning: Super-vised Techniques (VL)	3	**Statistical Concepts** Bayes Statistics (KV)	4	**Data Science** Data Warehousing (UE)	3		
Data Science Visualization (VL)	3	**Rec. Developments in Statistics and Data Sc.** Data Science (SE)	4	**Master Thesis Seminar** Master's Seminar (SE)	2		
Rec. Developments in Statistics and Data Sc. Applied Statistics (SE)	4			**Soft Skills**	3		
Free Electives	3	**Free Electives**	3	**Free Electives**	6		
∑	31	∑	29	∑	29	∑	31
						Total	**120**

Annex 2: Global map of study subjects- Master's Program Statistics and Data Science (Part time study)

1st Semester (WS)		2nd Semester (SS)		3rd Semester (WS)		4th Semester (SS)		5th Semester (WS)		6th Semester (SS)	
Subject/Course	**ECTS**	**Subject/Course**	**ECTS**	**Subject/Course**	**ECTS**	**Subject/Course**	**ECTS**	**Subject/Course**	**ECTS**	**Subject/Course**	**ECTS**
Mathematical Statistics Probability Theory (VL)	4	**Mathematical Statistics** Advanced Statistical Inference (VL)	4	**Statistical Concepts** Computational Statistics (KV)	4	**Statistical Concepts** Bayes Statistics (KV)	4	**Rec. Developments in Statistics and Data Sc.** Biostatistics (KV)	4	**Master Thesis Seminar** Master's Seminar (SE)	2
Mathematical Statistics Probability Theory (UE)	6	**Mathematical Statistics** Advanced Statistical Inference (UE)	6	**Statistical Modelling** Survival Analysis (KV)	4	**Rec. Developments in Statistics and Data Sc.** Data Science (SE)	4	**Data Science** Data Warehousing (VL)	3	Master's Thesis	20
Mathematical Statistics Stochastic Processes (KV)	4	**Statistical Concepts** Experimental Design (KV)	4	**Statistical Modelling** Advanced Regression Analysis (KV)	4	**Data Science** Statistical Priciples of Data Science (KV)	6	**Data Science** Data Warehousing (UE)	3	Master's Exam	3
Rec. Developments in Statistics and Data Sc. Applied Statistics (SE)	4	**Statistical Modelling** Statistical Learning (KV)	4	**Data Science** Machine Learning: Supervised Techniques (VL)	3			**Master Thesis Seminar** Master's Seminar (SE)	2		
				Data Science Visualization (VL)	3						
Soft Skills	3	**Free Electives**	3			**Free Electives**	6	**Free Electives**	3		
∑	21	∑	21	∑	18	∑	20	∑	15	∑	25
										Total	**120**

Annex 3: Global map of study subjects- Master's Program Statistics and Data Science (Half time study)

1st Semester (WS)		2nd Semester (SS)		3rd Semester (WS)		4th Semester (SS)		5rd Semester (WS)		6th Semester (SS)		7th Semester (WS)		8th Semester (SS)	
Subject/Course	**ECTS**	**Subject/Course**	**ECTS**	**Subject/Course**	**ECTS**	**Subject/Course**	**ECTS**	**Subject/Course**	**ECTS**	**Subject/Course**	**ECTS**	**Subject/Course**	**ECTS**	**Subject/Course**	**ECTS**
Mathematical Statistics Probability Theory (VL)	4	**Mathematical Statistics** Advanced Statistical Inference (VL)	4	**Statistical Modelling** Advanced Regression Analysis (KV)	4	**Statistical Modelling** Statistical Learning (KV)	4	**Statistical Concepts** Computational Statistics (KV)	4	**Data Science** Statistical Priciples of Data Science (KV)	6	**Data Science** Data Warehousing (VL)	3	**Master Thesis Seminar** Master's Seminar (SE)	2
Mathematical Statistics Probability Theory (UE)	6	**Mathematical Statistics** Advanced Statistical Inference (UE)	6	**Data Science** Machine Learning: Super-vised Techniques (VL)	3	**Statistical Concepts** Bayes Statistics (KV)	4	**Statistical Modelling** Survival Analysis (KV)	4			**Data Science** Data Warehousing (UE)	3	Master's Thesis	20
Mathematical Statistics Stochastic Processes (KV)	4	**Statistical Concepts** Experimental Design (KV)	4	**Data Science** Visualization (VL)	3	**Rec. Developments in Statistics and Data Sc.** Data Science (SE)	4	**Rec. Developments in Statistics and Data Sc.** Biostatistics (KV)	4			**Master Thesis Seminar** Master's Seminar (SE)	2	Master's Exam	3
				Rec. Developments in Statistics and Data Sc. Applied Statistics (SE)	4										
						Free Electives	3	**Free Electives**	3	**Free Electives**	6	**Soft Skills**	3		
∑	14	∑	14	∑	14	∑	15	∑	15	∑	12	∑	11	∑	25
														Total	**120**