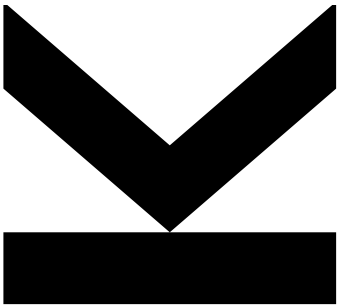
UK 066/951

CURRICULUM FOR THE MASTER'S PROGRAM IN **STATISTICS.**



(in English)

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Contents

§ 1 Qualification Profile

(1) The Master's program "Statistics" 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 analysis and is based on a profound education in Statistics in a preceding Bachelor's program.

(2) A graduate from the Master's program "Statistics" is able to manage, visualise and analyse data in complex applications. Due to a profound knowledge of the theoretical foundations, she/he can develop new statistical methods and apply these methods to practical problems. Finally a graduate from the Master's program "Statistics" is well prepared to do a PhD in Statistics.

(3) A major focus in the Master's program is inter-disciplinarity, which is supported by courses in applied statistics and free electives. Graduates from the Master's program "Statistics" 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.

(5) Masters in Statistics who have completed the study focus Data Science are particularly qualified to work as Data Scientists in business companies and other institutions.

(6) Masters in Statistics who have completed the study focus Official Statistics are particularly qualified for professional activities in statistics agencies.

§ 2 Admissions

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

(2) The Master's program "Statistics" 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" 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" 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" is taught in English.

§ 3 Structure and Outline

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

Subjects	ECTS
Mandatory Subjects	61
Elective Subjects	18
Master's Thesis (incl. Master's Seminars)	24
Master's Examination	3
Free Electives	14
Total	**120**

(2) For Free Electives students have to pass examinations corresponding to 14 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 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	Name	ECTS
951MATS14	Mathematical Statistics	24
951DAAN17	Data Analysis	10
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) 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 Elective Subjects/Modules

(1) Students have to complete a total of 18 ECTS in the following elective subjects successfully:

Code	Name	ECTS
951SMDS17	Statistical Methods in Data Science	0/6
951DAEN17	Data Engineering	0/6/12
951APST17	Applied Statistics	0/6/12/18

If no study focus is chosen students have to complete at least 6 ECTS in the subject Applied Statistics.

(2) In the subject Data Engineering students can only choose courses which they did not complete as part of the Bachelor's program which qualified them for this Master's program.

§ 6 Study focus

The Master's program "Statistics" offers two areas of study focus: Data Science and Official Statistics, but students are free to complete the Master's program "Statistics" without a particular focus.

If subjects according to a study focus are chosen and the topic of the Master's Thesis is related to the study focus (see § 8) the Master's program is completed with the corresponding study focus and the study focus is mentioned in the certificate.

(1) The study focus "Data Science" provides students with competences in computer science and business intelligence. Data Science is an interdisciplinary field about processes and systems to extract knowledge or insights from data in various forms, either structured or unstructured. It employs techniques and theories drawn from other fields, i.e., the broad areas of mathematics, information science and computer science, and aims at extracting information from data to improve decision making or gain more thorough and deeper insights.

To complete the study focus Data Science students have to complete the subject Statistical Methods in Data Science and 12 ECTS in the subject Data Engineering.

(2) The study focus "Official Statistics" provides students with an additional advanced training in the specific themes of official statistics, e.g., the organisation and role of the National Statistical Institutes and other official data producers and their legal bases, the different kinds of data sources (censuses, sample surveys, administrative sources) and the methodological and confidentiality issues in official statistics. The completion of this study focus qualifies students to additionally receive the certificate EMOS (European Master in Official Statistics).

To complete the study focus Official Statistics students have to complete 12 ECTS in the subject Applied Statistics, 6 ECTS in the subject Statistical Methods in Data Science and to conduct a project in the area of Official Statistics preferably within an internship at a statistical authority (such as Statistics Austria, the statistical office of the federal state of Upper Austria, the economic chamber, the UNIDO, or the Austrian National Bank) in the subject Applied Statistics.

§ 7 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”).

§ 8 Master’s Thesis

(1) Students of the Master’s program “Statistics” 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 or elective subjects according to §§ 4 and 5 with the exception of Soft Skills and must permit completion within a period of 6 months. To complete the Master’s program with a study focus the topic of the Master’s Thesis has to be related to the study focus.

(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.

§ 9 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” 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 and elective subjects according to §§ 4 and 5.

(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 or elective subject according to §§ 4 and 5 with the exception of Soft Skills.

§ 10 Academic Degree

(1) Graduates of the Master's program "Statistics" 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.

§ 11 Legal Validity

(1) This curriculum comes into effect on October 1st, 2017.

(2) The curriculum of the Master's Program "Statistics" in the version published in the official newsletter of Johannes Kepler University Linz on June 25th, 2014, 25th piece, item 209 expires with the exception of the transitional provisions (§ 10) by the end of September 30th, 2017.

(3) § 10 para. 1 as published in the official newsletter of the Johannes Kepler University Linz on June 22nd, 2018, 26th piece, item 295 will take effect on October 1st, 2018.

(4) § 2 para. 2 and 5, the first sentence of § 6 and § 7 para. 1 as published in the official newsletter of the Johannes Kepler University Linz on June 24th, 2019, 33rd piece, item 476 will take effect on October 1st, 2019.

(5) § 1 para. 2, 3 and 4, § 2 para. 2 and 3, § 3 para. 1 and 2, § 4 para. 1 and 3, § 5, § 6 para. 2 and 3, § 12 para. 4 and 5 and annex 1 as published in the official newsletter of the Johannes Kepler University Linz on June 30th, 2020, 30th piece, item 354 will take effect on October 1st, 2020.

(6) § 3 para. 3 and annex 2 and 3 as published in the official newsletter of the Johannes Kepler University Linz on May 18th, 2021, 23rd piece, item 299 will take effect on October 1st, 2021.

(7) § 2 para. 3 and 4 as published in the official newsletter of the Johannes Kepler University Linz on May 31st, 2022, 27th piece, item 409, and the repeal of § 2 para. 6 will take effect on October 1st, 2022.

§ 12 Transitional Provisions

(1) For students who did examinations within the Master's program 2014, the equivalences given in the JKU study handbook are effective.

(2) Students who have completed courses with at least 40 ECTS within the Master's program 2014, have the right to complete 6 ECTS in Free Electives instead of Elective Subjects until September 30th, 2019.

(3) Students who have completed the Master's program 2014 with the exception of the Master's Seminars, the Master thesis and Master's Examination have the right to complete their studies according to the regulations of the Master's program 2014 until September 30th, 2018.

(4) Students who have already completed one of the courses "SE Statistical Projects" or "SE Methods for Statistical Projects" in the subject "Data Analysis" before October 1st, 2020 have the right to complete the subject until September 30th, 2022, according to the regulations valid until September 30th, 2020. In this case, the subject "Free Electives" comprises 12 ECTS.

(5) Students who have already completed 18 ECTS in the subject "Applied Statistics" as part of the study focus "Official Statistics" before October 1st, 2020 have the right to complete this study focus according to the regulations valid until September 30th, 2020.

Annex 1: Global map of study subjects- Master's Program Statistics (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	**Elective Subjects**	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	4	**Statistical Concepts** Experimental Design (KV)	4	**Data Analysis** Biostatistics (KV)	4	Master's Thesis	20
Statistical Modelling Advanced Regression Analysis (KV)	4	**Statistical Modelling** Statistical Learning (KV)	4	**Elective Subjects**	6	Master's Exam	3
Elective Subjects	6	**Statistical Concepts** Bayes Statistics (KV)	4	**Master Thesis Seminar** Master's Seminar (SE)	2		
		Data Analysis Statistical Applications (SE)*	6				
Soft Skills	3						
Free Electives	3	**Free Electives**	2	**Free Electives**	9		
Σ	**30**	**Σ**	**30**	**Σ**	**29**	**Σ**	**31**
						Total	**120**

* Alternatively Applied Statistics (SE) during the winter term (WS)

Annex 2: Global map of study subjects- Master's Program Statistics (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	**Data Analysis** 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	**Data Analysis** Statistical Applications (SE)*	6	**Elective Subjects**	6	Master's Thesis	20
Mathematical Statistics Stochastic Processes	4	**Statistical Concepts** Experimental Design (KV)	4	**Statistical Modelling** Advanced Regression Analysis (KV)	4	**Elective Subjects**	6	**Master Thesis Seminar** Master's Seminar (SE)	2	Master's Exam	3
		Statistical Modelling Statistical Learning (KV)	4	**Elective Subjects**	6						
Soft Skills	3										
Free Electives	3	**Free Electives**	2			**Free Electives**	6	**Free Electives**	3		
∑	**20**	**∑**	**20**	**∑**	**18**	**∑**	**22**	**∑**	**15**	**∑**	**25**
										Total	**120**

* Alternatively Applied Statistics (SE) during the winter term (WS)

Annex 3: Global map of study subjects- Master's Program Statistics (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	**Elective Subjects**	6	**Elective Subjects**	6	**Master Thesis Seminar** Master's Seminar (SE)	2
Mathematical Statistics Probability Theory (UE)	6	**Mathematical Statistics** Advanced Statistical Inference (UE)	6	**Elective Subjects**	6	**Statistical Concepts** Bayes Statistics (KV)	4	**Statistical Modelling** Survival Analysis (KV)	4			**Master Thesis Seminar** Master's Seminar (SE)	2	Master's Thesis	20
Mathematical Statistics Stochastic Processes	4	**Statistical Concepts** Experimental Design (KV)	4			**Data Analysis** Statistical Applications (SE)*	6	**Data Analysis** Biostatistics (KV)	4					Master's Exam	3
				Soft Skills	3										
		Free Electives	2	**Free Electives**	3			**Free Electives**	3	**Free Electives**	6				
∑	14	∑	16	∑	16	∑	14	∑	15	∑	12	∑	8	∑	25
														Total	120

* Alternatively Applied Statistics (SE) during the winter term (WS)