K 066/951

CURRICULUM FOR THE
MASTER'S PROGRAM IN
STATISTICS.

(in English)

JᴗU

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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, visualize and analyse data in complex applications. Due to a profound knowledge of the theoretical fundaments, 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 (K033/551) 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 other Universities, Universities of Applied Sciences, and other recognized national or international post-secondary educational institutions can be admitted to the Master's program "Statistics" if their degree programs are equivalent to the Bachelor's program in Statistics at JKU.

(4) Graduates of programs that are not equivalent according to (3) can be granted admission on the condition to complete additional courses with up to 40 ECTS points during their Master's study.

(5) As the Master's program in Statistics is taught in English, sufficient knowledge of the English language (corresponding to level B2 of the Common European Framework of Reference for Languages, CEFR) is recommended.

(6) Graduates of a Diploma program with a longer duration than a Bachelor's program can obtain recognition for examinations of the Master's program (see § 78 UG) to the extent of which the Diploma program (excluding the diploma thesis) exceeds the Bachelor's program.

§ 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	63
Elective Subjects	18
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 can be taken anytime during the Master's study.

(3) The recommended course of study is shown in the annex 1.

§ 4 Mandatory Subjects/Modules

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

Code	Name	ECTS
951MATS14	Mathematical Statistics	24
951DAAN17	Data Analysis	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) 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' 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 12 ECTS in the subject Applied Statistics.

(2) In the subjects Statistical Methods in Data Science und 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 in Statistics offers two areas of study focus: Data Science and Official Statistics, but students are free to complete the Master's program in 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 in competences 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 specialization area qualifies students to additionally receive the certificate EMOS (European Master in Official Statistics).

To complete the study focus Official Statistics students have to complete 18 ECTS in the subject Applied Statistics 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 (http://www.jku.at/studienhandbuch).

(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.

§ 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.

Global map of study subjects- Master's Program Statistics

1stSemester (WS)		2ndSemester (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 Seminars** Master's Seminar (SE)	2
Mathematical Statistics Stochastic Processes	4	**Statistical Concepts** Experimental Design (KV)	4	**Data analytics** 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 Seminars** Master's Seminar (SE)	2		
		Data analytics Methods for Statistical Projects (SE) *	4				
Soft Skills	3	**Data analytics** Statistical Projects (SE)*	4				
free electives	3	**free electives**	0	**free electives**	9		
Σ	**30**	Σ	**30**	Σ	**29**	Σ	**31**
						Total	**120**

* joint with Bachelor Statistics