Faculty of Economic Sciences:

Following the resolution of the Faculty Council of the Faculty of Economic Sciences dated 08.02.2023, the Presidential Board of University of Göttingen approved the eighteenth amendment to the examination and study regulations for the consecutive Master's degree programme "Applied Statistics" on 24.04.2023 in the version published on 28.03.2013 (Official Announcements I no. 14/2013, p. 355), last amended by resolution of the Presidential Board dated 28.09.2022 (Official Announcements I no. 48/2022, p. 1036), (§ 44 section 1 sentence 2 NHG in the version contained in the announcement dated 26.02.2007 (Nds. GVBI. p. 69), last amended by Article 7 of the Act dated 23.02.2022 (Nds. GVBI. p. 218); § 37 section 1 sentence 3 no. 5 b) NHG, § 44 section 1 sentence 3 NHG).

Examination and study regulations for the consecutive Master's degree programme "Applied Statistics" at the University of Göttingen

§ 1 Scope and faculties involved

(1) The provisions of the "General examination regulations for Bachelor's and Master's degree programmes and other and degree programmes offered by the University of Göttingen" (APO), as well as the "General examination and study regulations for Master's degree programmes of the Faculty of Economic Sciences" (RPO-MA), in the respective current version, apply to the consecutive Master's degree programme "Applied Statistics" at Georg-August-Universität Göttingen.

(2) These regulations stipulate the additional provisions for the Master's degree programme.

(3) The Master's degree programme "Applied Statistics" is offered jointly by the Faculty of Economic Sciences and the Faculty of Medicine. The umbrella faculty is the Faculty of Economic Sciences. Changes to these regulations are decided by the Faculty Council of the Faculty of Economic Sciences at the suggestion of the Advisory Board of the Faculty of Economic Sciences. Before any corresponding resolutions are passed, the Faculty Council of the Faculty of Medicine must be given suitable opportunity for deliberations.

§ 2 Aim of the qualification

[1]Besides the general aims of the course of studies defined in the RPO-MA, graduates acquire in-depth knowledge of statistical analysis and modelling, taking into account the latest specialised developments and changed requirements of the professional world. [2]Applied Statistics is a key discipline in all areas that deal with the collection, analysis and integration of data. [3]It develops general methods and tools with which, among other things, large and complex data volumes from various sources can be responsibly and objectively translated into information and knowledge. [4]The Master's degree programme therefore teaches a modern knowledge of statistics to Bachelor graduates from various faculties and thus reflects the classic bridging function of statistics: [5]On the basis of in-depth knowledge in an area of application and basic knowledge of statistics, in-depth knowledge is acquired during the Master's degree programme, which in turn helps to strengthen the empirical foundation of the respective areas of application. [6]During the course of studies, students have the opportunity to specialise in one of the four areas of application (Economic Sciences, Life Sciences, Social Sciences and Computer Science) and to combine the acquired specialised knowledge with in-depth knowledge of these areas of application. [7]On the basis of the acquired competences, graduates are able to exploratively assess data from different areas, analyse it statistically, critically examine the suitability and limits of different procedures and thus select the most suitable procedure for a given issue, prepare the results obtained, and communicate them to a broad public. [8]They can also include ethical and social aspects in the assessment. [9]After completing their course of studies, graduates can thus take up high professional positions nationally or internationally or progress to doctoral studies.

§ 3 Recommended prior knowledge

For the Master's degree programme, it is very beneficial to have subject-specific computer skills. Students with poor computer skills are advised to engage in appropriate learning before beginning the course of studies.

§ 4 Structural contents of the Master's programme and credit requirements

(1) The 120 C which must be completed over the standard course length of four semesters of the Master's programme "Applied Statistics" are comprised of the following:

1.	Compulsory part of the programme	36 C
2.	Compulsory elective subject	36 C
3.	Statistical internship	6 C
4.	Key qualifications	12 C

5. Master’s thesis 30 C

(2) The compulsory part of the programme provides basic knowledge of statistical inference, statistical models and statistical programming and includes the following research areas:

- Mathematical Foundations of Applied Statistics
- Methods of Advanced Statistical Inference
- Linear Models and their Mathematical Foundations
- Introduction to Statistical Programming
- Generalised Linear Models
- Advanced Statistical Programming with R

In addition, in the area of key qualifications, students must attend the module “Data Protection and Data Security”.

(3) The compulsory elective subject provides in-depth knowledge of statistical modelling (total 18 C) and of statistical specialisations in the selected area of application (18 C). Economic Sciences, Life Sciences, Empirical Social Research and Computer Science can be selected as areas of application.

(4) As part of the statistical internship, students work on statistical solutions for a given problem in groups of up to four people in cooperation with a practice partner. The results of the internship are presented in a colloquium and summarised in a project report.

(5) [1]The number, type and scope of the modules to be completed successfully are regulated by the module overview (appendix I). [2]The module catalogue and module handbook are published separately in a common electronic version (digital module directory). They form part of these regulations, in as far as the modules are itemised in the module overview (appendix I).

(6) Prerequisite for admission to the master’s thesis is earning at least 36 C from the compulsory part of the programme. The time allotted for completing the master’s thesis is 20 weeks. Participation in a research colloquium, in which your own work has to be presented, forms a part of the master’s thesis.

(7) Appendix II shows a schematic overview of the course of the Master's programme “Applied Statistics” and includes a proposal for the schedule.

§ 5 Entry into Force

(1) These regulations shall enter into force following their announcement in the Official Announcements I of Georg-August-Universität Göttingen as of 01/10/2013.

(2) [1]Students who commenced their course of studies before an amendment to these examination and study regulations came into force and who have remained enrolled therein without interruption will be examined on the basis of the examination and study regulations in place before the amendments came into force. [2]In the case of pending examinations, this does

not apply to module overviews and descriptions, unless the legal entitlements of a student calls for a different decision by the examination board. [3]A different decision can be reached especially in cases where an examination component can be repeated, or a compulsory or optional required module has changed significantly or been cancelled. [4]The examination board can draw up general rules for this purpose. [5]Examinations based on a version valid prior to the coming into force of an amendment to the existing examination and study regulations will be conducted for the last time in the fourth semester following the amendment has come into force. [6]On application, students affected by sentence 1 shall be examined in general on the basis of the amended regulations.

Appendix I: Module overview

Modules with a rating of at least 120 C in total should be successfully completed in accordance with the following provisions. Modules that were already completed successfully as part of the Bachelor's programme do not count.

1. Compulsory part of the programme (36 C)

The following modules with a rating of 36 C in total should be successfully completed. Modules that were already completed successfully as part of the Bachelor$_s$ programme do not count. Alternatively, modules should be successfully completed in accordance with no. 2 letter a.

M.MED.0010	Mathematical Foundations of Applied Statistics	6 C
M.WIWI-QMW.0002	Advanced Statistical Inference	6 C
M.MED.0001	Linear Models and their mathematical Foundations	9 C
M.WIWI-QMW.0021	Introduction to Statistical Programming	3 C
M.WIWI-QMW.0001	Generalized Regression	6 C
M.WIWI-QMW.0011	Advanced Statistical Programming with R	6 C

2. Compulsory elective subject (36 C)

Modules with a rating of at least 36 C in total should be successfully completed in accordance with the following provisions:

a. Advanced Statistical Modelling

From the following modules for Advanced Statistical Modelling, a total of three modules with a rating of 18 C in total must be successfully completed:

M.WIWI-QMW.0004	Econometrics I	6 C
M.WIWI-QMW.0005	Econometrics II	6 C
M.WIWI-QMW.0009	Introduction to Time Series Analysis	6 C
M.WIWI-QMW.0010	Multivariate Statistics	6 C
M.WIWI-QMW.0012	Multivariate Time Series Analysis	6 C
M.WIWI-QMW.0016	Spatial Statistics	6 C
M.WIWI-QMW.0033	Current Topics in Applied Statistics	6 C
M.WIWI-QMW.0035	Statistical and Deep Learning	6 C
M.WIWI-QMW.0037	Advanced Bayesian Inference	6 C
M.WIWI-BWL.0139	Discrete Choice Modelling	6 C
M.MED.0002	Longitudinal Data	6 C
M.MED.0003	Event Time Analysis	6 C
M.MED.0011	Nonparametric procedures	6 C
M.Inf.1211	Probabilistic Data Models and Applications	6 C

M.Inf.1501	Data Mining in Bioinformatics	6 C
M.Inf.2102	Advanced Statistical Learning for Data Science	6 C
M.Inf.2201	Probabilistic Machine Learning	6 C
B.Inf.1236	Machine Learning	6 C
B.Inf.1237	Deep Learning	6 C

b. Specialisation

Modules with a rating of at least 18 C in total must be successfully completed from specialisations in the selected area of application. Economic Sciences, Life Sciences, Empirical Social Research and Computer Science can be selected as areas of application.

aa. Specialisation in Economic Sciences

At least three of the following modules with a total rating of at least 18 C must be completed successfully.

M.WIWI-BWL.0001	Financial management	6 C
M.WIWI-BWL.0004	Financial Risk Management	6 C
M.WIWI-BWL.0008	Derivate	6 C
M.WIWI-BWL.0080	Market Research II	6 C
M.WIWI-BWL.0134	Panel Data Analysis in Marketing	6 C
M.WIWI-BWL.0139	Discrete Choice Modeling	6 C
M.WIWI-QMW.0004	Econometrics I	6 C
M.WIWI-QMW.0005	Econometrics II	6 C
M.WIWI-QMW.0009	Introduction to Time Series Analysis	6 C
M.WIWI-QMW.0010	Multivariate Statistics	6 C
M.WIWI-QMW.0012	Multivariate Time Series Analysis	6 C
M.WIWI-QMW.0013	Applied Econometrics	6 C
M.WIWI-QMW.0025	Development Microeconomics	6 C
M.WIWI-QMW.0027	Advanced Meta-Research in Economics	6 C
M.WIWI-QMW.0034	Python for Econometrics	6 C
M.WIWI-QMW.0036	Economic and Business Forecasting	6 C
M.WIWI-VWL.0008	Development Economics I: Macro Issues in Economic Development	6 C
M.WIWI-VWL.0009	Development Economics II: Micro Issues in Economic Development	6 C
M.WIWI-VWL.0040	Empirical Trade Issues	6 C
M.WIWI-VWL.0041	Panel Data Econometrics	6 C
M.WIWI-VWL.0054	Behavioral Game Theory	6 C
M.WIWI-VWL.0096	Essentials of Global Health	6 C

M.WIWI-VWL.0099	Poverty & Inequality	6 C
M.WIWI-VWL.0113	Macroeconometrics	6 C
M.WIWI-VWL.0147	Empirical Political Economy	6 C
M.WIWI-VWL.0150	Game Theory	6 C
M.WIWI-VWL.0175	International Development Policy	6 C
M.WIWI-VWL.0184	Empirical Analysis of Conflict and Development	6 C
M.WIWI-WB.1000	Internship	6 C
M.WIWI-WIN.0026	Machine Intelligence: Concepts and Applications	6 C
M.WIWI-WIN.0029	Learning Analytics and Educational Data Mining	6 C
M.WIWI-WIN.0038	Digital Health	6C
B.Mat.3043	Non-life insurance mathematics	6 C
B.Mat.3044	Life insurance mathematics	6 C
M.SIA.E19	Market Integration and price transmission	6 C

bb. Specialisation in Life Sciences

At least three of the following modules with a total rating of at least 18 C must be completed successfully.

M.MED.0002	Longitudinal Data	6 C
M.MED.0003	Event Time Analysis	6 C
M.MED.0004	Clinical Studies	6 C
M.MED.0005	Statistical Methods in Bioinformatics	6 C
M.MED.0006	Genetic Epidemiology	6 C
M.MED.0008	Fundamentals of application to the areas of life sciences/medicine/health care research	3 C
M.MED.0011	Nonparametric procedures	6 C
B.Inf.1504	Maschine Learning in Bioinformatics	5 C
B.Inf.1501	Algorithms in Bioinformatics I	5 C
B.Inf.301.2	Medical Documentation	3 C
M.Inf.1504	Algorithms in Bioinformatics II	6 C
M.MM.001	Epidemiology	4 C
M.WIWI-QMW.0010	Multivariate Statistics	6 C
M.WIWI-WB.1000	Internship	6 C
M.WIWI-WIN.0038	Digital Health	6 C
M.Agr.0068	Quantitative-genetical methods in animal breeding	6 C

The following modules can also be taken if the admission requirements are met and teaching capacity is available. Possible free places for these highly sought-after modules can be requested from the respective lecturers:

M.iPAB.0001	Quantitative genetics and population genetics	6 C
M.iPAB.0006	Breeding informatics	6 C
M.iPAB.0013	Selection theory, design and optimization of breeding programs	6 C

cc. Specialisation in Empirical Social Research:

i. The following module with a rating of 6 C must be successfully completed:

M.MZS.12	Methods of Data Collection in Quantitative Social Research	6 C

ii. At least one of the following modules with a total rating of at least 12 C must be completed successfully:

M.MZS.11	Conception and planning of empirical research projects	6 C
M.Pol.200	Advanced Political Theory and International Relations	12 C
M.Pol.300	Advanced Comparative Politics and German Politics	12 C
M.Soz.200	Methods of Comparative Research	6 C
M.Soz.100	Macrosociological Theories	6 C
M.Soz.30a	Work and Social Structure (Overview Module)	6 C
M.Soz.40a	Political Sociology and Social Policy (Overview Module)	6 C
M.Soz.50a	Sociology of Culture (Overview Module)	6 C
M.WIWI-WB.1000	Internship	6 C

The following module can also be taken if the admission requirements are met and teaching capacities are available. Possible free places for this highly demanded module can be requested from the respective lecturers:

M.MZS.13	Possible applications and limitations of multivariate data analysis	6 C

dd. Specialisation in Computer Science:

Modules with a rating of at least 18 C in total must be successfully completed. All modules mentioned in appendix I no. 1) (“Professional Studies”) of the Master’s degree programme “Applied Computer Science” can be selected. The following modules are recommended:

B.Inf.1206	Databases	5 C

B.Inf.1210	Computer Security and Privacy	5 C
B.Inf.1236	Machine Learning	6 C
B.Inf.1237	Deep Learning	6 C
B.Inf.1701	Advanced Theoretical Computer Science	5 C
B.Inf.1705	Advanced Software Engineering	5 C
B.Inf.1707	Advanced Computernetworks	5 C
B.Inf.1802	Training in Programming	5 C
B.Inf.1842	Programming for Data Scientists II	5 C
B.Inf.1913	Advanced Topics in Computational Linguistics	6 C
B.Mat.0720	Mathematical application software (Basics)	3 C
M.Inf.2102	Advanced Statistical Learning for Data Science	6 C
M.Inf.2201	Probabilistic Machine Learning	6 C
M.WIWI-QMW.0010	Multivariate Statistics	6 C
M.WIWI-QMW.0034	Python for Econometrics	6 C
M.WIWI-QMW.0035	Statistical and Deep Learning	6 C
M.WIWI-WB.1000	Internship	6 C
M.WIWI-WIN.0026	Machine Intelligence: Concepts and Applications	6 C
M.WIWI-WIN.0036	Design of Software Architectures	6 C

3. Statistical internship (6 C)

The following module with a rating of 6 C should be successfully completed.

M.WIWI-QMW.0020	Practical Statistical Training	6 C

4. Key specialisations (12 C)

Modules with a rating of 12 C in total must be successfully completed in accordance with the following provisions.

a. The following module with a rating of 3 C must be successfully completed:

M.WIWI-QMW.0038	Data protection and data ethics in applied statistics	3 C

b. Other modules with a rating of at least 9 C in total must be successfully completed. These can be selected from one or several of the following offers:

ba. Modules from the languages offered by the university can be selected, provided they are modules which are for a level equivalent to level B as per the CEFR, and provided the modules have not been done in a degree programme already completed. Notwithstanding sentence 1 modules relating to English, German, as well as the mother tongue of the student, are excluded.

bb. Modules with the code M.WIWI.

bc. Modules from the following list of module groups and modules from the central key competency offer of the University of Göttingen, provided the qualifications for entry mentioned there are fulfilled. Inclusion of modules with codes SK.AS is limited to a total of 7 C; modules are not taken into account on a pro rata basis; a module with which the maximum total of 7 C is exceeded can only be taken into account as a voluntary additional examination.

SK.AS.BK	Modules Skills of professional intersection	
SK.AS.FK	Modules Leadership skills	
SK.AS.KK	Modules Communication skills	
SK.AS.SK	Modules Social skills	
SK.AS.WK	Modules Knowledge competence and self competence	
SK.GB.02	Communication Skills: Gender and Diversity Competencies in Communication	3 C
B.Inf.1101	Introduction to Computer Science and Programming	10 C
B.Inf.1206	Databases	5 C
B.Inf.1211	Sensor Data Processing	5 C
B.Inf.1231	Infrastructures of Data Science	6 C
B.Inf.1235	Text Mining	5 C
B.Inf.1801	Programming	5 C
B.MZS.03	Introduction to Empirical Social Research	6 C
B.MZS.22	Computer Based Data-Analysis II	4 C
B.Phy.5629	Nonlinear dynamics and time series analysis	6 C
M.Inf.1351	Work Methods in Health Research	5 C
M.Inf.1800	Practical Course Advanced Networking	6 C
M.Inf.1802	Practical Course on XML	6 C
M.Inf.1804	Practical Course in Software Quality Assurance	6 C
M.Inf.2241	Current Topics in Machine Learning	5 C
M.MED.0008	Basics of application to life sciences/medicine	3 C
M.Phy.562	Advanced Topics in Biophysics/Physics in Complex Systems II: Pattern Recognition and Machine Learning	6 C

Modules with the identifier B.Mat.XXXX can be selected, with the exception of modules B.Mat.0730, B.Mat.0740, B.Mat.0970, modules with the identifier B.Mat.32XX and modules with the identifier B.Mat.34XX.

The following module can also be taken if the admission requirements are met and teaching capacities are available. Possible free places for this highly demanded module can be requested from the respective lecturers:

B.Geg.04-1	Geoinformatics 1	5 C

c. In the area of key qualifications and in the area of specialisations under 2.b., modules (alternative modules) other than those mentioned can be completed in accordance with the following provisions. The following are required for the consideration of an alternative module:

ca. A written application to be handed in by the student to the Dean of the Faculty of Economic Sciences before choosing the alternative module;

cb. Approval by the Dean of Studies or teaching unit offering the alternative module.

The decision on approving the application is made by the Dean of Studies of the Faculty of Economic Sciences. Before passing the decision, the Dean will obtain the opinion of the degree programme tutors on the usefulness of the module replacement in which the student is enrolled. The application can be rejected without stating any reasons; a legal right of the applicant to object the decision does not exist. The consideration of an already completed module as an alternative module is excluded.

5. Master's thesis

30 C are awarded for successful completion of the master's thesis.

Appendix II: Graphic of the recommended course of study