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**Study and Examination Regulations for the Master's Program in Operations Research and Business Analytics dated 1 March 2017.**

On the basis of §§ 13 para 1 and 67 para 3 no. 8 of the Universities Act of Saxony-Anhalt (HSG LSA) dated 10/14/2010 (Official Gazette for Saxony-Anhalt p. 600) as amended, in combination with § 6 para 1 of the General Regulations of Otto von Guericke University Magdeburg dated 03/27/2012 (Ministerial Gazette for Saxony-Anhalt p. 305), Otto von Guericke University Magdeburg has enacted the following Study and Examination Regulations:

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## **I. General**

### **§ 1**

#### **Scope of application**

(1) These regulations govern the objective, content and structure, plus the examinations and the final degree awarded in the English language Master's program in Operations Research and Business Analytics offered by the Faculty of Economics and Management at Otto von Guericke University Magdeburg.

(2) This consecutive course is designed as a full-time, class-based program. It belongs to the "more research-oriented" category of programs.

### **§ 2**

#### **Program objective**

(1) The objective of the program is to enable students to independently identify business problems, to devise solutions to these problems autonomously on a scientific basis, and to propose alternative courses of action. The students will acquire the capacity for systemic thought, and excellent analytical skills. Both are valuable aptitudes for consultancy and managerial roles, which enable complex interrelationships to be understood and problem areas to be considered and assessed from multiple perspectives.

(2) Graduates of this interdisciplinary Master's program will acquire skills in both business management and the field of data management and data analysis (Computer Science). To this end, students will acquire essential methodological skills from the fields of Computer Science and Mathematics and, building on these in two specializations, will receive targeted training in the application of these methods to business problems in the specialized fields of Supply Chain Management and Financial Management.

(3) The students will acquire skills relating to scientific methods of analysis and optimization of complex business processes, and for the critical evaluation of a variety of possible decisions. Graduates will also be able to make scientifically substantiated decisions on the basis of incomplete or limited information and in the process consider social, scientific and ethical insights arising from the application of this knowledge and the decisions taken. Graduates will receive instruction in established problem-solving insights from the relevant fields (Supply Chain Management, Operations, Logistics, Capital Markets, Financial & Risk Management), to enable them to make a significant contribution to the development of independent problem-solving approaches to strategic, tactical and operational problems within a business. Students will be able to carry out largely self-directed research and practical projects on the basis of the broad and specialized research methodology of the subject as well as develop and deal with scientific questions in an independent manner. Over and above this students will be in a position to plan and execute the process steps involved in

problem solving including in new and unfamiliar as well as interdisciplinary contexts in a targeted way. They will learn to communicate clearly and concisely to experts and lay persons regarding the current status of research and practice, problems, solutions and the underlying information and reasons.

(4) Students will, in particular, learn to prepare and analyze large quantities of data using scientific methods and to use the data for producing forecasts or creating models to support decision making. Alongside the provision of input data for business planning models, the students will also learn to create mathematical models themselves, to use algorithms for calculating solutions and, where necessary, to develop new methods. In this way, the students' analytical skills will be further developed and their practical problem-solving skills further extended.

(5) In particular, the program pursues the following learning objectives:

- Students will be put in a position to be able to work with, analyze and further process large datasets.
- The students will be able to analyze business issues (with the focus on Supply Chain Management, Operations, Logistics, Capital Markets, and Financial & Risk Management) and model them quantitatively (i.e. using approaches from Operations Research).
- The students will be in a position to determine forecasts and input parameters for economic planning models on the basis of data.
- The students will possess the ability to analyze existing mathematical methods for solving problems in decision-making and where necessary to develop new methods.
- The students will be able to implement these methods in practice and successfully use them for problem solving.

(6) Students will be able to organize themselves effectively in collaborative groups and work cooperatively on relevant issues. In the process they will develop an understanding of their role in the team, take on responsibility for themselves and the group and reflect critically upon and enhance their own conduct and actions in the group, taking into account ethical and moral standpoints. The students will thus be in a position to present and advocate for complex subject-related information clearly as well as appropriately for the target audience.

(7) The training received on the Operations Research and Business Analytics program enables its graduates – irrespective of industrial sector – to undertake managerial roles and activities in policy units in private and public companies, management consultancies, banks and insurance companies, as well as in public utilities and transport operators. Examples of private companies include industrial (manufacturing, production of capital goods, energy industry), retail (wholesale, mail order) and service companies (trucking, transportation, distribution, disposal). In particular, graduates will be able to find employment in the following areas: Supply Chain Management, Operations, Logistics, Capital Markets and Finan-

cial & Risk Management, as well as in fields in which data plays an important role in decision-making. Alongside specialized and management activities in companies, self-employment, roles in the IT industry or positions in academia may also be possible.

(8) In addition to the acquisition of both specialist and interdisciplinary skills, the program also makes a contribution to personality development and promotes both the personal and social skills of the students. Through the acquisition of key competences such as independence and self-organization, team skills, a sense of responsibility and media skills, students develop into dedicated personalities with a sound education in business management. As a result of their training they will be in a position to gain essential insights into the methodological and ethical/moral foundations of business management and be able to evaluate the social relevance of business management knowledge and practices. Through the reflective and communicative skills that they will also acquire, they will be able to clearly explain and communicate the insights they have gained to others. In the process they will take into account interdisciplinary references and current cultural developments.

(9) The academic education resulting in the degree “Master of Science” provides an ample foundation for further post-graduate study in the field of business management and adjacent fields (for example doctoral studies).

### **§ 3**

#### **Academic title**

If the required study credits and examination results set out in these study and examination regulations are attained, the Faculty of Economics and Management (hereafter the Faculty) at Otto von Guericke University Magdeburg will award the academic title of “Master of Science”, abbreviated to: MSc.

## II. Examination Scope and Procedures

### § 4

#### Admission to the course

(1) The requirements for admission to this Master's program are as follows:

- Proof of a Bachelor's degree, a university diploma or a comparable qualification from a state / state-recognized college of advanced vocational studies, a Magister degree or a relevant course of study at a university completed with a state or ecclesiastical examination,
- Proof of adequate knowledge of the English language [suitable forms of proof are set out in Appendix 3 of these regulations.],
- Submission of a letter of motivation in English setting out the student's interest in this Master's program in the Faculty.

(2) In the case of applicants who are about to complete a course of studies in accordance with § 4 para 1, and who by the date of application for this program have not yet graduated, the proof of the degree in question may be replaced by a complete transcript of grades achieved to date. They must be able to demonstrate that they have already obtained a minimum of 140 credit points.

(3) A course of studies is relevant if

- at least 65 credit points (CP) in accordance with the European Credit Transfer System (ECTS) have been obtained in business management modules or
- at least 65 CP in accordance with ECTS have been obtained in mathematical/statistical modules or
- at least 80 CP in accordance with ECTS have been obtained in business management and mathematical/statistical modules.

If the ECTS does not apply to the Bachelor's program pursued by the applicant, the program shall be considered relevant if

- at least 13 courses have been passed in business management modules or
- at least 13 courses have been passed in mathematical/statistical modules or
- at least 16 courses have been passed in business management and mathematical/statistical modules.

(4) The Faculty reserves the right to conduct selection interviews with candidates.

(5) The decision regarding whether or not the admission requirements are satisfied shall be made by the board of examiners.

(6) No applicant will be admitted to the program who

1. has irrevocably failed a module examination in the selected course at an equivalent university and/or has lost their entitlement to take an examination or
2. is subject to another corresponding examination procedure.

## § 5

### Course duration and start

The standard course duration, including the preparation of the Master's thesis is four semesters. The program may be commenced in either the winter or the summer semester.

## § 6

### Organization and scope of studies

(1) The program is divided into a compulsory section with 35 CP, a specialization section with 55 CP and the Master's thesis.

(2) The Master's degree consists of the module examinations taken during the course and the thesis, which must be produced as part of a final seminar.

(3) The program is divided into modules. It contains compulsory modules, compulsory elective modules and elective modules. In terms of subject, modules consist of related study units and their examinations and generally last for one semester. They may be made up of different forms of teaching and learning. A module examination must be taken for each module.

(4) The module descriptions must be published for each module before the start of the semester, and contain the following information: language, volume of classes, duration of module, frequency of courses, learning and qualification objectives (skills), participation requirements, credit points available plus the type, scope and form of the examination.

(5) For each successfully completed module, a certain number of credit points (CP) will be awarded in accordance with the European Credit Transfer System (ECTS). They are a quantitative measurement of the average time generally required by students to fulfill the relevant requirements and meet the learning objectives for a module. Alongside participation in the classes belonging to a module, they also comprise all of the preparation for and reviewing of the content, independent processing and consolidation of the content, preparation and elaboration of students' own contributions plus successful participation in the performance reviews. One CP corresponds to an average student effort of approx. 30 hours. As a general principle, 30 CP must be obtained per semester.

(6) To successfully complete the course of studies, a total of 120 credit points must be obtained. Details of the compulsory, compulsory elective and elective modules that must be obtained for this purpose, the necessary examination results and the allocation of CP to the individual modules can be found in the study and examination schedules contained in Ap-



pendices 1 and 2 and/or in the module handbook.

(7) It is possible for students to undertake an individualized part-time course of study in accordance with the framework regulations for individualized part-time courses of study at Otto von Guericke University.

## § 7

### Course structure

(1) The range of courses consists of compulsory, compulsory elective and elective modules.

(2) The designation “compulsory module” applies to all modules that are required for successful completion of the program in accordance with these regulations (see Appendices 1 and 2).

(3) The designation “compulsory elective module” applies to all modules in accordance with these regulations that may be selected from a certain number of modules that are assigned to the optional specialization subjects. Within the context of the chosen discipline, they enable students to pursue individual inclinations and interests and to take the subject-specific requirements of their future field of professional activity into account. The list of compulsory elective modules may be amended in accordance with developments in the disciplines taught and the availability of teaching staff, and adapted to the range of courses offered by the Faculty. The planning for an adequate range of courses in the compulsory elective modules must be communicated to the students in each case for at least two consecutive semesters in the module handbook.

(4) The designation “elective modules” applies to all modules that may be freely selected by the students from the range of courses offered by the Faculties of Economics and Management, Computer Science, Mathematics, Natural Sciences and the Engineering faculties.

## § 8

### Compulsory, compulsory elective and elective modules

(1) In the compulsory modules set out in Appendices 1 and 2, a total of 35 CP must be obtained in the first two semesters. The compulsory modules are only offered in the semesters detailed in Appendices 1 and 2. The subsequent examinations may be taken in every semester.

(2) A total of at least 35 CP must be obtained in compulsory elective modules in one of the following specialization areas:

- Financial Management or
- Supply Chain Management

. The compulsory elective modules must be selected in such a way that the specialization

area consists of at least 10 CP from compulsory elective modules, one seminar (10 CP) and the academic project (15 CP).

(3) Up to 20 CP may be obtained in elective modules. All modules from the range of courses offered by the Faculty of Economics and Management that cannot be allocated to one of the selected areas of specialization, plus modules from the range of courses offered by the Faculties of Computer Science, Mathematics, Natural Sciences and the Engineering faculties.

(4) The Faculty Council decides upon the allocation of compulsory elective modules to the areas of specialization in accordance with paragraphs 2 to 5. The board of examiners decides upon the permissibility of modules from other faculties as elective modules in this program.

(5) The classes and examinations in the compulsory, compulsory elective and elective modules are usually held in English. Up to 20 CP may be obtained in German language modules. The examinations must be sat in the language of the respective class/course.

(6) The course of studies concludes with a Master's thesis and its presentation as part of a final seminar (30 CP).

(7) The chronology of the modules shown in the appendices is not binding. The requisite prior knowledge as stipulated in the module descriptions must be complied with.

(8) The sequence shown in the appendices for the completion of modules and examinations is a recommendation for the completion of the degree program within the standard course duration. Further information on the course can be obtained from the examination office of the Faculty, from the Dean of Studies' office and from the enrolment office of Otto von Guericke University Magdeburg.

## § 9

### **Study placement abroad**

(1) In view of the internationalization of the world of work and the acquisition of linguistic and social skills associated with a stay abroad, the Faculty of Economics and Management recommends and encourages a voluntary study placement at a foreign university. A study placement abroad of this kind should be undertaken in consultation with the relevant officer of the board of examiners. The study placement abroad must be prepared well in advance.

(2) Before taking up a study placement abroad, the students and board of examiners conclude a learning agreement that may be updated if the previously planned classes cannot be undertaken in the locality for any reason.

(3) Any credits attained during a study placement abroad shall be recognized in accordance with § 15. The seminar or academic project in accordance with § 8 para 2 may be substituted by modules amounting to 10 or 15 CP that require the production of a seminar paper and a presentation as an assessment.

## § 10

### Types of class

- (1) Courses and classes are announced on the University's website. Primarily lectures, seminars, practical tutorials, tutorials, and academic projects are offered.
- (2) Lectures are used to communicate in a cohesive and systematic presentation fundamental technical, theoretical and methodological knowledge.
- (3) Seminars are used for teachers and students to scientifically appraise theoretical and practical issues collaboratively. This can be in a variety of different ways of working (provision of information, presentations, development of theses, discussions) and in groups. They require cooperation between the students in the form of presentations and/or written assignments. The seminar leader may require additional accomplishments.
- (4) Tutorials are used to practice and consolidate the subject matter, especially the acquisition of basic methods, skills and competences in conjunction with practical exercises. In general they are carried out under the responsibility of the person who is offering the course on which the tutorials are based or by research assistants.
- (5) Tutorials are used to practice and consolidate the subject matter. In general they are carried out under the responsibility of the member of teaching staff responsible for the course on which the tutorials are based or by students from later semesters.
- (6) In classes designated for academic projects, students work on complex tasks taking theoretical principles into particular account on the basis of practical examples. The results are presented in a final project assignment plus an associated presentation, a method that is also customary in professional practice. The project may be supervised by an interdisciplinary team of lecturers, members of which may act as both coach and mentor. Access to projects may depend on the students having fulfilled certain requirements, as well as on the module regulations. It is also possible for students, in agreement with a course lecturer, to work on a project independently during a semester.
- (7) The main focus of the presentation is to present and defend the knowledge acquired during the relevant modules. The objective of the presentation is to reflect on a subject in theoretical and practical terms to a high professional standard.
- (8) In the case of teaching and learning forms that demand regular active participation by candidates in order to attain the learning objective, the requirement to attend regularly may be included in the module description.
- (9) Access to individual modules may be restricted in justified exceptional cases if, due to the type and purpose of the class or for any other teaching or research reason it is necessary to limit the number of participants. The admission requirements are governed by the corresponding module descriptions.

## **§ 11**

### **Departmental academic counseling**

- (1) In order to facilitate orientation within the Faculty for new students, introductory courses are offered at the start of each program.
- (2) These study and examination regulations only contain information of a general nature; for this reason, further information is needed for precise orientation and planning of the course of studies. To this end students should also familiarize themselves with the module handbook.
- (3) Academic counseling is offered by the faculty for each course. The relevant persons are listed on the faculty website and in the examination office.

## **§ 12**

### **Individualized study plans**

- (1) The aim of individualized study plans is to facilitate the successful completion of the course within the standard course duration. They are offered particularly for those students who are dealing with especially heavy demands as a result of long-term illness, the birth of or caring for their own children, or other reasons.
- (2) Individualized study plans must be finalized in consultation with the head of the board of examiners. They also require the absolute approval of the relevant course leader.

### **III. Examinations**

#### **§ 13**

##### **Board of Examiners**

- (1) The Faculty has set up a board of examiners to organize the examinations and to administer the tasks assigned by these study and examination regulations.
- (2) The board ensures compliance with the terms set out in these study and examination regulations. It reports to the Faculty on developments regarding the examinations and study times. It makes suggestions regarding the reform of these study and examination regulations. The board of examiners adjudicates in respect of objections to decisions made regarding examination matters.
- (3) The board of examiners is elected by the Faculty Council from the ranks of professors, junior professors and the chair / deputy chair plus one additional member. Furthermore, the Faculty Council elects one member each to the board of examiners from the ranks of research assistants and students.
- (4) The board of examiners is quorate if, alongside the chairperson or his/her deputy, at least two additional members are present, but only if the group of professors and junior professors cannot be overruled. The board of examiners passes resolutions with a simple majority. If the votes are tied, the chairperson, or if he/she is not present, his/her deputy shall have the casting vote.
- (5) The term of office of the members of the board of examiners is two years, with student incumbency limited to one year. Members may be re-elected.
- (6) The meetings of the board of examiners are not held in public. The members of the board are bound to maintain confidentiality. If they are not public servants, they must be sworn to secrecy by the chair of the board of examiners.
- (7) The board of examiners shall adopt rules of procedure. It may revocably transfer standing tasks to be dealt with by the chair person. The chair of the board of examiners, or a person nominated by him/her shall represent the board of examiners both judicially and extrajudicially. The chairperson prepares and executes the resolutions of the board, and regularly informs board members as to his or her activities.
- (8) Decisions and other measures to be approved in accordance with these study and examination regulations, and in particular the registration and examination dates and deadlines must be publicly announced in the usual manner within the university. Admission to an examination, the refusal of admission and the examination results are announced individually via the electronic examination administration system.
- (9) The office of the board of examiners is the examination office of the Faculty.

#### **§ 14**

### **Lecturers, examiners and assessors**

- (1) Lecturers are appointed by the Faculty Council for specific courses/classes in a certain semester in accordance with the Universities Act of the state of Saxony-Anhalt.
- (2) The board of examiners appoints the examiners from the ranks of the professors and junior professors working in the Faculty. Over and above this, teachers, university and private lecturers, research associates with doctorates and employees who carry out independent teaching duties in the subject area to which the examination relates, plus professors and junior professors from other faculties may be appointed as examiners.
- (3) At least two examiners must be appointed for the evaluation of examinations. If the board of examiners determines that, having considered all those authorized to be examiners or assessors pursuant to paragraph 1, the additional burdens arising from appointment as an examiner for a particular examination date would have an unreasonable impact on their other duties, or if two examiners are not available, it can thereupon resolve that the written examinations may be marked by one examiner only. The resolution must be communicated to the student when registering for the examination.
- (4) The examiners are independent in their duties. They are subject to confidentiality.

### **§ 15**

#### **Recognition of periods of study, credits and examination results**

- (1) Upon written application, the board of examiners will decide on the recognition of prior periods of study, credits and examination results. The application is to be addressed to the board of examiners within four weeks from the beginning of the relevant program of studies. For purposes of recognition, students must present the necessary original documents or certified copies thereof. Otherwise, there can be no recognition.
- (2) Notwithstanding paragraph 1, prior periods of study, credits and examination results attained within Otto von Guericke University may be recognized ex officio.
- (3) In accordance with the provisions of the Lisbon Convention (Article III), prior periods of study, credits and examination results must be recognized if there are no significant differences in terms of quality, standard, learning outcome, scope and profile between the knowledge acquired and that to be acquired. This shall be ascertained through an overall consideration and evaluation rather than a schematic comparison. Conditional recognition is also possible.
- (4) The burden of proof in the event that study periods, credits and examination results do not meet the corresponding requirements for recognition lies with the board of examiners carrying out the evaluation. The applicant has responsibility for providing adequate information. For purposes of recognition, applicants must promptly present the necessary original documents or certified copies thereof. If applied by both parties, the European Credit Transfer System (ECTS) must be taken into account in the evaluation. Failure to present the

required documents in time or in the necessary form shall result in the rejection of the application.

(5) Skills and knowledge acquired outside of higher education may be accredited to a university degree course within the framework of an individual or, under certain circumstances, generalized examination, if

1. the requirements in force for university admission – including where necessary via the possibilities of university admission for particularly well qualified employed persons – are met;
2. they are equivalent to the part of the course of studies to be replaced in terms of content and level;
3. in accordance with the principles of the new quality assurance system in higher education, the qualitative and content-related criteria for the replacement of academic credits by skills and knowledge acquired outside of higher education are checked as part of the accreditation.

Knowledge and skills acquired outside of higher education may replace a maximum of 50% of a university course.

(6) If credits and examination results are recognized, the grades – to the extent that the grading systems are comparable – shall be transferred and included in the calculation of the overall grade. Where grading systems differ, the board of examiners shall decide upon the grade conversion. In the case of disparate grading systems, the endorsement “passed” shall be adopted.

## **§ 16**

### **Types of examinations during the program**

(1) The following types of examinations may be held during the program:

- Written examination (interim and/or final written test) (W),
- Electronic examination (interim and/or final written test) (eW),
- Oral examination (O)
- Academic (A) or seminar paper (S) or other equivalent written work,
- Presentation (P),
- Academic project (AP),
- Discussion contributions (D),
- Case studies (C),
- Exercises (E).

(2) In an examination (interim and/or final written test) in written or electronic form, that is

invigilated and taken in a time-limited session with limited aids, students are required to demonstrate their comprehension of standard methodology and problem recognition and solving skills within their specific fields. The time allowed for a written examination (interim and/or final written test) usually amounts to a total of 60 minutes (in the case of a module carrying five CP) or 120 minutes (in the case of a module worth more than five CP). Written exams (interim and/or final written tests) may contain tasks or consist of questions, for which there is a choice of several answers (multiple choice).

(3) In the case of multiple choice tests, the candidate must indicate which of the answers provided he or she considers to be the most applicable. When compiling the examination questions for a multiple choice test, those answers that are considered applicable must be specified. The second examiner in accordance with § 14 para 3 is responsible for checking the examination questions before determining the examination result to establish whether they, as measured by the requirements of paragraph 2, are erroneous. If this check should establish that individual questions are erroneous, they must not be taken into account in determining the examination result.

(4) A multiple choice test shall always be deemed to have been passed if the examination candidate has achieved at least 50 per cent of the possible points score (absolute pass mark). The examination shall also always be deemed to have been passed if the points score achieved by the candidate is at least 50 per cent of the average points score achieved by the top 5% of the participants in the test, but no less than 40 per cent of the maximum possible points score (sliding scale pass mark). In the case of repeated examinations, the sliding scale pass mark in line 2 shall not be applied if the number of participants is 45 candidates or fewer. In this case the absolute pass mark in accordance with line 1 shall apply. This paragraph shall apply if the proportion of examination questions in the multiple choice examination exceeds 50 percent of the total achievable score.

(5) In an oral examination, students should be able to demonstrate their capacity to recognize and classify complex issues from the specific topic under examination. The oral examination shall be conducted by several examiners (panel examination) or by one examiner and an expert assessor in the form of an individual or group examination, whereby up to 4 students may constitute a group. The assessor is to be consulted before a final grade is given. As a general rule the duration of the examination shall be fifteen minutes for each student. The essential points of the examination and its evaluation must be recorded in writing. This record must be signed by the examiners and the assessors. The result of the examination is to be made known to the student directly following the oral examination.

(6) An academic or seminar paper or other equivalent written work requires an experimental, empirical or theoretical approach to a task from the specialized area. Students are free to propose topics and task definitions for their papers. However their proposals shall not be legally binding. Other corresponding written work (e.g. a report or project work, spreadsheet analysis, essay, abstract or assignment) may be considered to be the equivalent of a seminar paper.



(7) A presentation comprises an independent and in-depth written discussion of a problem from the work context of the class with the inclusion and evaluation of relevant literature plus the presentation of the work and communication of the results in an oral presentation as well as in the subsequent discussion. Presentations must be provided in written form for assessment.

(8) By working on a joint academic project, students must demonstrate their capacity to produce scientific work independently as well as to work in a team. Individual contributions to a project must be clearly discernible.

(9) Work done on case studies shall include an independent written discussion of a subject-specific or interdisciplinary problem with the inclusion and evaluation of relevant literature.

(10) An exercise consists of a sequence of tasks provided by the relevant lecturer which must be completed independently by a fixed deadline. The exercise may include reviewing the tasks and discussing any problems. Exercises may also include work in written form or another kind of presentation of individual exercise work.

(11) Through oral discussion contributions, the students should demonstrate that they are familiar with the interrelationships of the subject area and are able to understand specific questions relating to the context.

(12) Group projects are also a permissible form of examination. The contribution of each individual student must meet the examination requirements and be clearly discernible and assessable on the basis of sections, pages or other objective criteria.

(13) Forms of examination with a combination of types as set out in para 1 are permissible. The form and scope of the examinations for the individual modules can be found in the appendices containing the study and examination schedules and/or the module handbooks.

(14) The type and scope of the examinations for the individual modules can be found in the study and examination schedule and/or the module handbook. The types of examination covered by these regulations (written or oral examination) may be amended under the following conditions:

- a) If a small number of candidates are registered or can be expected for an examination that is designated as a written examination, then upon application by the examiner, the board of examiners may agree to the examination being conducted orally instead.
- b) If a large number of candidates are registered or can be expected for an examination that is planned as an oral examination, then upon application by the examiner, the board of examiners may agree to the examination being conducted in writing instead.

This approval shall only apply for one examination date. Students affected by a change to the form of examination approved by the board of examiners must be notified without delay.

(15) The examiner shall decide which examination aids may be used in a written examination. A list of the authorized aids must be supplied in good time before the start of the examination. The examination assessment criteria must be published. Grades must generally be announced no later than the end of the semester during which the exam was taken.

## **§ 17**

### **Public access to oral examinations**

As long as they themselves are not registered to take the same examination, students of this program who have yet to successfully complete the respective examination may be present at the oral examinations as observers (§ 16 para 5). This, however, does not include the counseling and notification of the students being examined regarding their examination results. Pursuant to sentence 1, a student may apply to exclude observers from his or her examination.

## § 18

### **Examination administration system**

- (1) Students shall use existing online means of access to the electronic examination administration system in person. This system is used to electronically administer the examination data, registration and deregistration for module exams and announcement of examination decisions; the responsible board of examiners may enact more detailed regulations for the execution of the process.
- (2) As far as they are able, students are obliged to check the accuracy of the entries in the examination administration system at least once per semester; any transcription errors should be reported immediately.
- (3) The examiners as defined in § 14 shall be involved in the electronic recording of the examination results. The grading lists shall be retained by the board of examiners responsible for the examination.
- (4) The study and examination results shall, where possible, be announced via the electronic examination administration system or by notice on the notice board. In this respect, students are obliged to utilize the examination administration system. The assessment result shall be considered to have been announced at the latest two weeks after the assessment has been entered in the electronic examination administration system or after being posted on the notice board, unless the relevant students have not been demonstrably made aware of the result already. The students shall be notified in the customary manner that the examination results have been entered in the electronic examination administration system.
- (5) If a student wishes to leave the university or change course, upon application a certificate will be issued containing all passed and failed examinations and their grades and indicating whether the Master's examination has not yet been completed or has been irrevocably failed.

## § 19

### **Admission to participate in examinations during the program**

- (1) Anyone who is enrolled at Otto von Guericke University on the program named in § 1 may be admitted to the program examinations.
- (2) The module examinations are generally arranged by the end of the semester. The deadlines stipulated by the chair of the board of examiners and announced by notice at the latest four weeks before the expiration of said deadlines for registration for the examinations are cut-off dates. The registration deadline is usually four weeks after the start of classes. Communications to the students are by notice or via the faculty website, provided that these study and examination regulations do not stipulate otherwise.
- (3) Before starting each module examination, the student must have registered for it with the board of examiners. For modules that are completed within the faculty, this registration

shall be via electronic enrolment on the main course (lecture, seminar or project) that is part of the module via the web portal of the university. For modules that are completed outside of the faculty, a separate written registration must be submitted to the responsible board of examiners or students must register electronically via the university web portal intended for the purpose. This also applies to modules that are delivered during studies on the selected program at another university institution. Retrospective registration not permitted. Multiple accreditation of the same course/class is not permitted. After achieving the necessary CP for successful completion of the program, it will not be possible to register again for the same module.

(4) Registration may be revoked in writing no later than four weeks before the start of the examination period by submission to the board of examiners, or electronically in the designated web portal. In the event of a withdrawal, a new application for admission to the examination must be submitted in accordance with paragraphs 1 and 2 for a later examination date. Students are not permitted to revoke their registration for an exam if this is expressly indicated in the description of the relevant module.

(5) The board of examiners is responsible for admission decisions. Admission must be refused if

1. the requirements for admission are not fulfilled or
2. the documents are incomplete or
3. the examination has been irrevocably failed or is deemed to have been irrevocably failed.

## § 20

### Assessment of examination results and determination of module grades

(1) Each examination is evaluated and graded by the respective examiners. In the case of written examinations, the evaluation results must be communicated no later than the end of the semester during which the exam was held.

(2) The following grades are to be used for the assessment of examinations:

Grade	Designation	Definition
1	Very good	An outstanding performance
2	Good	A performance which is significantly above average
3	Satisfactory	An average performance
4	Sufficient	A performance which, in spite of its shortcomings, is considered to be sufficient
5	Insufficient	A performance which, because of substantial shortcomings, does not meet the requirements

For the sake of greater differentiation, individual grades may be rounded up or down by 0.3; this does not apply to the following grades: 0.7, 4.3, 4.7 and 5.3.

(3) An examination is considered to have been passed if a minimum grade of "sufficient" is awarded. If an examination is graded by more than one examiner, it is considered to have been passed if all examiners award at least a grade of "sufficient". In this case, notwithstanding the regulation stipulated in paragraph 2, the grade awarded for the examination corresponds to the arithmetic average to one decimal place of the individual grades awarded by the examiners.

(4) A module examination is considered to have been passed when all necessary examinations have been awarded a grade of at least "sufficient". If a module examination consists of only one examination, then the module grade shall correspond to the result of that examination. If a module examination comprises several exams, notwithstanding the regulation stipulated in paragraph 2, the grade awarded for the module shall correspond to the arithmetic average to one decimal place (and if necessary weighted) of all the grades awarded for the examinations in the module.

(5) When arriving at a grade by means of averaging, only the first decimal place will be taken into account; all other decimal places will be disregarded. The corresponding grade is as follows:

<b>For a grade average of</b>	<b>Designation</b>
up to and including 1.5	Very good
from 1.6 up to and including 2.5	Good
from 2.6 up to and including 3.5	Satisfactory
from 3.6 up to and including 4.0	Sufficient
from 4.1	Insufficient

## § 21

### Repetition of examinations

(1) Examinations in the compulsory modules that are failed or deemed to have been failed may be repeated once. A second repetition is only permissible for a maximum of one examination from all of the examinations in the compulsory section of the program. § 20 applies accordingly for the assessment. Examinations that have been passed may not be repeated.

(2) Notwithstanding paragraph 1, in the case of compulsory elective and elective examinations, attempts are not counted, and it is therefore not necessary to repeat failed modules.

(3) Notwithstanding paragraphs 1 and 2, in compulsory elective examinations that are completed in the form of a seminar and an academic project, a maximum of two attempts may be awarded a grade of "insufficient" or deemed to be "insufficient".

## § 22

### **Supplementary examinations**

(1) Students may also take examinations in the additional modules to those modules in the compulsory, compulsory elective and elective parts of the course that are prescribed in the attached study and examination schedules.

(2) Upon request by the student, the results of supplementary examinations will be included in the academic transcript and/or certificates. The results of supplementary examinations are not taken into consideration when calculating grade point averages and when determining the cumulative grade.

### **§ 23**

#### **Non-attendance, withdrawal, cheating, breach of regulations**

(1) If, after registering for an examination for which the time and location has been set, the candidate fails to attend without a good reason, or if he or she withdraws from the examination after it has commenced without good reason, then the examination concerned shall be awarded a grade of "insufficient" (5.0). The same applies if an examination is not submitted by the prescribed submission deadline or an examination is not completed by the prescribed date.

(2) Students wishing to withdraw from an examination after the end of the withdrawal period in accordance with § 19 para 4 must apply in writing to the board of examiners. The reason for missing or withdrawing from the examination must be provided in writing without delay to the board of examiners and must be substantiated. In the case of impairments caused by ill health, the withdrawal from the examination must be substantiated by a doctor's note. In cases of doubt, the doctor may be appointed by the chair of the board of examiners. If the board of examiners recognizes the reason given, then the candidate will be notified either in writing or electronically.

(3) Should the candidate attempt to influence the result of an examination by deception, then the examination result concerned shall be recorded as "insufficient" (5.0). Making use of unauthorized aids after the start of an examination shall always be deemed to be an attempt at deception within the meaning of line 1. In particularly serious cases, the board of examiners may revoke the right to repeat the examination.

(4) If a candidate disrupts the proper process of an examination, then he or she may be excluded by the examiner or invigilator from continuing with the examination. If this is the case, the examination shall be deemed to have been graded as "insufficient" (5.0).

(5) Adverse decisions in accordance with paragraphs 1 to 4 must be communicated in writing without delay to the candidate, and must be justified. Prior to the decision he or she must be given the opportunity to be heard.

## § 24

### **Protective provisions, compensation for disadvantages**

(1) Where a student provides credible evidence (medical certificate) that, due to a prolonged or permanent illness, he or she is completely or partially unable to fulfill the examination requirements in the prescribed form, the board of examiners must provide the student with the possibility of taking equivalent examinations in a different form.

(2) Disabled students may be granted additional materials or aids to compensate for disadvantages, provided that this is necessary to establish equality of opportunity. To this end the duration of the assessment may be extended to a reasonable degree or approval may be given for the examination to be taken in a different form. A disabled student is defined as someone who, due to a protracted or permanent physical impediment, is not in a position to complete the examination in the prescribed form, either in part or in full. The impediment must be substantiated. The University may require substantiation in the form of a medical certificate or submission of a certificate of disability. Compensation for disadvantage must be applied for in writing to the board of examiners. The application should be made no later than when registering for the examination.

(3) The protective provisions pursuant to the Maternity Protection Act and, in accordance with the time limits set out by the Federal Child-Raising Allowance Act as to parental leave, are to be strictly adhered to and promoted in applying these study and examination regulations, especially in terms of the calculation of time limits. During a leave of absence granted on the grounds of family responsibilities, students are free to continue with their studies and examinations. Upon written application to the board of examiners, students may repeat a failed examination during their leave of absence.

## § 25

### **Appeal procedure**

Students may file an objection against adverse administrative acts in connection with examination matters in writing or verbally for transcription, with the board of examiners in accordance with the Administrative Procedure Act (Verwaltungsverfahrensgesetz, VwVfG). The reasons for the objection must be given in writing. If the board of examiners does not wish to remedy the objection, the relevant student must be provided with an official decision complete with instructions on how to appeal.

## **IV. Master's Thesis**

### **§ 26**

#### **Master's thesis registration**

- (1) A master's thesis must be written in the English language in the context of a final seminar.
- (2) The Master's thesis should demonstrate that students are capable of working independently, using scientific methods and within a given time frame on a particular issue from the subject area. The topic and task definition of the Master's thesis must correspond to the purpose of the examination and the required period of time. The type of task and the project definition must be specified when the topic is assigned. Within the context of the final seminar, the candidate must demonstrate that he or she is able to adequately present and explain the problems and solutions on which he or she has been working.
- (3) Only students who are enrolled at Otto von Guericke University on the relevant program in accordance with § 1, and who are able to successfully demonstrate having obtained at least 75 CP including the compulsory modules and all compulsory elective modules from the area of specialization, may be admitted to write their Master's thesis.
- (4) Admission to write a Master's thesis must be applied for in writing to the board of examiners. The seminar facilitators may set justified admission requirements for the relevant final seminars.

### **§ 27**

#### **Issuing of the topic, submission and assessment of the Master's thesis**

- (1) The topic shall be set by the lead examiner in consultation with the students to be examined. Students should be given the opportunity to make proposals for the Master's thesis topic and task definition. However they shall not be legally binding. Upon application, the board of examiners shall guarantee that students will receive a topic in good time. During the preparation of their thesis, the students shall be supervised by their lead examiner.
- (2) For the setting of topics, the board of examiners shall appoint persons from the ranks of professors, junior professors, university and private lecturers and research associates who hold a doctorate and who are active within the Faculty. Over and above this, with their agreement, other habilitated members of the Faculty and professors, junior professors, university and private lecturers from the Faculties of Computer Science, Mathematics, Natural Sciences or the Engineering faculties may also be appointed as examiners. If the lead expert is not employed in the Faculty of Economics and Management, then the second expert appointed must be an examiner from the Faculty of Economics and Management. The board of examiners may limit the number of theses to be supervised by one person with the objective of achieving an even distribution among the persons setting topics.



(3) The topic of the Master's thesis shall be issued by the board of examiners once the student has been granted permission to write their thesis and the student shall be notified of the submission deadline for their work. The date of issuing of the topic must be put on record. The topic may only be returned once and only within two weeks from date of issue. After this, the student must reapply to write their Master's thesis.

(4) The time between the issuing of the topic and the submission of the Master's thesis, including a one-month reading period, is five months. It may be extended by the board of examiners with the consent of the topic setter by a maximum of four weeks.

(5) A list of the resources used must be appended to the final thesis. When submitting their Master's thesis, students must assert in writing that they have completed the work independently and without the use of any other aids or resources than those indicated, and all passages that have been quoted verbatim or paraphrased from published or unpublished papers have been identified as such. Over and above this, a declaration must be given, and appended to the final thesis, that neither the work, nor excerpts from it, have already been used for another examination. Plagiarism is an attempt at deception in accordance with § 23 and any work containing it shall be graded as "insufficient".

(6) The Master's thesis must be submitted to the examination office in two bound copies plus two copies in digital form by the deadline. If the thesis is not submitted in a timely manner or in the form required, then it shall be graded as "insufficient" (5.0). §23 applies accordingly.

(7) Examiners should appraise and grade the Master's thesis within four weeks from the date on which it is submitted.

(8) For the successfully completed Master's thesis including the presentation within the context of the final seminar, 30 CP shall be awarded.

(9) The grade of the final thesis is calculated from the grade for the written thesis (80%) and the presentation during the final seminar (20%).

## **§ 28**

### **Repetition of the Master's thesis**

(1) A Master's thesis may be repeated once if it has or is deemed to have been graded as "insufficient".

(2) The Master's thesis must be repeated within the framework of a final seminar during the following semester.

(3) Repetition of a successfully completed Master's thesis is not permitted.

## **§ 29**

### **Overall result of the Master's degree**

(1) The Master's degree shall be deemed to have been passed when all examinations during

the program assessing the compulsory, compulsory elective and elective modules amounting to 90 CP in accordance with appendices 1–2 have been completed and the Master's thesis amounting to 30 CP has been evaluated as at least "sufficient".

(2) The overall grade of the Master's degree is the arithmetic average of the grades for the module examinations and the final thesis weighted according to the credit points.

(3) If the average of the overall grade is better than 1.3, then the classification "passed with distinction" shall be awarded.

(4) The Master's degree shall be deemed to have been irrevocably failed if the first repetition of two compulsory examinations, the second repetition of a compulsory examination, the third assignment in one seminar or in one academic project or the repetition of the Master's thesis is assessed as "insufficient" or is deemed to have been assessed as "insufficient".

### **§ 30**

#### **Academic transcripts and certificates**

(1) A transcript in German and a duplicate in English will be issued for a successfully completed Master's degree. The transcript will contain the overall grade, the subject and the grade awarded for the Master's thesis. The transcript shall bear the date on which the last examination was completed. It must be signed by the chair of the board of examiners and the Dean of the Faculty and stamped with the Otto von Guericke University stamp.

(2) An appendix to the transcript stamped with the university stamp in the German language and a copy in English will list all of the modules completed including the CP and grades awarded for them.

(3) Together with their transcripts, students shall receive a Diploma Supplement in German and English.

### **§ 31**

#### **Degree certificate**

(1) Together with the transcript, students shall receive a certificate in German and a copy in English with the date of the transcript. This also includes the certification of the award of the title of Master.

(2) The certificate shall be signed by the Dean of the Faculty at Otto von Guericke University and stamped with the stamp of the Faculty of Economics and Management at Otto von Guericke University.

## **V. Final Provisions**

## **§ 32**

### **Accessing the examination files**

- (1) Within a particular period specified by the board of examiners, after completion of each module examination and at the beginning of the following semester, students may view their written examination scripts, the examiners' assessments and the examination records. Outside of this period, access may only be granted upon written application to the board of examiners; it must be justified and substantiated.
- (2) Up to four weeks after having viewed them, the student may raise an objection to the assessment of the module examinations with the relevant board of examiners. The objection must be justified in writing.
- (3) After issuing of the certificate, written applications to the board of examiners to view an examination file must be made within a cut-off period of three months. The chairperson of the board of examiners will determine the time and place for reviewing the documents.

## **§ 33**

### **Invalidity of examination results**

- (1) If a student has cheated in an examination or influenced his or her result through the use of unauthorized aids, and this becomes known after the degree has been awarded, the board of examiners is authorized to declare an examination to have been failed either partially or in its entirety.
- (2) If the conditions for admission to the examination were not met but without any intentional deception, and this only becomes known after the degree has been awarded, the deficiency is deemed to have been righted if the examination was passed. If a student has deliberately used unfair means to gain admission, the board of examiners, taking into consideration relevant legal regulations, will decide as to the revocation of unlawful administrative acts.
- (3) Prior to such a decision, the affected student is to be given the opportunity to make a statement on the matter to the board of examiners.
- (4) The incorrect transcript must be recovered, and replaced by a correct transcript or certificate in accordance with § 18 paragraph 5. No decision may be made in accordance with paragraphs 1 and 2 after a period of five years from the date of the transcript being issued has elapsed. In the event that the examination transcript is revoked without replacement, the holder must be stripped of his/her academic degree and the certificate recovered.

## **§ 34**

### **Validity and effective date of regulations**

- (1) The provisions of these study and examination regulations apply to all students who

enroll for the first time on the Master's program in accordance with § 1 of these regulations at Otto von Guericke University Magdeburg from the winter semester 2017 / 2018.

(2) These study and examination regulations shall enter into force after approval by the President on the day after they are published in the official announcements of Otto von Guericke University.

Issued by virtue of the resolutions of the Faculty Council of the Faculty of Economics and Management dated 01 March 2017 and the Senate of Otto von Guericke University dated 15 03 2017.

Magdeburg, 16.03.2017

Prof. Dr.-Ing. Jens Strackeljan  
President  
of Otto von Guericke University Magdeburg

Appendix 1: Study and Examination Schedule Operations Research and Business Analytics (where studies commence in the winter semester)

No.	Module / Modules	Semester 1 (WS)			Semester 2 (SS)			Semester 3 (WS)			Semester 4 (SS)		
		SHW	AE	CP	SHW	AE	CP	SHW	AE	CP	SHW	AE	CP
<b>1.</b>	<b>Compulsory Modules</b>												
1.1	Stochastic Models in Production and Logistics	2L+2T	W60	5									
1.2	Integer and Combinatorial Optimization with Applications	2L+2T	W60	5									
1.3	Programming in C++	1L+3T	W60	5									
1.4	Concepts and Algorithms of Optimization	2L+2T	W60	5									
1.5	Intelligent Data Analysis				2L+2T	W120	5						
1.6	Data Mining				2L+2T	O	5						
1.7	Database Concepts				2L+2T	W120	5						
<b>2.</b>	<b>Compulsory Elective Modules in Specialization</b>												
2.1	Module I	*	*	5									
2.2	Module II				*	*	5						
2.3	Seminar				*	*	10						
2.4	Academic Project							*	*	15			
<b>3.</b>	<b>Elective Modules</b>												
3.1	Elective Module I	*	*	5									
3.2	Elective Module II							*	*	5			
3.3	Elective Module III							*	*	5			
3.4	Elective Module IV							*	*	5			
<b>4.</b>	<b>Master's Thesis</b>												
4.1	Final Seminar										2S	P	
4.2	Master's Thesis											APa	
	<b>Total</b>	<b>~21</b>		<b>30</b>	<b>~18</b>		<b>30</b>	<b>~13</b>		<b>30</b>	<b>2</b>		<b>30</b>

Appendix 2: Study & Examination Schedule Operations Research and Business Analytics (where studies commence in the summer semester)

No.	Module / Modules	Semester 1 (SS)			Semester 2 (WS)			Semester 3 (SS)			Semester 4 (WS)		
		SHW	AE	CP	SHW	AE	CP	SHW	AE	CP	SHW	AE	CP
<b>1.</b>	<b>Compulsory Modules</b>												
1.1	Stochastic Models in Production and Logistics				2L+2T	W60	5						
1.2	Integer and Combinatorial Optimization with Applications				2L+2T	W60	5						
1.3	Programming in C++				1L+3T	W60	5						
1.4	Concepts and Algorithms of Optimization				2L+2T	W60	5						
1.5	Intelligent Data Analysis	2L+2T	W120	5									
1.6	Data Mining	2L+2T	O	5									
1.7	Database Concepts	2L+2T	W120	5									
<b>2.</b>	<b>Compulsory Elective Modules in Specialization</b>												
2.1	Module I	*	*	5									
2.2	Module II	*	*	5									
2.3	Seminar				*	*	10						
2.4	Academic Project							*	*	15			
<b>3.</b>	<b>Elective Modules</b>												
3.1	Elective Module I	*	*	5									
3.2	Elective Module II							*	*	5			
3.3	Elective Module III							*	*	5			
3.4	Elective Module IV							*	*	5			
<b>4.</b>	<b>Master's Thesis</b>												
4.1	Final Seminar										2S	P	
4.2	Master's Thesis											APa	
	<b>Total</b>	<b>~21</b>		<b>30</b>	<b>~19</b>		<b>30</b>	<b>~13</b>		<b>30</b>	<b>2</b>		<b>30</b>

## Study and Examination Schedule Key

\* for the scope and types of class as well as the form and scope of the examinations during the program, see module descriptions for the available modules.

CP	=	Credit Points	S	=	Seminar
APa	=	Academic Paper	SS	=	Summer semester
W60	=	Written examination lasting 60 minutes	SHW	=	Semester hours per week
O	=	Oral examination	T	=	Tutorial
P	=	Presentation	L	=	Lecture
AE	=	Type of examination	WS	=	Winter semester

### Appendix 3: Proof of English language skills

A student's English language skills may be evidenced in one of the five following ways:

1. Proof of a valid language test listed here with the relevant minimum points score:

<b>TOEFL</b>	TOEFL iBT (internet): 108
<b>IELTS</b>	7.0
<b>Cambridge Certificate in Advanced English / CAE</b>	grade C
<b>UNlcert</b>	III

2. Proof of a Bachelor's degree or a university diploma completely in a relevant, English-language program.
3. Proof of at least 30 credit points (CP) in accordance with the European Credit Transfer System (ECTS) in English-language modules on a German-language program.
4. Attendance at a secondary or tertiary education institution (e.g. college, high school, university) in an English-speaking country for at least nine months, evidence for which must be provided by an official transcript of records. The following countries are recognized as English-speaking: Antigua & Barbuda, Australia, Bahamas, Barbados, Belize, Grenada, Great Britain (incl. overseas territories), Guyana, Ireland, Jamaica, Canada, New Zealand, St. Kitts & Nevis, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, USA (incl. external territories).
5. Applicants who have obtained a domestic university entrance qualification with an average grade in the subject of English of at least 10 points. The average grade will be calculated from the arithmetic average of the most recent four half-yearly assessments. If, in addition, a final examination in the subject of English has been taken, then the arithmetic average will be calculated from the most recent four half-yearly assessments and the final examination.