

For informative use only. Only the German version has legal validity.

# **Examination and Academic Regulations** **for the joint Master's Degree Program** **Finance and Information Management (FIM)** **at the Technical University of Munich and the University** **of Bayreuth**

dated December 21, 2023

In accordance with Article 9 Line 1 and 2 together with Article 80 (1) Line 1, Article 84 (2) Line 1 and Article 90 (1) Line 2 of the Bayerischen Hochschulinnovationsgesetzes (BayHIG) [Bavarian Higher Education Act] the Technical University of Munich (TUM) issues the following Examination and Academic Regulations (Fachprüfungs- und Studienordnung, FPSO):

## **Table of contents:**

§ 34	Applicability, Academic Title
§ 35	Commencement of Studies, Standard Duration of Study, ECTS
§ 36	Eligibility Requirements
§ 37	Modular Structure, Module Examination, Courses, Course Specialization, Language of Instruction
§ 38	Examination Deadlines, Study Progress Monitoring, Failure to Meet Deadlines
§ 39	Examination Board
§ 40	Recognition of Periods of Study, Coursework and Examination Results
§ 41	Continuous Assessment Procedure, Types of Assessment
§ 42	Registration for and Admission to the Master's Examination
§ 43	Scope of the Master's Examination
§ 44	Repeat Examinations, Failed Examinations
§ 45	Coursework
§ 45a	Multiple Choice Tests
§ 46	Master's Thesis
§ 47	Passing and Assessment of the Master's Examination
§ 48	Degree Certificate, Diploma, Diploma Supplement
§ 49	Entry into Force

Appendix 1	I. Components of the Master's Examination
	II. Examination Modules

Appendix 2	Aptitude Assessment Process
------------	-----------------------------

### **§ 34**

#### **Applicability, Academic Title**

- (1) <sup>1</sup>These Examination and Academic Regulations (FPSO) for the joint master's degree program in Finance and Information Management (FIM) of the Technical University of Munich (TUM) and the University of Bayreuth (UB) (FPSO) complement the General Examination and Study Regulations for bachelor's and master's degree programs at the Technical University of Munich (APSO) as of March 18, 2011, as amended. <sup>2</sup>The APSO shall have precedence.
- (2) Based on the successful completion of the master's examination, the academic degree „Master of Science" („M.Sc.") is jointly awarded.

### **§ 35**

#### **Commencement of Studies, Standard Duration of Study, ECTS**

- (1) The joint master's program in Finance and Information Management (FIM) at the Technical University of Munich generally begins in the winter semester.
- (2) <sup>1</sup>The scope of the credits required for obtaining the master's degree in the compulsory and elective areas is 90 (30 semester hours), distributed over three semesters. <sup>2</sup>In addition, 30 credits (maximum six months) are required to complete the master's thesis in accordance with § 46. <sup>3</sup>The scope of the coursework and examinations to be performed in the compulsory and elective areas in accordance with Appendix 1 in the joint master's degree in Finance and Information Management (FIM) is therefore at least 120 credits. <sup>4</sup>The standard period of study for the master's program is four semesters in total.

### **§ 36**

#### **Eligibility Requirements**

- (1) Qualification for the joint master's program in Finance and Information Management (FIM) is demonstrated by:
  1. A qualified bachelor's degree of at least six semesters obtained at a domestic or foreign university or a degree of at least equivalent value in the fields of economics and social sciences, industrial engineering, (applied) computer science, mathematics including financial and business mathematics, statistics, or comparable courses of study,
  2. Adequate knowledge of the English language; for this purpose, students whose language of education is not English must provide evidence utilizing a recognized language test such as the "Test of English as a Foreign Language" (TOEFL) (at least 88 points), the "International English Language Testing System" (IELTS) (at least 6.5 points) or the "Cambridge Main Suite of English Examinations"; if examinations amounting to 12 credits in English-language examination modules were taken in the undergraduate degree program or if a GMAT score of at least 53 percent was submitted, this also demonstrates adequate knowledge of the English language,
  3. A proof of subject knowledge in the form of a Graduate Management Admission Test (GMAT) with at least 65 percent is mandatory for applicants who have completed their first degree in the following countries: China, Bangladesh, India, Egypt, Pakistan; for other applicants with a first degree that was not completed in a signatory state of the Convention on the Recognition of Qualifications concerning

For informative use only. Only the German version has legal validity.

Higher Education in the European Region of April 11, 1997 (hereinafter: Lisbon Convention), the submission of the test according to sentence 1 is recommended,

4. passing the suitability procedure according to Annex 2.
- (2) A qualified university degree within the meaning of Para. 1 No. 1 exists if there are no significant differences in the first professionally qualifying degree with regard to the competences (learning outcomes) acquired in the Bachelor's degree courses mentioned in Para. 1 No. 1 and, at the latest at the time of application, an academic paper in the form of a Bachelor's thesis, a project, a scientific essay or a comparable achievement of at least 5 credits, in which the applicants have worked on a topic scientifically and have applied the methods and specialist knowledge of their field of study.
- (3) The module catalog of the bachelor's degree programs in Management and Technology, Mathematics, and Business Information Systems is used for the determination according to Paragraph 2.

### **§ 37**

#### **Modular Structure, Module Examination, Courses, Course Specialization, Language of Instruction**

- (1) <sup>1</sup>General regulations on modules and courses are set out in §§ 6 and 8 APSO. <sup>2</sup>In the event of deviations from module specifications, § 12 Para. 8 APSO shall apply.
- (2) The curriculum with the modules in the compulsory and elective areas is listed in Appendix 1.
- (3) In the master's program Finance and Information Management (FIM), modules can be chosen from the following elective areas: Quantitative Finance, Financial Management, Information Management and Computational Analytics.
- (4) <sup>1</sup>Students shall compile an individual semester study plan to the extent of 84 credits. <sup>2</sup>The corresponding modules are to be selected from Appendix 1. <sup>3</sup>They shall be advised by a mentor appointed by the faculty. <sup>4</sup>Any person at TUM or the University of Bayreuth who is authorized to teach in the degree program in accordance with the University Examination Regulations may be appointed as a mentor.
- (5) <sup>1</sup>The language of instruction in the joint master's program in Finance and Information Management (FIM) is generally English. <sup>2</sup>If it is stated in Annex 1 for a module that it will be held in English or German, the examiner shall announce the language of instruction in a suitable and binding manner at the latest at the beginning of the lecture. <sup>3</sup>If students have not provided evidence of German language skills in their application, the admission will be subject to the condition that at least one module in which integrative German language skills are acquired must be completed by the end of the second semester. <sup>4</sup>The offer will be announced by the Examination Committee in accordance with local practice. <sup>5</sup>Voluntary extracurricular courses such as German courses by the TUM Language Center will also be recognized.

### **§ 38**

#### **Examination Deadlines, Study Progress Monitoring, Failure to Meet Deadlines**

- (1) Examination deadlines, study progress monitoring and missed deadlines are regulated in § 10 APSO.

- (2) <sup>1</sup>At least two of the module examinations from the elective modules of the core area listed in Annex 1 must be successfully completed by the end of the second semester. <sup>2</sup>If the deadline is exceeded, § 10 Para. 5 APSO shall apply.

### § 39 Examination Board

<sup>1</sup>The body responsible for decisions in examination matters in accordance with § 29 APSO is the Master's Examination Board of the joint Master's degree program in Finance and Information Management (FIM). <sup>2</sup>The Master's Examination Board (Examination Board) consists of five members. <sup>3</sup>At least two representatives belong to the University of Bayreuth.

### § 40 Recognition of Periods of Study, Coursework and Examination Results

The recognition of study periods, coursework and examination achievements is regulated by § 16 APSO.

### § 41 Continuous Assessment Procedure, Types of Assessment

- (1) <sup>1</sup>In addition to written examinations (Klausuren) and oral examinations, possible forms of examination in accordance with §§ 12 and 13 APSO in this degree program are, in particular, laboratory activities, exercises (tests where applicable), reports, project work, presentations, learning portfolios, scientific papers and the examination course. <sup>2</sup>The specific components of the respective module examination and the competencies to be tested are listed in the module description. <sup>3</sup>The examination can be carried out as an individual or group examination if the topic is suitable; § 18 Para. 2 sentences 2 and 3 APSO apply accordingly.
- a) <sup>1</sup>A **Klausur** is a supervised written examination with the aim of recognizing problems within a limited amount of time and using predefined methods and defined aids, finding solution strategies, and, if required, implementing them. <sup>2</sup>The duration of written exams is provided for in § 12 Para. 7 APSO.
- b) <sup>1</sup>**Laboratory activities** include, depending on the subject discipline, tests, measurements, fieldwork, field exercises and other activities with the aim of carrying out, evaluating and gaining knowledge. <sup>2</sup>Examples include the following: the description of procedures and the theoretical foundations thereof, including the literature research, the preparation and practical implementation, the conduction of necessary calculations, the documentation and evaluation thereof, as well as the interpretation of the results with regard to the findings to be elaborated <sup>3</sup>The laboratory activity may be complemented by a presentation for the purpose of assessing the student's communication competency in presenting scientific topics to an audience.
- c) <sup>1</sup>An **exercise (test where applicable)** is the completion of specified tasks (e.g. mathematical problems, programming tasks, modeling, designs, etc.) with the aim of applying theoretical content to solve application-related problems. <sup>2</sup>It serves to test students' factual and detailed knowledge and its application. <sup>3</sup>The exercise can be carried out in writing, orally or electronically. <sup>4</sup>Possible forms are, for example,

homework, exercise sheets, programming exercises, (e-)tests, design tasks, posters, tasks as part of university internships, tests, etc.

- d) <sup>1</sup>A **report** is a written review and summary of a learning process with the aim of presenting the acquired knowledge in a structured manner and analyzing the results in the context of a module. <sup>2</sup>The report should demonstrate that the essential aspects have been understood and can be reproduced in writing. <sup>3</sup>Possible forms of reports are, for example, excursion reports, internship reports, work reports, etc. <sup>4</sup>The written report can be complemented by a presentation in order to test the students' communicative competence in presenting the content to an audience.
- e) <sup>1</sup>**Project work** is designed to reach, in several phases (initiation, problem definition, role assignment, idea generation, criteria development, decision, implementation, presentation, written evaluation), the defined objective of a project assignment within a given period of time and using suitable instruments. <sup>2</sup>In addition, a presentation or a technical discussion may be part of the project work in order to test the communicative competence in presenting scientific topics to an audience. <sup>3</sup>Project work may also include creative drafts, drawings, plans, models, objects, simulations and documentation.
- f) <sup>1</sup>A **scientific paper** is a written assignment in which students work independently on solving complex scholarly or scholarly/application-oriented problems, using the scientific methods of the related discipline. <sup>2</sup>The objective is to demonstrate the ability to solve problems corresponding to the learning results of the module in question in compliance with the guidelines for scholarly work – from analysis and conception to implementation. <sup>3</sup>Scientific papers, differing in their requirement standards, may take the form of a conceptual framework/theory paper [Thesenpapier], abstract, essay, research paper, seminar paper, etc. <sup>4</sup>The scientific paper may be complemented by a presentation and/or a colloquium for the purpose of assessing the student's communication competency in presenting scholarly work to an audience.
- g) <sup>1</sup>A **presentation** is a systematic and structured oral performance supported by suitable audio-visual equipment (such as a projector, slides, posters, videos) for the purpose of demonstrating and summarizing specific issues or results and paring complex problems down to their essential core. <sup>2</sup>The objective of the presentation is to demonstrate the ability to prepare a certain topic within a given timeframe in such a way as to present or report on it in a clear and comprehensible manner to an audience. <sup>3</sup>In addition, the ability to respond competently to any questions, suggestions or discussions brought by the audience and relating to the subject area should be demonstrated. <sup>4</sup>The presentation can be supplemented by a short written report.
- h) <sup>1</sup>An **oral examination** is a time-limited examination discussion of relevant topics and specific questions to be answered. <sup>2</sup>In oral examinations, the aim is to demonstrate that the interrelationships of the examination field have been recognized and that specific questions can be classified in these contexts. <sup>3</sup>The duration of the examination is regulated in § 13 Para. 2 APSO.
- i) <sup>1</sup>A **learning portfolio** is a collection of written materials compiled according to predefined criteria, demonstrating progress and achievements in defined content areas at a given time. <sup>2</sup>The criteria according to which the materials have been chosen and their relevance for their learning progress and the achievement of the qualification objectives must be explained. <sup>3</sup>The learning portfolio should demonstrate that active responsibility for the learning process has been taken. <sup>4</sup>Depending on the module description, types of independent study assessment in a learning portfolio may include, in particular, application-oriented assignments, websites, weblogs,

For informative use only. Only the German version has legal validity.

bibliographies, analyses, conceptual framework/theory papers, as well as the graphic representation of facts or problems. <sup>5</sup>A summary discussion can take place on the basis of the learning portfolio for verbal reflection.

- j) <sup>1</sup>In the context of an **examination course**, several examination elements must be completed within one examination performance. <sup>2</sup>In contrast to a partial module examination, the examination performance is examined in a coherent organizational manner (in terms of time and place). <sup>3</sup>Examination elements are several different examination formats which, in their entirety, cover the complete competence profile of the module. <sup>4</sup>Examination elements may in particular also be examination formats in accordance with letters g) and h) in combination with a practical performance. <sup>5</sup>The total duration of the examination must be specified in the module catalog.
- (2) <sup>1</sup>The module examinations are usually taken in the course of the studies. <sup>2</sup>The type and duration of a module examination are specified in Annex 1. <sup>3</sup>In the event of deviations from these stipulations, § 12 Para. 8 APSO shall apply. <sup>4</sup>For the evaluation of the module examination, § 17 APSO applies. <sup>5</sup>The grade weights of partial module examinations correspond to the weighting factors assigned to them in Annex 1.
- (3) If it is stated in Annex 1 that a module examination is written or oral, the examiner shall inform the students of the binding type of examination in an appropriate manner at the latest at the beginning of the lecture.

## § 42

### Registration for and Admission to the Master's Examination

- (1) Upon enrollment in the joint Master's program in Finance and Information Management (FIM), student are considered admitted to the module examinations of the master's degree.
- (2) <sup>1</sup>Registration for a module examination is governed by § 15 Para. 1 APSO. <sup>2</sup>Registration for a corresponding repeat examination is governed by § 15 Para. 2 APSO.

## § 43

### Scope of the Master's Examination

- (1) The Master's examination includes:
1. the module examinations in the corresponding modules according to par. 2,
  2. the module Master's thesis according to § 46.
- (2) <sup>1</sup>The module examinations are listed in Appendix 1. <sup>2</sup>6 credits must be earned in the compulsory modules and at least 84 credits in elective modules. <sup>3</sup>When choosing modules, § 8 Para. 2 APSO is to be observed.

## § 44

### Repeat Examinations, Failed Examinations

- (1) The repetition of examinations is regulated in § 24 APSO.
- (2) The failure of examinations is regulated in § 23 APSO.

## **§ 45 Coursework**

In the Master's degree program in Finance and Information Management (FIM), no modules are completed with coursework.

### **§ 45 a Multiple Choice Tests**

The implementation of multiple choice procedures is regulated in § 12 a APSO.

## **§ 46 Master's Thesis**

- (1) <sup>1</sup>Pursuant to § 18 APSO, students must prepare a thesis as part of the master's examination in the master's Thesis module. <sup>2</sup>The thesis can be issued and supervised by expert examiners from the faculties of TUM and the University of Bayreuth involved in the joint degree program (topic setter). <sup>3</sup>The expert examiners according to sentence 2 are appointed by the examination board.
- (2) <sup>1</sup>The completion of the Master's Thesis module should normally represent the final examination performance. <sup>2</sup>Students who have provided evidence of 6 credits from the compulsory modules and at least 42 credits from the elective modules may be admitted to the Master's Thesis module early upon application.
- (3) <sup>1</sup>The time from the issue to the delivery of the thesis may not exceed six months. <sup>2</sup> The thesis is deemed to have been submitted and failed if it is not submitted on time without valid reasons recognized in accordance with § 10 Para. 7 APSO. <sup>3</sup>30 credits are awarded for the Master's Thesis module. <sup>4</sup>The thesis shall be written in English language.
- (4) The completion of the Master's Thesis module consists of a scientific paper.
- (5) <sup>1</sup>If the Master's Thesis module is not graded with at least "sufficient" (4.0), it can be repeated once with a new topic. <sup>2</sup>The topic of the thesis should be re-registered no later than six weeks after notification of the result.

## **§ 47 Passing and Assessment of the Master's Examination**

- (1) The Master's examination is passed if all examinations to be taken as part of the Master's examination in accordance with § 43 Para. 1 have been passed and a credit balance of at least 120 credits has been achieved.
- (2) <sup>1</sup>The module grade is calculated according to § 17 APSO. <sup>2</sup>The overall grade of the master's examination is calculated as a weighted grade average of the modules in accordance with § 43 Para. 2 and the Master's thesis module. <sup>3</sup>The grade weights of the individual modules correspond to the assigned credits. <sup>4</sup>The overall assessment is expressed by the rating in accordance with § 17 APSO.



**§ 48****Degree Certificate, Diploma, Diploma Supplement**

<sup>1</sup>If the Master's examination is passed, a joint certificate, a certificate, and a Diploma Supplement with a Transcript of Records shall be issued in accordance with § 25 Para. 1 and § 26 APSO. <sup>2</sup>This certificate shall be signed by the President of TUM and the President of the University of Bayreuth. <sup>3</sup>The date of the certificate shall be the date on which all examination and study achievements have been completed.

**§ 49****Entry into Force**

- (1) <sup>1</sup>These statutes come into force on January 1, 2024. <sup>2</sup>They apply to all students who begin their studies at the Technical University of Munich from the winter semester 2024/2025 onwards.
- (2) <sup>1</sup>The subject examination and study regulations (FPSO) for the joint Master's degree program in Finance and Information Management (FIM) at the Technical University of Munich and the University of Bayreuth dated June 7, 2021, last amended by the Second Amendment Statutes dated December 12, 2022, shall expire at the same time, subject to the provision in § 49 sentence 2 of these Statutes. <sup>2</sup>Students who have already started their studies at the Technical University of Munich before the winter semester 2024/2025 will complete their studies in accordance with the statutes pursuant to sentence 1.



**APPENDIX 1: Examination modules****I. Scope of the master's examination**

	Components	Credits	Semester
1.	Course-related examinations for the acquisition of credits in the compulsory modules	6	1st semester
2.	Course-related examinations for the acquisition of credits in the elective modules from the core area „Entrepreneurship and Sustainability“	6	1st semester
3.	Course-related examinations for the acquisition of credits in the elective modules from the core areas „Finance“ and „Information“	48	1st/2nd semester
4.	Course-related examinations for the acquisition of credits in the elective modules from the elective area	30	3rd semester
5.	<b>Master's Thesis</b> according to § 46	30	4th semester

**II. Examination modules****Mandatory modules**

Students must successfully complete 6 credits from the following required modules.

No.	Module number	Module name	Module type	Teaching form SWS / V Ü P S	Sem.	SWS	Credits	Type of examination	Exam duration	Teaching language
1	WI001287	Basics of FIM	Mandatory module	6 V	1st sem.	6	6	Written exam	90	English

**Elective modules from the core area „Entrepreneurship and Sustainability“**

At least 6 credits must be earned in the elective modules from the core area "Entrepreneurship and Sustainability". This exemplary elective module catalog is continuously updated by the Examination Board; the current elective module catalog will be announced by the TUM School of Management in a suitable manner in good time before the start of lectures.

No.	Module number	Module name	Module type	Teaching form SWS / V Ü P S	Sem.	SWS	Credits	Type of examination	Exam duration	Teaching language
2	WI000997	Marketing Entrepreneurship Lab	Elective module	4 S	1st sem.	4	6	Scientific paper	n.a.	English
3	WI001141	Principled Entrepreneurial Decisions	Elective module	4 S	1st sem.	4	6	Scientific paper	n.a.	English
4	WI000946	Energy Markets I	Elective module	2 V + 2 Ü	1st sem.	4	6	Written exam	60	English

### Elective modules from the core area „Finance“

At least 24 credits must be earned in the elective modules from the core area of "Finance". Some of these examinations can be taken at the University of Bayreuth. These modules are assigned a module number beginning with the abbreviation WIBT. This exemplary elective module catalog is continuously updated by the Examination Board; the current elective module catalog will be announced by the TUM School of Management in a suitable manner in good time before the start of lectures.

No.	Module number	Module name	Module type	Teaching form SWS / V Ü P S	Sem.	SWS	Credits	Type of examination	Exam duration	Teaching language
5	MA9972	Financial Mathematics 1 (Discrete Time Finance)	Elective module	2 V + 2 Ü	1st sem.	4	6	Written exam	60 - 90	English
6	MA9973	Financial Mathematics 2 (Continuous Time Finance)	Elective module	2 V + 2 Ü	2nd sem.	4	6	Written exam	90	English
7	WI001270	Behavioral Finance	Elective module	4 V	2nd sem.	4	6	Scientific paper	n.a.	English
8	WI001267	Advanced Corporate Finance	Elective module	2 V + 2 Ü	1st sem.	4	6	Written exam	60	English
9	WI000234	Value-based Management	Elective module	2 V + 2 Ü	2nd sem.	4	6	Written exam	120	English
10	WI001269	International Accounting	Elective module	4 V	1st sem.	4	6	Written exam	60	English

### Elective modules from the core area „Information“

At least 24 credits must be chosen from the core area "Information" as part of the elective modules. Some of these examinations can be taken at the University of Bayreuth. These modules are given a module number beginning with the abbreviation WIBT. This exemplary elective module catalog is continuously updated by the Examination Board; the current elective module catalog will be announced by the TUM School of Management in a suitable manner in good time before the start of lectures.

No.	Module number	Module name	Module type	Teaching form SWS / V Ü P S	Sem.	SWS	Credits	Type of examination	Exam duration	Teaching language
11	WIBT0001	Business Process Management & Digital Innovation	Elective module	4 V	1st sem.	4	6	Oral examination	20	English
12	WIBT0002	Digital Energy Management	Elective module	2 V + 2 Ü	1st sem.	4	6	Written exam	60	English
13	WIBT0003	Digital Disruption, Innovation and Transformation	Elective module	4 V	2nd sem.	4	6	Scientific paper	n.a.	English
14	IN2028	Business Analytics and Machine Learning	Elective module	2 V + 2 Ü	1st sem.	4	6	Written exam	90	English
15	IN0024	Operations Research / Optimization	Elective module	3 V + 2 Ü	1st sem.	5	6	Written exam	120	English

For informative use only. Only the German version has legal validity.

16	WI001272	Introduction to Deep Reinforcement Learning	Elective module	2 V + 2 Ü	2nd sem.	4	6	Scientific paper	n.a.	English
----	----------	---	-----------------	-----------	----------	---	---	------------------	------	---------

## Elective modules from the elective area

The elective area consists of the area "Finance" with the sub-areas "Quantitative Finance" and "Financial Management" and the area "Information" with the sub-areas "Computational Analytics" and "Information Management". As part of the elective modules from the elective area, at least 6 credits must be earned from the area of "Finance" or "Information". These sub-areas represent the specializations. A total of 30 credits from the elective catalog must be successfully completed. Some of these credits can be taken at the University of Bayreuth. These modules are given a module number beginning with the abbreviation WIBT. This exemplary elective module catalog is continuously updated by the Examination Board; the current elective module catalog will be announced by the TUM School of Management in a suitable manner in good time before the start of lectures.

## Elective from the area „Finance“

### Sub-area „Quantitative Finance“

No.	Module number	Module name	Module type	Teaching form SWS / V Ü P S	Sem.	SWS	Credits	Type of examination	Exam duration	Teaching language
17	MA3703	Fixed Income Markets	Elective module	2 V + 1 Ü	3rd sem.	3	6	Written exam	60	English
18	MA5709	Investment Strategies	Elective module	2 V + 1 Ü	3rd sem.	3	6	Written exam	60	English
19	MA3405	Insurance Mathematics 1	Elective module	4 V + 2 Ü	3rd sem.	6	9	Written exam	90	English

### Sub-area „Financial Management“

No.	Module number	Module name	Module type	Teaching form SWS / V Ü P S	Sem.	SWS	Credits	Type of examination	Exam duration	Teaching language
20	WI001280	FinTech	Elective module	4 S	3rd sem.	4	6	Scientific paper	n.a.	English
21	WI000231	Asset Management	Elective module	2 V + 2 Ü	3rd sem.	4	6	Written exam	120	English
22	WI001187	Private Equity	Elective module	2 V + 2 Ü	3rd sem.	4	6	Written exam	90	English

## Elective modules from the area „Information“

### Sub-area „Computational Analytics“

No.	Module number	Module name	Module type	Teaching form SWS / V Ü P S	Sem.	SWS	Credits	Type of examination	Exam duration	Teaching language
23	MGT001400	Coding Lab: Deep Reinforcement Learning	Elective module	4 V	3rd sem.	4	6	Scientific paper	n.a.	English

For informative use only. Only the German version has legal validity.

24	MGTBT0008	Applied Artificial Intelligence	Elective module	2 V + 2 Ü	3rd sem.	4	6	Exercise + Written exam (1:1)	60	English
25	WI000977	Stochastic Modeling and Optimization	Elective module	4 VI	3rd sem.	4	6	Written exam	90	English

### Sub-area „Information Management“

No.	Module number	Module name	Module type	Teaching form SWS / V Ü P S	Sem.	SWS	Credits	Type of examination	Exam duration	Teaching language
26	WIBT0005	Digital Energy & Sustainability	Elective module	2 S	3rd sem.	2	6	Scientific paper	n.a.	English
27	WIBT0006	Emerging Digital Technologies Seminar	Elective module	4 VI	3rd sem.	4	6	Scientific paper	n.a.	English
28	MGTBT0009	Process Analytics & Intelligence	Elective module	2 V + 2 Ü	3rd sem.	4	6	Exercise + Written exam (1:1)	60	English

### Master's Thesis

No.	Module number	Module name	Module type	Teaching form SWS / V Ü P S	Sem.	SWS	Credits	Type of examination	Exam duration	Teaching language
29	WI900030	Master's Thesis (Master Finance and Information Management)	Mandatory module		4th sem.		30	Scientific paper (thesis)		English

### Explanations:

Sem. = semester; SWS = semester hours per week; V = lecture; Ü = exercise; VI = lecture with integrated exercise; P = practical course; S = seminar.

In the column exam duration, the exam duration in minutes is listed for written and oral examinations.

## **APPENDIX 2: Aptitude Assessment**

### **Aptitude Assessment for the joint Master's program in Finance and Information Management (FIM) at the Technical University of Munich and the University of Bayreuth**

#### **1. Purpose of the Assessment**

<sup>1</sup>Qualification for the joint Master's degree program in Finance and Information Management (FIM) requires, in addition to the prerequisites of § 36 Para. 1 Nos. 1 to 3, a proof of suitability according to § 36 Para. 1 No. 3 in accordance with the following regulations. <sup>2</sup>The special qualifications and skills of the applicants should correspond to the professional field of an economist, industrial engineer, (business) computer scientist or financial and business mathematician. <sup>3</sup>Individual suitability parameters are:

- 1.1 Special competence in scientific work (demonstrated by a scientific paper in the context of a thesis, a project, or another comparable achievement),
- 1.2 Special willingness to perform (demonstrated, for example, by completion of an internship during studies, stays abroad, working student activities, or social commitment),
- 1.3 Reflection on own competencies, talents, and expertise in the context of the first degree.

#### **2. Aptitude Assessment Procedure**

2.1 <sup>1</sup>The aptitude assessment procedure is carried out annually. <sup>2</sup>The statutes of the Technical University of Munich on enrollment, re-registration, leave of absence and exmatriculation (ImmatS) of February 6, 2023, as amended, in particular § 6, apply to the procedure for determining aptitude.

2.2 <sup>1</sup>Applications for the aptitude assessment procedure in accordance with § 6 ImmatS must be submitted to the Technical University of Munich together with the documents specified therein as well as the documents specified in No. 2.3 and § 36 Para. 1 Nos. 2 and 3 for the winter semester using the online application procedure by May 31 (cut-off deadline). <sup>2</sup>The certificate and the transcript as proof of passing the Bachelor's degree program must be submitted to the TUM Center for Study and Teaching - Application and Enrollment no later than five weeks after the start of lectures. <sup>3</sup>Failing this, admission to the Master's degree program is not yet possible in accordance with § 36 of these statutes.

2.3 The application must be accompanied by:

- 2.3.1 A transcript of records with modules worth at least 140 credits; the transcript of records must be issued by the relevant examination authority or the relevant study secretariat,
- 2.3.2 The curriculum on which the first degree program is based, from which the respective module content and the competencies taught must be evident (e.g. module handbook, module descriptions),
- 2.3.3 A curriculum vitae (CV) in tabular form,
- 2.3.4 A curricular analysis derived from the transcript of records; this must be completed as part of the online application process and uploaded with the application documents,
- 2.3.5 an essay of 2000 words written in English; in this essay, the applicants should demonstrate their ability to argue scientifically and logically with a basic and method-oriented text structure on the basis of a question and write the essay in a scientific manner, correctly citing sources; the essay must also demonstrate the ability to express oneself in English; the chairperson of the committee may specify a topic or provide

several topics to choose from; this is to be announced no later than May 15 via the TUM School of Management website. Applicants must be informed of these via the TUM School of Management website by May 15 at the latest,

- 2.3.6 an attestation that the essay was written independently and without external help and in compliance with the guidelines for safeguarding good scientific practice and for dealing with scientific misconduct at the Technical University of Munich and that any ideas taken from external sources are marked as such,
- 2.3.7 optional for applicants who are not required to provide proof of a GMAT score in accordance with Section 36 Para. 1 No. 3, proof of a GMAT score.

### **3. Commission for the Aptitude Assessment Procedure, selection committees**

- 3.1 <sup>1</sup>The aptitude assessment procedure is carried out by the aptitude assessment committee and the selection committees. <sup>2</sup>The Commission for the Aptitude Assessment procedure is responsible for preparing the procedure, organizing it and ensuring a structured and standardized procedure for determining aptitude within the framework of these statutes; it is responsible unless a different responsibility is defined by these statutes or by delegation. <sup>3</sup>The selection committees are responsible for carrying out the procedure in accordance with no. 5, subject to no. 3.2 sentence 11.
- 3.2 <sup>1</sup>The committee for the aptitude assessment procedure (committee) consists of five members. <sup>2</sup>These are appointed by the Dean in consultation with the Vice Dean Academic and Student Affairs from among the members of the TUM School of Management and the University of Bayreuth who are eligible to take part in the degree program. <sup>3</sup>At least three of the committee members must be university lecturers within the meaning of the BayHIG. <sup>4</sup>The student council has the right to nominate a student representative to serve on the commission in an advisory capacity. <sup>5</sup>A deputy shall be appointed for each member of the commission. <sup>6</sup>The committee elects a chairperson and a deputy chairperson from among its members. <sup>7</sup>The procedural provisions of the TUM's Basic Regulations, as amended, shall apply to the course of business. <sup>8</sup>The term of office of the members is one year. <sup>9</sup>Extensions of the term of office and reappointments are possible. <sup>10</sup>The Chairperson may make urgent decisions that cannot be postponed in place of the Commission on the suitability procedure; he or she must inform the Commission of this immediately. <sup>11</sup>The School Office supports the Commission for the Aptitude Assessment Procedure and the selection committees; the Commission for the Aptitude Assessment Procedure can assign the School Office the task of the formal admission assessment in accordance with no. 4 as well as the points assessment on the basis of previously defined criteria where there is no scope for assessment, in particular the conversion of the grade and the determination of the total number of points achieved as well as the composition of the selection committees from the members appointed by the Commission and the allocation to the applicants.
- 3.3 <sup>1</sup>The selection committees each consist of two members from the group of members of the TUM School of Management or the University of Bayreuth who are entitled to take examinations in the degree program in accordance with Art. 85 Para. 1 Sentence 1 BayHIG in conjunction with the University Examination Ordinance. <sup>2</sup>At least one member must be a university lecturer within the meaning of the BayHIG. <sup>3</sup>The activity as a member of the Aptitude Assessment Commission can be carried out alongside the activity as a member of the Selection Commission. <sup>4</sup>The members are appointed by the Aptitude Assessment Committee for one year; no. 3.2 sentence 9 applies accordingly. <sup>5</sup>Different selection committees may be appointed for each criterion and level.

#### 4. Admission to the Aptitude Assessment Procedure

- 4.1 <sup>1</sup>The eligibility procedure requires that the documents specified in no. 2.2 are submitted in due form and time, in compliance with the rules of good scientific practice, and in full. <sup>2</sup>In order to determine whether the rules of good scientific practice have been complied with, the essay will be checked using special plagiarism checking software.
- 4.2 <sup>1</sup>Applicants who fulfill the necessary requirements according to No. 4.1 will be examined in the aptitude procedure according to No. 5. <sup>2</sup>Otherwise, a rejection notice will be issued with reasons and information on legal remedies. <sup>3</sup>If the selection committee comes to the conclusion that the rules of good scientific practice have been significantly violated, the applicant will be excluded from the current application procedure. <sup>4</sup>Sentence 2 applies accordingly.

#### 5. Implementation of the Assessment Procedure

##### 5.1 First stage of the Aptitude Assessment procedure

- 5.1.1 <sup>1</sup>The written application documents required in accordance with no. 2.3 are used to assess whether the applicants have the aptitude to study in accordance with no. 1 (first stage of the aptitude assessment procedure). <sup>2</sup>The documents submitted are assessed on a scale of 0 to 70 points, with 0 being the worst and 70 the best result to be achieved.

<sup>3</sup>The following assessment criteria are taken into account:

##### a) **Academic qualification**

<sup>1</sup>The curricular analysis is not based on a schematic comparison of modules, but on competencies. <sup>2</sup>It is based on the elementary subject groups listed in the following table for the Bachelor's degree programs in Management and Technology, Mathematics and Business Informatics at the Technical University of Munich.

Core module group	Points
Business administration modules worth at least 12 credits <b>or</b> mathematical modules worth at least 12 credits <b>or</b> modules in computer science worth at least 12 credits	10
Scientific paper within the scope of a bachelor thesis, a project, a scientific essay, or a comparable achievement of at least 5 credits, in which the applicant has worked on a topic scientifically and has applied the methods and expertise of his or her field of study.	10
<b>Total</b>	<b>20</b>

<sup>3</sup>If it has been established that there are no significant differences in terms of the skills acquired (learning outcomes), a maximum of 20 points are awarded. <sup>4</sup>If competences are missing, 0 points are awarded for the respective group type.

##### b) **Grade**

<sup>1</sup>One point is awarded for every tenth grade (0.1) that is better than 2.5 in the average calculated over 140 credits. <sup>2</sup>The maximum number of points is 15. <sup>3</sup>Negative points are not awarded. <sup>4</sup>In the case of foreign degrees or if the grading system does not correspond to that of TUM, the grade converted using the Bavarian formula will be used. <sup>5</sup>If a degree certificate with more than 140 credits is available at the time of application, the assessment will be based on the best graded modules amounting to 140 credits. <sup>6</sup>It is the applicant's responsibility to list these in the application and to confirm in writing that the information provided is correct. <sup>7</sup>If this is done, the average is calculated from the best graded module examinations amounting to 140 credits. <sup>8</sup>The average is calculated as a weighted grade average of the modules. <sup>9</sup>The grade weights of the individual modules correspond to the



For informative use only. Only the German version has legal validity.

assigned credits. <sup>10</sup>If this information is missing, the overall average grade submitted by the applicant will be used.

c) **Essay**

<sup>1</sup>The essay will be assessed by the respective selection committee on a scale of 0 to 25 points. <sup>2</sup>The content of the essay is evaluated according to the following criteria:

1. Classification of the question in the context of finance and information management (0 to 10 points),
2. Ability to work in a scientific or basic and method-oriented manner (0 to 10 points),
3. business/scientific/engineering language proficiency in English (0 to 5 points).

<sup>3</sup>The two selection committee members evaluate each of the criteria independently, whereby the three criteria are weighted as indicated. <sup>4</sup>The score is calculated from the arithmetic mean of the individual scores, rounded up to whole numbers of points.

d) **GMAT Score**

The GMAT score is evaluated on a scale of 1 to 10 points according to the following criteria:

GMAT certificate Percentile Ranking (%)	≤ 65	72	75	80	83	85	89	≥ 93
Points	0	1	2	3	4	6	8	10

5.1.2 The score for the first stage is the sum of the individual scores, rounded up to whole numbers of points.

5.1.3 Applicants who reach at least 62 points have passed the Aptitude Assessment procedure.

5.1.4 Applicants who reach less than 40 points have not passed the Aptitude Assessment procedure.

## 5.2 Second stage of the Aptitude Assessment Procedure

5.2.1 <sup>1</sup>The remaining applicants will be invited to an aptitude interview. <sup>2</sup>In the second stage of the aptitude assessment procedure, the qualification acquired in the first degree course and the result of the aptitude interview are assessed, whereby the qualification acquired in the first degree course is to be given at least equal consideration. <sup>3</sup>The date for the aptitude interview will be announced at least one week in advance. <sup>4</sup>Time slots for any aptitude interviews to be held must be set before the application deadline. <sup>5</sup>Applicants must adhere to the date set for the interview. <sup>6</sup>If an applicant is unable to attend the aptitude interview for reasons beyond his/her control, he/she may, upon justified request, receive a follow-up appointment no later than two weeks before the start of lectures. <sup>7</sup>If the application is justified and approved by the committee, an aptitude interview via video conference is possible. <sup>8</sup>If the video or audio transmission is disrupted, the interview can be continued after the disruption has been rectified or a follow-up appointment can be scheduled. <sup>9</sup>In the event of repeated disruption, the aptitude interview may be scheduled as a face-to-face appointment in deviation from sentence 7. <sup>10</sup>Sentences 8 and 9 do not apply if it can be proven that the applicant is responsible for the disruption. <sup>11</sup>In this case, the aptitude interview will be assessed.

5.2.2 <sup>1</sup>The aptitude interview must be conducted individually for each applicant. <sup>2</sup>The interview lasts a minimum of 30 and a maximum of 40 minutes per applicant and takes place in English. <sup>3</sup>In addition, the applicants take part in a group discussion. <sup>4</sup>The discussion lasts a minimum of 30 minutes and a maximum of 40 minutes and is held in English. <sup>5</sup>The content of the discussion covers the following main topics:

1. Special willingness to perform in the master's program Finance and Information Management (FIM), as well as social and problem-solving skills,
2. Behaviour during the group discussion, e.g., communication and teamwork skills, social skills, and assertiveness,
3. Basic and application-related questions from the field of finance and information management to assess professional qualifications,
4. English language proficiency.

<sup>6</sup>The documents submitted in accordance with no. 2.3 may also be included. <sup>7</sup>Scientific knowledge that is only to be taught in the Master's degree program in Finance and Information Management (FIM) is not decisive. <sup>8</sup>With the consent of the applicant, a member of the student group may be admitted to the audience.

- 5.2.3 <sup>1</sup>Each member of the selection committee evaluates each of the four key areas independently, whereby the four key areas are weighted equally. <sup>2</sup>Each member records the result of the aptitude interview on a point scale from 0 to 25, with 0 being the worst and 25 the best result to be achieved. <sup>3</sup>The score is calculated from the arithmetic mean of the individual assessments. <sup>4</sup>Non-disappearing decimal places are to be rounded up.
- 5.2.4 <sup>1</sup>The total number of points in the second stage equals the sum of the points from No. 5.2.3 and the points from No. 5.1.1 a) (academic qualification) and No. 5.1.1 b) (grade). <sup>2</sup>Applicants with 48 or more points have passed the Aptitude Assessment procedure. <sup>3</sup>Applicants with a total score of less than 48 points have failed the Aptitude Assessment procedure.

### 5.3 Determination and announcement of the result

<sup>1</sup>The result of the aptitude test is determined on the basis of the number of points achieved and announced in a formal decision. <sup>2</sup>Notices of rejection must be substantiated and include information on legal remedies.

5.4 The determined eligibility applies to all subsequent applications for this degree program.

## 6. Documentation

<sup>1</sup>The course of the aptitude assessment procedure must be documented, in particular the names of the persons involved in the decision, the names of the applicants, the assessment of the first and second stages and the overall result must be evident. <sup>2</sup>Minutes must be taken of the aptitude interview, stating the date, duration and location of the assessment, the names of the selection committee members, the names of the applicants and the main topics of the interview in bullet points.

## 7. Retake

Applicants who have not passed the Aptitude Assessment can register once for the Aptitude Assessment procedure.

---

Issued on the basis of the resolution of the Academic Senate of the Technical University of Munich dated November 30, 2023 and the approval by the President of the Technical University of Munich dated December 21, 2023.

Munich, December 21, 2023

Technical University of Munich

signed  
Thomas F. Hofmann  
Präsident

For informative use only. Only the German version has legal validity.

These statutes were officially published digitally on the website <https://www.tum.de/satzungen> on December 21, 2023. It is also available for inspection during office hours at the premises of the TUM Center for Study and Teaching - Law, Arcisstraße 21, 80333 Munich, Room 0561. The date of publication is therefore December 21, 2023.