

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

Examination and Academic Regulations for the Master's Program in Management & Technology (track 2)* at the Technical University of Munich

**dated September 13, 2013
as amended by the First Amendment Statute of September 8, 2015**

In accordance with Art. 13 (1) sentence 2 in conjunction with Art. 58 (1) sentence 1 and Art. 61 (2) sentence 1 of the Bayerisches Hochschulgesetz (BayHSchG) [Bavarian Higher Education Act] the Technical University of Munich issues the following Examination and Academic Regulations (Fachprüfungs- und Studienordnung, FPSO):

Introductory note on linguistic usage

In accordance with Art. 3 (2) of the German Constitution, women and men have equal rights. Any terms relating to persons and functions mentioned in the following regulations are equally valid for women and men.

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, 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 Test
§ 46	Master's Thesis
§ 47	Passing and Assessment of the Master's Examination
§ 48	Degree Certificate, Diploma, Diploma Supplement
§ 49	Double Degree
§ 50	Entry into Force
Appendix 1	I. Scope of the Master's Examination
	II. Examination Modules
	III. Curriculum – Details for Each Engineering/Natural Science Subject
Appendix 2	I. Aptitude Assessment Process

*also called WITEC

§ 34

Applicability, Academic Title

- (1) ¹These Examination and Academic Regulations (FPSO) for the Master's program in Management & Technology complement the General Academic and Examination Regulations for Bachelor's and Master's programs at the Technical University of Munich (APSO) of March 18, 2011 as amended. ²The APSO shall have precedence.
- (2) ¹Upon successful completion of the Master's examination the degree "Master of Science" ("M.Sc.") is awarded. ²The academic title may be used with the name of the university "(TUM)".

§ 35

Commencement of Studies, Standard Duration of Study, ECTS

- (1) Commencement of the Master's program in Management & Technology is possible in the winter semester only.
- (2) ¹The number of classes in required, required elective and elective subjects needed to complete the Master's degree is 90 credits (61 weekly hours per semester). ²In addition, 30 credits (maximum six months) are required for the completion of the Master's thesis pursuant to § 46. ³The number of examinations in required, required elective and elective subjects to be completed in the Master's program in Management & Technology according to Appendix 1 (II) is thus a minimum of 120 credits. ⁴The standard duration of study for the Master's program will be a total of four semesters.

§ 36

Eligibility Requirements

- (1) Eligibility for the Master's program in Management & Technology is demonstrated by
 1. a Bachelor's degree of at least six semesters obtained from a German or foreign university, or a degree in management, business, economics or similar that is at least the equivalent of this,
 2. an adequate knowledge of the English language; students whose native language or language of education is not English must submit proof of having passed a recognized language text such as the Test of English as a Foreign Language (TOEFL, scoring at least 88 points), the International English Language Testing System (IELTS, at least 6.5 points) or the Cambridge Main Suite of English Examinations; alternatively, this proof may take the form of a good grade in English (at least 10 out of 15 points) in the German higher education entrance qualification (HZB); if the student has successfully passed examination modules in English worth 12 credits as part of an undergraduate degree, adequate knowledge of English is similarly deemed to be proven,
 3. passing the aptitude assessment pursuant to Appendix 2.
- (2) A degree is considered a qualified degree within the meaning of subsection 1 if there are no significant differences between the competences (learning results) acquired in the management, business and economics subjects of the scientifically oriented

relevant Bachelor's degrees as stipulated in subsection 1 (1) and those of the scientifically oriented relevant Bachelor's degree in Management & Technology at the Technical University of Munich, and these competences correspond to the subject-specific requirements of the Master's program in Management & Technology.

- (3) The comparability of programs, the specific aptitudes and the recognition of skills from degrees acquired at foreign universities will be decided upon by the Examination Committee in compliance with Art. 63 of the Bayerisches Hochschulgesetz [Bavarian Higher Education Act].

§ 37

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

- (1) ¹General provisions on modules and courses are set out in §§ 6 and 8 of the APSO. ²For any changes to the stipulated module provisions, § 12 (8) of the APSO shall apply.
- (2) The curriculum listing the required, required elective and elective modules to be attended is given in Appendix 1 (I).
- (3) ¹As a rule, the language of instruction in the Master's program in Management & Technology is German. ²Any modules taught entirely or partially in English are identified in Appendix 1 (II). ³Where the Appendix provides that a module will be taught either in English or German, the examiner must inform the students in appropriate form, no later than the first day of classes, of the actual language of instruction.

§ 38

Examination Deadlines, Progress Monitoring, Failure to Meet Deadlines

- (1) Examination deadlines, progress monitoring and failure to meet deadlines are governed by § 10 of the APSO.
- (2) ¹At least one of the basic module examinations listed in Appendix 1 (II) must be successfully completed by the end of the second semester. ²In the event of failure to meet deadlines, § 10 (5) of the APSO shall apply.

§ 39

Examination Board

Pursuant to § 29 of the APSO, the board responsible for all decisions concerning examination matters shall be the Master's Examination Board of TUM School of Management.

§ 40

Recognition of Periods of Study, Coursework and Examination Results

The recognition of periods of study, coursework and examination results is governed by the provisions of § 16 of the APSO.

§ 41

Continuous Assessment Procedure, Types of Assessment

- (1) In addition to written examinations (*Written exam*) and oral examinations, types of assessment pursuant to § 12 and § 13 of the APSO may include (but are not limited to) laboratory assignments, exercises (tests, where applicable), reports, project work, presentations, learning portfolios and/or research papers.
- a) ¹A **Written exam** is a supervised written examination. ²In these written examinations, students are expected to demonstrate, within a limited amount of time and using predefined methods and resources, their ability to identify problems, find solution strategies and, if required, implement them. ³The duration of Written examen is provided for in § 12 (7) of the APSO.
- b) ¹Depending on the discipline, **laboratory assignments** may include tests, measurements, fieldwork, field exercises, etc. designed for implementing procedures, evaluating results and gaining knowledge. ²They may consist of, for example, process descriptions and the underlying theoretical principles including the relevant literature; preparation and practical implementation; calculations, if required; documentation, evaluation and interpretation of the results in the context of the knowledge to be gained. ³Laboratory assignments may be complemented by a presentation designed to demonstrate a student's communication competency in presenting scholarly work to an audience. ⁴Details of each laboratory assignment and the related competencies to be examined are set out in the module descriptions.
- c) ¹**Exercises (tests where applicable)** are administered to assess a student's ability to complete assigned tasks (for example, solving mathematical problems, writing computer programs, designing models) using theoretical knowledge to solve application-oriented problems. ²Exercises are designed to assess the student's factual and detailed knowledge and its application. ³Practical exercises may be administered in writing, orally or electronically. ⁴They may take the form of homework assignments, practice sheets, programming exercises, (e-)tests, tasks assigned within a university internship program, etc. ⁵Details of each practical exercise and the related competencies to be examined are set out in the module descriptions.
- d) ¹A **report** is a written record and summary of a learning process for the purpose of presenting the acquired knowledge in a structured way and analyzing the results in the context of a module. ²Students are expected to demonstrate that they have understood all essential aspects and are able to present them in writing. ³Reports may include excursion reports, internship reports, work reports, etc. ⁴The written report may be complemented by a presentation for the purpose of assessing the student's communication competency in presenting scholarly work to an audience.
- e) ¹**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.

²In addition, project work may include a presentation in order to assess a student's communication competency in presenting scholarly work to an audience. ³The specific components of each project work assignment and the related competencies to be assessed are delineated in the module description. ⁴Project work may include group work. ⁵Students are expected to demonstrate that they are able to complete the tasks in a team environment. ⁶If the student's contribution to group work is to be assessed as a component of an examination, that contribution must be clearly identifiable and gradable. ⁷This also applies to each individual's contribution to the group result.

- f) ¹A **research 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. ²Students are expected to demonstrate that they are able 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. ³Research papers, differing in their requirement standards, may take the form of a conceptual framework/theory paper [*Thesenpapier*], abstract, essay, research paper, seminar paper, etc. ⁴The research 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. ⁵Specific details of each research paper and the related competencies to be assessed are set out in the module description.
- g) ¹A **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. ²For the presentation, students are expected to demonstrate that they are capable of preparing 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. ³In addition, students are expected to demonstrate that they are able to respond competently to any questions, suggestions or discussions brought by the audience and relating to their subject area. ⁴The presentation may be complemented by a brief written précis. ⁵The presentation may be prepared either individually or in groups. ⁶If the student's contribution to group work is to be assessed as a component of an examination, that contribution must be clearly identifiable and gradable. ⁷This also applies to each individual's contribution to the group result.
- h) ¹An **oral examination** is a timed, graded discussion of relevant topics and specific questions to be answered. ²In oral examinations, students are expected to demonstrate that they have reached the qualification objectives laid out in the module descriptions, understood the central concepts of the subject matter covered by the exam, and are able to apply them to specific problems. ³The oral examination may be held either as an individual or group examination. ⁴The duration of the examination is provided for in § 13 (2) of the APSO.
- i) ¹A **learning portfolio** is a collection of written materials compiled by the student according to predefined criteria, which exhibits the student's progress and achievements in defined content areas at a given time. ²Students are required to explain according to which criteria they have chosen the materials and their relevance for their learning progress and the achievement of the qualification objectives. ³With the learning portfolio, students are expected to demonstrate that they have taken active responsibility for their learning process and have reached

the qualification objectives set out in the module description. ⁴Depending on the module description, types of independent study assessment in a learning portfolio may include, in particular, application-oriented assignments, websites, weblogs, bibliographies, analyses, conceptual framework/theory papers, as well as the graphic representation of facts or problems. ⁵The specific components of each learning portfolio and the related competencies to be assessed are set out in the module description.

- (2) ¹The module examinations are, as a rule, taken concurrently with the program. ²The type and duration of module examinations are provided for in Appendix 1 (II). ³In the event of divergence from those provisions, § 12 (8) of the APSO must be complied with. ⁴The assessment of module examinations is governed by § 17 of the APSO.
- (3) Where Appendix 1 (II) provides that a module examination is either in written or oral form, the examiner must inform the students in appropriate form, no later than the first day of classes, of the type of examination to be held.
- (4) Upon request of a student and with the agreement of the examiners, examinations in German-language modules may be taken in English.

§ 42

Registration for and Admission to the Master's Examination

- (1) ¹Students who are enrolled in the Master's program in Management & Technology are deemed admitted to the module examinations of the Master's examination.
- (2) ¹The registration requirements for required, required elective and elective module examinations are set out in § 15 (1) of the APSO. ²The registration requirements for repeat examinations for failed required and required elective modules are set out in § 15 (2) of the APSO.

§ 43

Scope of the Master's Examination

- (1) The Master's examination consists of
 1. the module examinations in the corresponding modules pursuant to subsection (2),
 2. the Master's thesis pursuant to § 46.
- (2) ¹The module examinations are listed in Appendix 1. ²Students must pass
 1. one required module in Management Methods worth 6 credits,
 2. one required module from the interdisciplinary qualification worth 6 credits,
 3. one required module in Basics in Economics 6 credits,
 4. one required module in Basics in Law worth 6 credits.

³In their chosen subject in engineering/natural science, students must pass required modules worth 24 credits. ⁴In addition, students must select one of the four specializations in management. ⁵Students must pass

1. one required elective module worth 6 credits and elective modules worth a minimum of 18 credits if they choose Innovation & Entrepreneurship,

2. one required elective module worth 6 credits and elective modules worth a minimum of 18 credits if they choose Marketing, Strategy & Leadership,
3. one required module worth 6 credits and elective modules worth a minimum of 18 credits if they choose Operations and Supply Chain Management,
4. one required module worth 6 credits and elective modules worth a minimum of 18 credits if they choose Finance & Accounts.

⁶In addition, students must pass elective modules worth a minimum of 18 credits in their elective in Management & Economics.

§ 44 Repeat Examinations, Failed Examinations

- (1) The repetition of examinations is governed by § 24 of the APSO.
- (2) Failure to pass examinations is governed by § 23 of the APSO.

§ 45 Coursework

The Master's program in Management & Technology does not require coursework, only the successful completion of examinations.

§ 45a Multiple Choice Test

The procedure for multiple choice tests is provided for in § 12 of the APSO.

§ 46 Master's Thesis

- (1) ¹As provided for in § 18 of the APSO, each student must complete a Master's thesis as part of their Master's examination. ²The Master's thesis topic may be determined and the thesis supervised by any expert examiner (*Themensteller*) from the School of Management of the Technical University of Munich. ³Expert examiners are professors of the School, junior fellows of the School, and lecturers or professors of other TUM schools or colleges who teach on the program in Management & Technology.
- (2) ¹In order to be admitted to commence work on their Master's thesis, students must have passed the basic courses worth 24 credits and earned a minimum of 11 credits in the major in Engineering or Natural Science and a minimum of 18 credits in the elective in Management (see Appendix 1 II). ²Work on the Master's thesis should commence at the latest when all module examinations have been successfully completed.
- (3) ¹The period of time between topic determination and submission of the completed Master's thesis must not exceed six months. ²The Master's thesis is considered presented and not passed if the student fails to submit it on time without valid

reasons pursuant to § 10 (7) of the APSO. ³The Master's thesis may be written in either German or English.

- (4) ¹If the Master's thesis is not graded with at least "sufficient" (4.0), it may be repeated once with a new topic. ²Students must renew their application for admission within six weeks of receiving the grade for their thesis.

§ 47

Passing and Assessment of the Master's Examination

- (1) The Master's examination is deemed passed when the student has successfully completed all examinations required pursuant to § 43 (1) and has earned a total of at least 120 credits.
- (2) ¹The module grade is calculated according to § 17 of the APSO. ²The overall grade for the Master's examination will be calculated as the weighted grade average of the modules according to § 43 (2) and the Master's thesis. ³The weighting of the grades for individual modules corresponds to the credits assigned to each module. ⁴The overall grade is expressed by the designation pursuant to § 17 of the APSO.

§ 48

Degree Certificate, Diploma, Diploma Supplement

¹If the Master's examination is passed, a degree certificate, diploma and a diploma supplement including a transcript of records are to be issued in compliance with § 25 (1) and § 26 of the APSO. ²The date to be entered on the degree certificate is the day when all examination and coursework requirements have been fulfilled.

§ 49

Double Degree

- (1) ¹The Technical University of Munich and the Chambre de Commerce et d'Industrie de Paris, acting on behalf of its educational institution HEC, have signed a cooperation agreement. ²The following special regulations apply for students on the Master's program in Management & Technology at the Technical University of Munich who are participating in the double degree program with the HEC:
- ¹The selection of participants consists of two stages. ²First, potential participants are selected on the basis of their success at high school, academic success, knowledge of French and their motivation. ³The final selection is then made on the basis of personal interviews by representatives of both universities.
 - Students must successfully complete the first two semesters (in which they are registered for courses awarding credits toward the degree) at the Technical University of Munich and must have earned a minimum of 40 credits at the end of the second semester in order to continue their studies at the HEC in the third and fourth semesters.
 - ¹Students on the double degree program must earn a minimum of 40 credits at the partner university HEC. ²For the elective in Management & Economics in the Master's program in Management and Technology (Track 2) at the Technical

University of Munich, 12 credits can be recognized and count toward this 40 credits.
³In addition, students must complete a recognized internship of at least 15 weeks' duration. ⁴The internship can only be commenced after completion of the Bachelor's program and should take place in France. ⁵In addition, students can apply for the certification program at HEC. ⁶For this program they earn a further 15 credits.

4. ¹For the research paper at HEC, 20 credits are recognized and count toward the 30 credits for the Master's thesis at the Technical University of Munich. ²Students have the option of starting the research paper at HEC and developing it into a Master's thesis at the Technical University of Munich.
 5. Students successfully completing the Master's program in Management & Technology at the Technical University of Munich also receive the degree of "HEC Master of Science in Management" from HEC, on condition that they earn a minimum of 40 credits in the second stage of the Master's program and 20 credits from the research paper, in addition to successfully completing a recognized internship of at least 15 weeks after their Bachelor's degree.
- (2) The following regulations apply for students at HEC participating in the double degree program:
1. ¹Students are selected by HEC. ²Selection is based partly on personal interviews, at which a representative of TUM should be present. ³Students must be enrolled in the Master of Science in Management at HEC in order to be considered for selection.
 2. Students of the Master's of Science in Management at HEC first study for a period of one year in the first stage of the Master's program at HEC.
 3. ¹Starting from the winter semester, students then spend their second year studying at the Technical University of Munich. ²Students can use the time between their first year at HEC and their second year at the Technical University of Munich to do an internship in Germany.
 4. ¹The period of study at the Technical University of Munich lasts a minimum of three semesters. ²During these three semesters, students take modules from one major in management worth 24 credits, from one engineering or natural science subject worth 24 credits, and from the elective in Management & Economics worth 12 credits.
 5. ¹In addition, students write their Master's thesis, worth 30 credits, at the Technical University of Munich. ²The Master's thesis is recognized as a research paper by HEC and 20 credits are awarded for it.
 6. Students who receive the degree of "Master of Science in Management" at HEC also receive the degree of "Master of Science" in the "Master in Management & Technology" at the Technical University of Munich, on condition that they have earned, pursuant to (2) 4., a minimum of 60 credits in the Master's program in Management & Technology at the Technical University of Munich and successfully completed their Master's thesis.

§ 50
Entry into Force*)

- (1) ¹These Examination and Academic Regulations will enter into force on October 1, 2013. ²They shall apply to all students who commenced their regular studies on the degree program at the Technical University of Munich as of the winter semester 2011/2012.
- (2) At the same time, the Examination and Academic Regulations for the Master's program in Management and Technology (Track 2) at the Technical University of Munich of April 1, 2011, as last amended by the statutes from April 15, 2013, will cease to be in effect subject to the provision set forth in subsection (1), sentence 2.

*) This provision relates to the entry into force of the Regulations in their original version of September 13, 2013. The date of entry into force of the amendments is determined on the basis of the amendment statute.

APPENDIX 1:

I. Scope of the Master's Examination

	Components	Credits	Semester
1.	Examinations during the course of the program earning credits in the required module Methods in Management and Economics	6	Semester 1
2.	Examinations during the course of the program earning credits in the required Minor in Economics	6	Semester 2
3.	Examinations during the course of the program earning credits in the required Minor in Law	6	Semester 2
4.	Examinations during the course of the program earning credits in the required module interdisciplinary qualification (HR Management)	6	Semester 1/3
5.	Examinations during the course of the program earning credits in the required modules from the Major in Engineering and Natural Science	24	Semester 1/2/3/4
6.	Examinations during the course of the program earning credits in the required, required elective and elective modules from the Major in Management	24	Semester 1/2
7.	Examinations during the course of the program earning credits in the elective modules from the Elective in Management	18	Semester 3
8.	Master's thesis	30	Semester 4

II. Examination Modules

Minors

Students must successfully complete the following minors:

No.	Module name	Module type	Type of instruction SWS/V Ü P	Sem.	SWS	Cr.	Type of exam.	Duration of exam.	Language of instruction
Methods in Management and Economics									
1	Empirical Research in Management and Economics	Required	1 V + 3 Ü	1	4	6	Written exam	120	German/ English

Interdisciplinary qualification									
2	Leadership and Organization	Required	1 V + 3 Ü	1	4	6	Written exam	120	English

Minor in Economics									
3	Economics III	Required	1 V + 3 Ü	2	4	6	Written exam	120	German/ English

Minor in Law									
4	EU Business Law	Required	2 V + 2 Ü	2	4	6	Written exam	120	German/ English

Major in Engineering and Natural Science

Students must choose one of the following three engineering/natural science majors. Each of the modules listed in the selected major must be successfully completed (24 credits in total for each engineering/natural science major):

No.	Module name	Module type	Type of instruction SWS/V Ü P	Sem.	SWS	Cr.	Type of exam.	Duration of exam.	Language of instruction
Chemistry									
1	General und Inorganic Chemistry	Required	2 V + 2 Ü	1	3	6	Written exam	90	German
2	Introduction to Organic Chemistry	Required	3 V + 1 Ü	2	4	6	Written exam	90	German
3	Basics in Physical Chemistry I	Required	3 V + 1 Ü	1/3	4	6	Written exam	90	German
4	Biology for Chemists	Required	2 V + 1 Ü	3	3	6	Written exam	90	German

Informatics									
--------------------	--	--	--	--	--	--	--	--	--

1	Introduction in Informatics I	Required	3 V + 2 Ü	1	4	6	Written exam	90-150	German
2	Practical Course: Basics in Programming	Required	3 P + 1 Ü	1	4	6	Exercise	90-150	German
3	Introduction to Software Engineering	Required	3 V + 2 Ü	2	5	6	Written exam	75-125	German
4	Basics in Databases	Required	3 V + 1 Ü	3	4	6	Written exam	75-125	German

Mechanical Engineering									
1	CAD and Machine Drawing 1 and 2	Required	2 V + 2 Ü	1-2	4	5	Exercise + Written exam	60	German
2	Engineering Mechanics I (separately for TUM-BWL)	Required	2 V + 2 Ü	1	4	6	Written exam	120	German
3	Machine Elements I – Basics Manufacturing Application	Required	3 V + 2 Ü	3	5	7	Written exam	120	German
4	Materials in Mechanical Engineering	Required	2 V + 2 Ü	4	4	6	Written exam	90	German

Major in Management

Students must select one of the four majors in management.

If they choose **Innovation & Entrepreneurship**, they must successfully complete one of the five modules listed under Nos. 1a-e instead of the required module.

If they choose **Marketing, Strategy & Leadership**, they must successfully complete one of the two modules listed under No. 1a and No. 1b instead of the required module.

If they choose **Operations & Supply Chain Management** or **Finance & Accounting**, they must successfully complete the required module indicated.

Within their chosen focus area, students must also successfully complete further elective modules worth a total of 18 credits from the supplementary catalog of elective modules. This catalog will be published by the School of Management in appropriate form in good time before the first day of classes.

No.	Module name	Module type	Type of instruction SWS/ S V Ü P	Sem.	SWS	Cr.	Type of exam.	Duration of exam.	Language of instruction
Innovation & Entrepreneurship (IE)									

1a	Advanced Seminar Innovation (=Main Seminar TIM)	Required elective	4	1/2 ¹⁾	4	6	Re-search paper	n/a	German/English
or									
1b	Advanced Seminar Entrepreneurship	Required elective	4	1/2 ¹⁾	4	6	Re-search paper	n/a	German/English
or									
1c	Advanced Seminar Strategic Entrepreneurship	Required elective	4	2/4 ¹⁾	4	6	Re-search paper	n/a	German/English
or									
1d	Advanced Seminar Concepts in International Entrepreneurship	Required elective	4	1/2 ¹⁾	4	6	Re-search paper	n/a	German/English
or									
1e	Advanced Seminar in Entrepreneurial Behavior	Required elective	4	1/2 ¹⁾	4	6	Re-search paper	n/a	German/English

No.	Module name	Module type	Type of instruction SWS/ S V Ü P	Sem.	SWS	Cr.	Type of exam.	Duration of exam.	Language of instruction
Marketing, Strategy & Leadership (MSL)									
1a	Advanced Seminar Marketing, Strategy & Leadership (Marketing)	Required elective	4	1/2 ¹⁾	4	6	Re-search paper	n/a	German/English
or									
1b	Advanced Seminar Marketing, Strategy & Leadership - Strategy and Organization	Required elective	4	1/2 ¹⁾	4	6	Re-search paper	k A.	German/English

No.	Module name	Module type	Type of instruction SWS/ S V Ü P	Sem.	SWS	Cr.	Type of exam.	Duration of exam.	Language of instruction
Operations & Supply Chain Management									

1	Advanced Seminar Operations & Supply Chain Management	Required	4	3/4 ¹⁾	4	6	Re-search paper	n/a	English
---	---	----------	---	-------------------	---	---	-----------------	-----	---------

No.	Module name	Module type	Type of instruction SWS/ S V Ü P	Sem.	SWS	Cr.	Type of exam.	Duration of exam.	Language of instruction
Finance & Accounting (FA)									
1	Advanced Seminar in Finance & Accounting	Required	4	1-4 ¹⁾	4	6	Re-search paper	n/a	German/ English

Elective in Management

As part of a period of residence abroad, students may take subject-related examinations worth a total of 18 credits at a foreign university. The student, together with a mentor assigned by the School, shall put together an individual semester curriculum that must be approved at the latest three weeks before the examinations are taken. The courses must be selected from those offered by the foreign university. Instead of taking examinations at a foreign university or in the elective in Management (see below), students can also choose from the courses offered as part of the majors in management at Master's level. The supplementary catalog of elective modules will be published by the School of Management in appropriate form in good time before the first day of classes.

No.	Module name	Module type	Type of instruction SWS/ V Ü P	Sem.	SWS	Cr.	Type of exam.	Duration of exam.	Language of instruction
Elective in Management									
1	Public Economics I	Elective	2 V	1-4 ¹⁾	2	3	Written exam	60	German
2	Public Economics II	Elective	2 V	1-4 ¹⁾	2	3	Written exam	60	German
3	Public Economics III	Elective	2 V	3/4 ¹⁾	2	3	Written exam	60	German
4	Public Economics IV	Elective	2 V	3/4 ¹⁾	2	3	Written exam	60	German
5	Industrial Organization	Elective	2 V + 2 Ü	3.	4	6	Written exam	120	German/ English

Master's Thesis

Master's Thesis									
Master's Thesis ²⁾			30			German/English			

Key:

Sem. = Semester; Exam. = Examination; SWS = *Semesterwochenstunden* (weekly hours per semester); V = *Vorlesung* (lecture); Ü = *Übung* (exercise); P = *Praktikum* (Practical Course), S = Seminar. The column "Duration of Exam." gives the length in minutes for written/oral examinations.

Notes:

1)

Recommended semester depending on the major in management and engineering/natural science subject chosen by the student.

2) This module can be stretched over two semesters or more.

III. Curriculum

1. Curriculum for students choosing the engineering/natural science subject Chemistry

Semester	Course	Type of module	Credits
Semester 1	Empirical Research in Management and Economics	Required	6
	Leadership and Organization	Required	6
	Required/required elective(s) Major in Management	Required/required elective	12
	Required module(s) Major in Engineering/Natural Science	Required	6
Total credits in Semester 1:			30
Semester 2	Economics III	Required	6
	EU Business Law	Required	6
	Required elective(s) Major in Management	Required elective	12
	Required module(s) Major in Engineering/Natural Science	Required	6
Total credits in Semester 2:			30
Semester 3	Required module(s) Major in Engineering/Natural Science	Required	12
	Elective in Management	Elective	18
Total credits in Semester 3:			30
Semester 4	Master's thesis	Required	30
Total credits in Semester 4:			30
Total credits for Master's in Management & Technology/major in Chemistry:			120

2. Curriculum for students choosing the engineering/natural science subject Informatics

Semester	Course	Type of module	Credits
Semester 1	Empirical Research in Management and Economics	Required	6
	Required/required elective(s) Major in Management	Required/required elective	12
	Required module(s) Major in Engineering/Natural Science	Required/required elective	12
Total credits in Semester 1:			30
Semester 2	Economics III	Required	6
	EU Business Law	Required	6
	Required elective(s) Major in Management	Required elective	12
	Required module(s) Major in Engineering/Natural Science	Required	6
Total credits in Semester 2:			30
Semester 3	Required module(s) Major in Engineering/Natural Science	Required	6
	Elective in Management	Elective	18
	Leadership and Organization	Required	6
Total credits in Semester 3:			30
Semester 4	Master's thesis	Required	30
Total credits in Semester 4:			30
Total credits for Master's in Management & Technology/major in Informatics:			120

3. Curriculum for students choosing the engineering/natural science subject Mechanical Engineering

Semester	Course	Type of module	Credits
Semester 1	Empirical Research in Management and Economics	Required	6
	Leadership and Organization	Required	6
	Required/required elective(s) Major in Management	Required/required elective	12
	Required module(s) Major in Engineering/Natural Science	Required	6
Total credits in Semester 1:			30
Semester 2	Economics III	Required	6
	EU Business Law	Required	6
	Required elective(s) Major in Management	Required elective	12
	Required module(s) Major in Engineering/Natural Science	Required	5
Total credits in Semester 2:			29
Semester 3	Required module(s) Major in Engineering/Natural Science	Required	13
	Elective in Management	Elective	18
Total credits in Semester 3:			31
Semester 4	Master's thesis	Required	30
Total credits in Semester 4:			30
Total credits for Master's in Management & Technology/major in Mechanical Engineering:			120

APPENDIX 2: Aptitude Assessment

Aptitude Assessment for the Master's Program in Management & Technology at the Technical University of Munich

1. Purpose of the Assessment

¹Eligibility for the Master's Program in Management & Technology, in addition to the requirements pursuant to § 36 (1) numbers 1 and 2, requires proof of aptitude pursuant to § 36 (1) no. 3 in accordance with the following provisions. ²The special qualifications and skills of the candidates should correspond to the profession of a management specialist. ³Individual aptitude parameters are

- 1.1 specialized knowledge from (and success in) undergraduate studies in management,
- 1.2 knowledge of technical business/management/economic matters,
- 1.3 the ability to carry out research work and/or basic research and methodological work, and specialist linguistic competence (in both German and English) in the area of management,
- 1.4 particular dedication (demonstrated, for example, through details of commercial apprenticeships, internships during their studies, periods of residence abroad, periods as a working student or social projects),
- 1.5 interest in an interdisciplinary degree at the interface of management and engineering/natural science.

2. Aptitude Assessment Process

2.1 The aptitude test will be held annually by the School of Management.

2.2 ¹Applications for admission to the aptitude test, including the documents set out in 2.3.1 through 2.3.5, must be filed with the Technical University of Munich via the online application process by May 31 for the winter semester (absolute deadline). ²The degree certificate and diploma showing that the applicant has successfully completed the Bachelor's degree must be filed with the Registrar's Office of the Technical University of Munich no later than five weeks after the beginning of lectures. ³If this is not done; the applicant will not be permitted to start the Master's degree pursuant to § 36 of these regulations.

2.3 The application must include

2.3.1 a transcript of records including modules worth at least 140 credits; this transcript must be issued by the relevant examining authority or Academic Programs Office,

2.3.2 a Curriculum Vitae in table form,

2.3.3 a written statement of no more than 2 DIN A4 pages of the reasons for choosing the Master's program in Management & Technology at the Technical University of Munich, in which the candidate explains those specific abilities and interests that make him or her particularly qualified for the Master's program in Management & Technology at the Technical University of Munich; a candidate's exceptional motivation and commitment is to be demonstrated by details on program-related vocational training, internships, stays abroad or program-related further education beyond the attendance and course

requirements of the Bachelor's program; if necessary, this should be backed up with appropriate documentation,

2.3.4 a written essay, in English or German, approximately 2,000 words in length; the chairperson of the committee may provide one topic or a selection of several topics for this essay; the candidates must be informed of the topic(s) not later than 15 May,

2.3.5 a declaration that both the statement of the reasons for choosing the program and the essay are the candidate's own work, and that the candidate has clearly identified any ideas taken from outside sources.

3. Aptitude Assessment Committee

3.1 ¹The aptitude test is administered by a committee that, as a rule, consists of the dean for academic affairs in charge of the Master's program in Management & Technology, at least two members of the professorial faculty and at least one research associate. ²At least half of the committee members must be members of the professorial faculty. ³A representative of the student body shall also participate in the committee in an advisory capacity.

3.2 ¹The members of the committee are appointed by the faculty council in consultation with the dean for academic affairs. ²At least one member of the professorial faculty is appointed as deputy member of the committee. ³As a rule, the committee is chaired by the dean for academic affairs. ⁴Procedural regulations will be in accordance with Art. 41 of the BayHSchG as last amended.

4. Admission to the Aptitude Assessment Process

4.1 Admission to the aptitude assessment process requires that all the documentation specified in no. 2.3 has been submitted in a timely and complete fashion.

4.2 Applicants who have fulfilled the requirements will be tested according to no. 5.

4.3 Applicants who are not admitted will receive a rejection notice specifying the reasons and providing information on legal remedies.

5. The Aptitude Assessment Process

5.1 First stage of the aptitude assessment process

5.1.1 ¹The committee will assess, on the basis of the written application documents required under no. 2.3, whether or not an applicant is suitable for a program pursuant to no. 1 (First stage of the aptitude assessment process). ²For this purpose, the committee evaluates and grades the candidate's documentation on a scale ranging from 0 to 100 points, 0 being the worst and 100 the best possible result. ³There will be no negative points.

The following criteria will be applied to the evaluation:

a) Academic qualification

¹The curricular analysis is not conducted in the form of a schematic comparison of the modules, but rather on the basis of competencies. ²It will encompass the subject

groups of the Bachelor's program in Management & Technology at the Technical University of Munich listed in the table below.

Subject group	Credits TUM
Basics in Management	51
Basics in Economics	12
Basics in Law	12
Basics in Mathematics/Natural Science	18
Specialization in Management and Economics	18
Interdisciplinary qualification	3
Project Studies	12
Total	126

³Where candidates' competencies are at least equivalent to those listed above, they will be awarded a maximum of 60 points. ⁴Missing competencies will be deducted in accordance with the credits of the corresponding modules of the Bachelor's program in Management & Technology at the Technical University of Munich in a ratio of 60:126 (relative method).

b) **Final grade**

¹For each two-tenths of a grade that the average of all the applicant's examinations (worth at least 140 credits) is better than 3.0, the applicant will be awarded one point. ²The maximum number of points is 10. ³Where a degree was obtained outside of Germany, the grade will be converted according to what is referred to as the "Bavarian formula". ⁴If the applicant, at the time of filing the application, submits a final degree certificate showing more than 140 credits, the assessment will be made on the basis of the modules that were awarded the best grades, up to a total of 140 credits. ⁵The applicant must list these modules in the application and confirm the accuracy of the information presented in writing. ⁶The average is calculated on the basis of graded module examinations worth a total of 140 credits. ⁷The overall grade average will be calculated as the weighted grade average of the modules. ⁸The weighting of the grades for individual modules corresponds to the credits assigned to each module.

c) **Letter of motivation**

¹The applicant's written statement of purpose will be evaluated by two committee members and graded on a scale of 0-5 points. ²The motivation letter will be assessed using the following criteria:

1. exceptional motivation and commitment (demonstrated by details of program-related vocational training, internships during their studies, stays abroad, periods as a working student or social projects),
2. interest in an interdisciplinary degree at the interface of management and engineering/natural science

³The committee members assess each of the criteria independently; the criteria will be weighted as follows

1. exceptional motivation and commitment: x3
2. interest in an interdisciplinary degree at the interface of management and engineering/natural science: x2

⁴The points for each committee member will be calculated as the sum of the weighted assessments for each criterion divided by 5, rounded up to the nearest full point. ⁵The overall assessment will be calculated as the arithmetic mean of the assessments of the two committee members, rounded up to the nearest full point. ⁶The maximum number of points is 5.

d) **Essay**

¹The essay will be evaluated by two committee members. ²The contents of the essay will be assessed using the following criteria:

1. knowledge of management and technical issues,
2. ability to carry out research work and/or basic research and methodological work,
2. specialist linguistic competence.

³The committee members assess each of the criteria independently on a scale of 0 to 5; the criteria will be weighted as follows:

1. knowledge of management and technical issues: x2,
2. ability to carry out research work and/or basic research and methodological work: x2,
2. specialist linguistic competence: x1.

⁴The points for each committee member will be calculated as the sum of the weighted assessments for each criterion. ⁵The overall assessment will be calculated as the arithmetic mean of the assessments of the two committee members, rounded up to the nearest full point. ⁶The maximum number of points is 25.

5.1.2 The applicant's points total is calculated as the sum of the individual points awarded in a) to d).

5.1.3 ¹Applicants who have achieved at least 75 points will receive confirmation that they have passed the aptitude assessment test.

5.1.4 ¹Unsuitable applicants with an overall grade of fewer than 65 points will receive a rejection notice, signed by the TUM Board of Management, specifying the reasons for rejection and providing information on legal remedies. ²Signatory power may be delegated.

5.2 Second stage of the aptitude assessment process

Assessment Interview

5.2.1 ¹The remaining applicants will be invited for an aptitude assessment interview. ²In the second stage of the aptitude assessment process, the applicant's qualification at undergraduate level and the result of the assessment interview will be evaluated, with at least equal consideration given to the qualification obtained at undergraduate level. ³Interview appointments will be announced at least one week in advance. ⁴Time slots for interviews must be scheduled before expiration of the application deadline. ⁵The interview appointment must be kept by the applicant. ⁶If the applicant is unable to

attend an aptitude assessment interview due to reasons beyond their control, a later appointment may be scheduled upon a student's well-grounded request, but no later than two weeks before the beginning of classes.

5.2.2 ¹The aptitude assessment interview is to be held individually for each applicant. ²The interview lasts at least 20 and not more than 30 minutes for each applicant. ³The interview will focus on the following topics:

1. interest in an interdisciplinary degree at the interface of management and engineering/natural science,
2. knowledge of management and technical issues,
3. competence is using the technical language of management (in German and English).

⁴The interview may also cover the documentation submitted pursuant to § 2 (3). ⁵Any subject-specific academic knowledge that is to be taught in the Master's program in Management & Technology will not affect the decision. ⁶With the applicant's approval, a representative of the student body may sit in on the interview.

5.2.3 ¹The aptitude assessment interview will be conducted by at least two members of the committee. ²The committee members will grade each of the three topics independently. ³Each member will grade the result for each topic on a scale from 0 to 10, 0 being the worst and 10 being the best possible result. ⁴The three points will be weighted as follows:

1. interest in an interdisciplinary degree at the interface of management and engineering/natural science: x2
2. knowledge of management and technical issues: x3
3. competence is using the technical language of management (in German and English): x1.

⁵The points for each committee member will be calculated as the sum of the weighted grades for the individual topics. ⁶The points total will be calculated as the arithmetic mean of the points for the two committee members, rounded up to the nearest full point. ⁷The maximum number of points is 70.

5.2.4 ¹The applicant's points total in the second stage is calculated as the sum of all points obtained under 5.2.3 and the points under a) (academic qualification) and b) (grade). ²Applicants with 100 or more points will be deemed suitable.

5.2.5 ¹The applicant will be notified of the result of the aptitude test as decided by the committee in writing. ²The notice must be signed by the TUM Board of Management. ³Signatory power may be delegated. ⁴A rejection notice must specify the reasons for the rejection and provide information on legal remedies.

5.2.6 Admissions to the Master's program in Management & Technology shall apply to all subsequent applications for this program.

6. Record

¹The aptitude assessment process must be documented, including the date, duration and location of the assessment, the names of the committee members, the applicant's name and the decision of the members of the committee, as well as the overall result. ²This record must contain the essential reasons for the decision and the topics

discussed at the interview with the applicant; these reasons and topics may be recorded in note form.

7. Repetition

Applicants who fail the aptitude test for the Master's program in Management & Technology may register to repeat the Aptitude Assessment Test once.