Examination and Study Regulations  
for the Master's Program in Transportation Systems  
at the Technical University of Munich  

As of August 3rd, 2016

In accordance with article 13, subsection 1, sentence 2 in connection with article 58, subsection 1, sentence 1 as well as article 43, subsection 5 of the Bayerisches Hochschulgesetz (BayHSchG), the following constitution is hereby decreed by the Technical University of Munich:

PLEASE NOTE: The English version is provided merely as a convenience and is not legally binding!

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Scope of the Academic Degree

(1) 1. The Examination and Study Regulations for the Master’s Program in Transportation Systems (German - FPSO) complete the General Academic and Examination Regulations for Bachelor’s and Master’s Programs at the Technical University of Munich (German - APSO) in the currently valid framework. 2. APSO has priority.

(2) 1. Upon successful completion of the Master’s Examination, the candidate will receive a “Master of Science” (“M.Sc.”) degree. 2. Furthermore, the degree can be additionally denoted with the university acronym “(TUM)”.

§ 35
Start of Studies, Regular Period of Study, ECTS

(1) The study period for the Master’s Program in Transportation Systems at the Technical University of Munich always starts in the winter semester.

(2) 1. In order to obtain the Master’s degree each candidate has to achieve 85 credits in required, required elective and elective modules over the course of three semesters. 2. In addition, students have six months at maximum for the completion of the Master’s Thesis as per § 46. 3. Furthermore, an internship of at least 150 hours duration (5 credits) is required. 4. Thus, in the Master’s Program in Transportation Systems the total credits to be obtained from successful completion of required, required elective and elective course exams amounts to 120 credits, according to appendix 1. 5. The regular period of study is four semesters.

§ 36
Qualification Requirements

(1) Qualification for the Master’s Program in Transportation Systems is proved through the following:

1. A subject-specific Bachelor’s degree referring to transportation systems obtained at a domestic or foreign university after at least six semesters of study; subject-specific are degree programs in the area(s) of Civil Engineering, Transportation Engineering, Electrical Engineering, Geodesy, Mechanical Engineering, Geography, Computer Sciences, Communications Engineering, Industrial Engineering, Mathematics, Physics, Architecture, Environmental Engineering, or other scientific area related to transportation systems,

2. Adequate knowledge of the English language; for students whose native language or language of instruction is not English, this must be demonstrated by a recognized language test such as “Test of English as a Foreign Language” (TOEFL) (TOEFL iBT with at least 88 points), “International English Language Testing System” (IELTS, at least 6,5 points), the “Cambridge Main Suite of English Examinations”. Likewise, adequate English knowledge is also demonstrated with an amount of 60 credits achieved in undergraduate courses with English as the medium of instruction and examination,

3. Successful passing of the aptitude assessment according to appendix 2.

(2) A university degree is deemed qualified according to subsection 1 if there is no significant difference regarding the scientifically relevant Bachelor’s programs of the Technical University of Munich or of a comparable university – mentioned in subsection 1 no. 1 – and if the achieved competence (learning outcome) meets the technical requirements of the Master’s program.

(3) The qualification of the university degree, as stipulated in subsection 2, is evaluated within the first level of the aptitude assessment, referring to the module catalogue of the scientifically relevant Bachelor’s programs.

(4) The aptitude commission decides about the comparability of the degree program, the specific eligibility and about the recognition of examination skills of university degrees achieved at foreign universities – in accordance with article 63 of the Bayerisches Hochschulgesetz.
§ 37

Modules, Module Exams, Courses, Fields of Study, Language of Instruction

(1) 1General regulations regarding modules and courses can be found in § 6 and § 8 of the APSO. 2In case of deviations in module definitions § 12 subsection 8 of the APSO comes into effect. 3The curriculum containing the required, required elective and elective courses is stated in appendix 1. 4In the Master’s Program in Transportation Systems the following Fields of Study are available:
   - Field of Study I: Transportation Infrastructure
   - Field of Study II: Intelligent Transportation Systems
   - Field of Study III: Transportation Demand Management.

(2) The curriculum with required, required elective and elective modules is listed in appendix 1.

(3) 1Students have to choose a Field of Study, thus defining his or her individual study profile. 2The choice has to be done during the first semester. 3The curriculum containing the required, required elective and elective courses is stated in appendix 1. 4In the Master’s Program in Transportation Systems the following Fields of Study are available:
   - Field of Study I: Transportation Infrastructure
   - Field of Study II: Intelligent Transportation Systems
   - Field of Study III: Transportation Demand Management.

(4) 1Deviant from subsection 3, for students participating in a 1:1 or double degree program stipulated by contract, there have to be determined individual stipulations. 2The individual stipulations have to be determined in cooperation with a mentor and the academic counselling and must be approved by the examination board.

(5) 1The language of instruction of the Master’s Program in Transportation Systems is English. 2Therefore, students do not have to demonstrate adequate German skills for enrolment in this program, in accordance with § 7 (4) no. 9 of the Statute of the Technical University of Munich for Enrolment, Re-registration, Leave of Absence and Ex-matriculation (ImmatS) of 9th January 2014 in the currently valid framework. 3Courses in single modules can be conducted in the German language. 4If single modules are taught in German, this is indicated in appendix 1.

§ 37a

Internship

(1) 1With regards to § 6 subsection 7 of the APSO each student has to do an internship. 2The internship has to consist of at least 150 hours (5 credits). 3It has to be finished before the end of the fourth semester. 4The successful participation must be confirmed by the companies or the authorities where the internship took place and further be verified through submission of internship reports.

(2) The internship is to be supervised by an expert examiner (“Themensteller/in”).

(3) The examination board decides whether a successfully completed practical training or an adequate practical record can be recognized for the internship.

§ 38

Examination Deadlines, Monitoring of the Study Progress, Failure to Observe Time-Limit

(1) Examination deadlines, monitoring of the study progress, and failures to observe time-limit are regulated in § 10 of the APSO.

(2) 1At least one of the basic required module examinations specified in appendix 1 must be successfully completed by the end of the second semester. 2In case of failure to observe this time-limit, § 10 subsection 5 of the APSO applies.

§ 39

Examination Board

According to § 29 of the APSO, the Master’s Examination Board of the Department of Civil, Geo and Environmental Engineering is responsible for all decisions related to examinations.

§ 40

Recognition of Study Periods, Academic Performance
(1) The recognition of study periods and overall academic performance is regulated in § 16 of the APSO.

(2) Academic performance achieved within this Master's Program according to an individual study plan for a double degree or a 1:1 program pursuant to § 37 (4) will be recognized without equivalence assessment.

§ 41
Examination Procedure, Examination Types

(1) Apart from written and oral examinations, in this degree program other examination types according to § 12 and § 13 of the APSO are in particular laboratory performance, exercises, reports, project work, presentations, learning portfolios, scientific papers as well as the examination parcours.

a) 1A written exam is a written assignment under supervision where students should demonstrate that they are able to identify problems and find approaches to solutions applying specified methods and defined resources within a time limit. 2The duration of written exams is stipulated in § 12 subsection 7 of the APSO.

b) 1A report is written review and summary of a learning process with the aim of structuring and reproducing what the student has learned as well as analyzing the results in the context of a module. 2In the report, the students should show that they recognized the most important aspects and that they are able to reproduce them in writing. 3Possible report types are e.g. excursion reports, internship reports, work reports etc. 4The written report can be supplemented by an oral presentation, in order to assess the communicative competence in explaining contents in front of an audience.

c) 1Within a project work, students have to fulfill a project scope as defined objective in a defined time frame, applying appropriate tools; the project is divided in several phases (initiation, problem definition, task allocation, ideation, development of criteria, decision, implementation, presentation, written evaluation). 2Additionally, the project work can be supplemented by an oral presentation, in order to assess the communicative competence in explaining contents in front of an audience. 3The precise elements of the project work as well as the examined skills are specified in the module description. 4The project work can be done in teamwork. 5Thus, students should demonstrate that they are able to solve problems and tasks within a team. 6The individual contribution of each student must be clearly identifiable for evaluation of his/her academic performance. 7The same applies to the individual contribution to the overall group result.

d) 1A scientific paper is a written record in which ambitious scientific or scientific-applied problems are treated independently by the student, applying the scientific methods of the respective academic discipline. 2The students should prove that they are able to completely treat a problem corresponding to the learning results of the respective module involving analysis of the problem, concept of a draft and writing up – considering the guidelines for scientific work. 3Feasible types differing in their particular ambition level are, e.g. discussion papers, abstracts, essays, research papers, seminar papers etc. 4The scientific paper can be supplemented by an oral presentation and if applicable a colloquium, in order to assess the communicative competence in explaining contents in front of an audience. 5The precise elements of the scientific paper as well as the examined skills are specified in the module description.

e) 1A presentation is a systematic and structured oral performance, visually supported by appropriate media (e.g. projector, charts, posters, videos), during which specific topics or results are illustrated or summarized and complex facts are reduced to their essential core. 2With the presentation, students should demonstrate that they are competent to work on a certain topic in a given time frame as well as to present the topic in a clear, structured and understandable way in front of an audience. 3Besides, students should demonstrate that they are able to react in a professional way to questions, comments or points of discussion raised by the audience, with reference to the specific topic. 4The presentation can be supplemented by a short written scholarly work. 5The presentation can be given individually or in a group. 6The individual contribution of each student must be clearly identifiable for evaluation of his/her academic performance. 7The same applies to the individual contribution to the overall group result.
f) An **oral examination** is a time-limited examination talk about specific topics and specific questions to be answered. In oral exams, the students should show that they have reached the qualification aims of the module descriptions, that they have recognized relations and connections in the specific field of examination and that they are able to classify specific questions in these relations. The oral examination can be held as an individual or group examination. The duration of the examination is regulated in § 13 (2) of the APSO.

g) A **learning portfolio** is a written presentation of own works, according to prior stipulated criteria; it should demonstrate the learning progress and the standard of performance, at a specific date and concerning a defined content. The selection of works, their reference to the students’ learning progress as well as their significance for achieving the qualification objectives must all be justified. In the learning portfolio it shall be proofed that the students took responsibility for their learning progress and that they achieved the qualification objectives documented in the module description. Suitable elements of effective self-learning control of the learning portfolio could be – depending on the respective module description – particularly works with reference to applications, websites, weblogs, bibliographies, analyses, discussion papers as well as graphic preparations of facts or of a scientific issue. The precise elements of the specific learning portfolio as well as the competences to be examined are mentioned in the module description.

h) Within an **examination parcours** there have to be completed several examination elements within one single examination. The academic record is – in contrast to a sub-module exam – examined in one piece (organizationally, regarding time and location). Examination elements are several different formats of examination that altogether measure the complete competence profile of the specific module. Examination elements can particularly be also examination types pursuant to letters a) to g). The complete overall duration of the examination has to be specified in the module catalogue, exam type and exam duration of the single examination elements are to be specified in the module description.

(2) Module exams are usually taken during the course of study. Type and duration of the respective module exam are specified in appendix 1. In case of deviations from these predefinitions, § 12 subsection 8 of the APSO is to be observed. A module exam is evaluated according to § 17 of the APSO. Weighting of sub-module exams corresponds to the specified weighting factors in appendix 1.

(3) If appendix 1 stipulates a written or oral exam as module examination, the examiner will inform the students in an appropriate way about the binding examination type, by the lecture start at the latest.

(4) Upon request of a student and with the consent of the examiners, a German taught module exam can be taken in the English/ in a foreign language.

§ 42
Registration for and Admission to the Master’s Examination

(1) Once enrolled in the Master’s Program in Transportation Systems, a student is then considered as eligible to participate in the module exams of the master’s examination.

(2) Registration for exams of required, required elective and elective modules is regulated by § 15 subsection 1 of the APSO. Registration for retakes of failed exams of a required or required elective module is regulated by § 15 subsection 2 of the APSO.

(3) Deviating from subsection 2, students are considered as registered for a course-related exam of a required module of the Master’s Program in Transportation Systems as found in appendix 1 if they are in the semester where the specific examination is scheduled according to appendix 1. In the case of non-appearance for the exam, the examination is regarded as taken and failed, unless reasonable cause is given pursuant to § 10 subsection 7 of the APSO.
§ 43
Extent of the Master’s Examination

(1) The Master’s Examination comprises:
   1. The module examinations in the corresponding modules in accordance to subsection 2,
   2. The Master’s Thesis in accordance to § 46
   3. As well as the study performance specified in § 45.

(2) 1The module exams are listed in appendix 1. 2Candidates have to achieve 55 credits in required modules, 6 credits in required elective modules and at least 24 credits in elective modules. 3When choosing the modules, § 8 subsection 2 of the APSO is to be considered.

§ 44
Retake, Failing Exams

(1) Retaking exams is regulated in § 24 of the APSO.
(2) Failing exams is regulated in § 23 of the APSO.

§ 45
Study Performance

Apart from the credit requirements listed in § 43 subsection 1, no. 1 and 2, candidates have to prove the successful completion of a study performance amounting to 5 credits in accordance with § 37a.

§ 45 a
Multiple Choice Testing

The execution of multiple choice testing is regulated in § 12a of the APSO.

§ 46
Master’s Thesis

(1) 1According to § 18 of the APSO students have to write a Master’s Thesis within the Master’s examination. 2The Master’s Thesis can be issued and supervised by expert examiners (“Themensteller/in”) of the Department of Civil, Geo and Environmental Engineering of the Technical University of Munich. 3Expert examiners pursuant to Sentence 2 are authorized by the examination board.

(2) 1Working on the Master’s Thesis should be started after successful completion of all module examinations. 2Upon request, students can be prematurely admitted to the Master’s Thesis, if they have achieved at least 75 credits.

(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 deemed taken and not passed if the student does not submit it in time unless acknowledged convincing reasons are given according to § 10 subsection 7 of the APSO.

(4) 1The Master’s Thesis shall be written in the English language.

(5) 1Completion of the Master’s Thesis consists of a written part and an oral presentation of its contents. 2The oral presentation will not be considered for the grading of the Thesis.

(6) 1If the Master’s Thesis is not graded with at least “sufficient” (4.0), it can be retaken once with a new topic. 2It has to be re-registered within a period of six weeks, starting with the date of the notification letter about the results.
§ 47
Passing and Evaluation of the Master’s Examination

(1) The Master’s Examination is considered passed once all the required exams stated in § 43 subsection 1 have been passed and a balance of at least 120 credits has been achieved.

(2) ¹The module grade is calculated according to § 17 of the APSO. ²The final grade for the Master’s examination is determined by a weight based calculation of the modules under § 43 subsection 2 and the Master’s Thesis. ³The weights for each individual module correspond to the module’s assigned number of credits. ⁴The overall evaluation is expressed by the grading system as laid forth in § 17 of the APSO.

§ 48
Certificate, Record and Diploma Supplement

¹In accordance with § 25 subsection 1 and § 26 of the APSO, a certificate, record and diploma supplement with a transcript of records has to be issued upon successful completion of the Master’s examination. ²The date printed on the certificate is the date when all examination and study requirements have been fulfilled.

§ 49
Double Degree

¹Based on mutual cooperation agreements, the Technical University of Munich and the universities École Polytechnique (France), École Nationale des Ponts et Chaussées (France) and Kungliga Tekniska Högskolan (Sweden) are offering mutual double degree programs. ²For students of the Master’s Program in Transportation Systems at the Technical University of Munich who are participating in one of these double degree programs the following special regulations apply: ³Selection of the participants is organized in two steps. ⁴Firstly, potential participants are selected upon school and study success, English language skills and motivation. ⁵This proof is confirmed by the partner university. ⁶Then, the final choice will be made, based on personal discussions with representatives of both universities.

§ 50
Date of Effectiveness

(1) ¹This constitution comes into effect on October 1st, 2016. ²It is valid for all students starting their studies in the winter semester of 2016/2017 at the Technical University of Munich. ³By way of derogation from sentence 2, appendix 2 (aptitude assessment) is valid for all students starting their studies in the winter semester of 2017/2018 at the Technical University of Munich.

(2) ¹Simultaneously the Subject Examination and Study Regulations (FPSO) for the Master’s Program in Transportation Systems at the Technical University of Munich of 6th May 2009, lastly amended by the statute of 20th August 2015, ceases to be in force, conditionally to the regulations in subsection 1. ²Students who already started their studies before the winter semester 2016/17 at the Technical University of Munich will complete their studies according to the statute pursuant to sentence 1.
### Appendix 1: Examination Modules

<table>
<thead>
<tr>
<th>Code*</th>
<th>Module title</th>
<th>Teaching Methods SWS⁸</th>
<th>Sem.</th>
<th>SWS</th>
<th>Credits</th>
<th>Exam Type</th>
<th>Duration of Exam</th>
<th>Weighting Factor</th>
<th>Language of Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>BGU56037</td>
<td>Sustainable Transportation</td>
<td>3 L, 2 Se, 2 Ex</td>
<td>1+2</td>
<td>7</td>
<td>9</td>
<td>Written &amp; scientific paper</td>
<td>140</td>
<td>70:30</td>
<td>English</td>
</tr>
<tr>
<td>BV580010</td>
<td>Analysis Methods – Statistics and GIS</td>
<td>2 L, 2 Ex</td>
<td>1</td>
<td>4</td>
<td>6</td>
<td>written</td>
<td>120</td>
<td></td>
<td>English</td>
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<tr>
<td>BV520010</td>
<td>Land-Use and Transport – Strategies and Models</td>
<td>2 L, 2 Ex</td>
<td>1</td>
<td>4</td>
<td>6</td>
<td>written</td>
<td>120</td>
<td></td>
<td>English</td>
</tr>
<tr>
<td>BV560024</td>
<td>Traffic Management</td>
<td>2.5 L, 1.5 Ex</td>
<td>1</td>
<td>4</td>
<td>6</td>
<td>written</td>
<td>120</td>
<td></td>
<td>English</td>
</tr>
<tr>
<td>BGU56038</td>
<td>Cross-cutting Fundamentals and Methods</td>
<td>2 Se</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>scientific paper</td>
<td>-</td>
<td></td>
<td>English</td>
</tr>
<tr>
<td>BV340009</td>
<td>Infrastructure Planning</td>
<td>3 L, 2 Ex</td>
<td>1,2</td>
<td>5</td>
<td>6</td>
<td>written</td>
<td>120</td>
<td></td>
<td>English</td>
</tr>
<tr>
<td>BV520014</td>
<td>Transport Concepts and Implementation</td>
<td>2 L, 2 Ex</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>written</td>
<td>120</td>
<td></td>
<td>English</td>
</tr>
<tr>
<td>BGU56039</td>
<td>Transportation Systems in Germany</td>
<td>2 Se</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>scientific paper</td>
<td>-</td>
<td></td>
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<tr>
<td>BV520003</td>
<td>Project Seminar</td>
<td>3 Ex</td>
<td>3</td>
<td>3</td>
<td>10</td>
<td>scientific paper</td>
<td>-</td>
<td></td>
<td>English</td>
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</table>

**Required Module:** Master's Thesis

<table>
<thead>
<tr>
<th>Code*</th>
<th>Module title</th>
<th>SWS</th>
<th>Duration</th>
<th>Language</th>
</tr>
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<tbody>
<tr>
<td>BV00MTTS</td>
<td>Master's Thesis</td>
<td>4</td>
<td>6 months</td>
<td>30</td>
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</tbody>
</table>

**Required Elective Modules:** 6 Credits are to be obtained from the following list.

<table>
<thead>
<tr>
<th>Code*</th>
<th>Module title</th>
<th>SWS</th>
<th>Duration</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>BV340019</td>
<td>Transportation Infrastructure (Field of Study I)</td>
<td>3 L, 3 Ex</td>
<td>6</td>
<td>6</td>
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<tr>
<td>BV560023</td>
<td>Intelligent Transportation Systems (ITS) (Field of Study II)</td>
<td>2.5 L, 1.5 Ex</td>
<td>4</td>
<td>6</td>
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<tr>
<td>BV520002</td>
<td>Transportation Demand Management (Field of Study III)</td>
<td>2 L, 1 Ex, 2 Se</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

**Elective modules:** There must be achieved at least 24 Credits:
Within the Master’s Program in Transportation Systems there is a catalogue with elective modules. This catalogue comprises multidisciplinary courses. Credits can be also achieved in modules of other departments. From this catalogue, the students are required to choose as many modules, so that they reach at least 24 credits. For each Field of Study (specialization), there are thematically related elective modules which are recommended for the specialization, but not stipulated. In principle, the students have the opportunity to design their studies corresponding to their individual needs and perspectives.

The Examination Board continually updates the catalogue of the elective modules. Changes will be announced not later than at the beginning of the semester.
Study Requirements: There have to be achieved 5 credits as internship in form of a study requirement.

<table>
<thead>
<tr>
<th>BV00PKTS</th>
<th>Internship</th>
<th>P</th>
<th>3</th>
<th>5</th>
<th>report</th>
<th>-</th>
<th>English</th>
</tr>
</thead>
</table>

Explanation:
Sem. = Semester; SWS = Semesterwochenstunden (hours per week per semester); L = Lecture; Ex = Exercise Course; P = Practical Training; Se = Seminar.

In the column “Duration of Exam”, the duration is specified in minutes for written or oral exams.

* The indicated module codes may change; up-to-date codes can be found in the module catalogue in TUMonline.

X The distribution of the SWS (hours per week per semester) among the respective courses can vary up to 1 SWS during the current semester; the correct distribution of the SWS among the courses will be given in the module description, in the manner customary in the area.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Credits Required Modules</th>
<th>Credits Elective Modules</th>
<th>Credits Elective Modules</th>
<th>Credits Master’s Thesis</th>
<th>Total of Credits</th>
<th>Total of Exams</th>
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<tbody>
<tr>
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<td><strong>120</strong></td>
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</table>
Appendix 2: Aptitude Assessment

Aptitude Assessment for the Master's Program in Transportation Systems at the Technical University of Munich

1. Purpose of the Aptitude Assessment

Apart from fulfilling the admission requirements for the Master's Program in Transportation Systems in § 36 (1) numbers 1 and 2, candidates have to prove their eligibility according to § 36 (1) number 3 according to the following regulations. The particular qualifications and capabilities of the applicants should correspond to the vocational field of Transportation Systems. Single aptitude parameters are:

1.1 Ability to work scientifically respectively principle-based and method-oriented;
1.2 Knowledge and skills in the field of mobility and transportation as well as in the field of engineering science, gained in the previous academic education;
1.3 Oral and written subject related language skills;
1.4 Scientifically oriented interest in engineering problems from the field of transportation systems.

2. Aptitude Assessment Procedure

2.1 The aptitude assessment procedure is held annually by the Department of Civil, Geo and Environmental Engineering.

2.2 Applications for admission to the aptitude assessment must be filed with the Technical University of Munich no later than 31st May for the winter semester (absolute deadline), including the documents pursuant to no. 2.3.1 to 2.3.6 below and § 36 (1) no. 2 in the online application procedure. Certificate and record must be submitted within five weeks after the start of the lecture period.

2.3 The application must include:

2.3.1 Certification of a degree in accordance with § 36; if this certification is not yet available on the date of application, complete certification of the first degree coursework and examination results (transcript of records) amounting to 180 credits issued by the responsible examination authority or the responsible university office must be submitted;

2.3.2 A curriculum vitae formatted as a table,

2.3.3 A statement of purpose written in the English language of at least ½ up to 2 DIN A4 pages at maximum, outlining the motivation for choosing the Master's Program in Transportation Systems at the Technical University of Munich, in which the applicants demonstrate, based on their particular skills and interests, what specifically qualifies them for the Master's Program in Transportation Systems at the Technical University of Munich. Hereby, they should explicate based on which specific talents and interests they think they are particularly eligible for the Master's Program in Transportation Systems at the Technical University of Munich; the exceptional motivation and commitment is to be justified by, e.g. statements about degree program related vocational trainings, internships, periods abroad or by a subject-oriented training, achieved during the bachelor's program which was not compulsory for receiving the program degree; this is to be proven in the enclosure.

2.3.4 A written confirmation of the applicant justifying that the statement of purpose for choosing the master's program represents his/her own work and that no other sources than those listed were used.

2.3.5 In addition, the online application form is to be accompanied by a presentation portfolio of previous academic works and application-related academic records. Therefore, the applicants have to provide an English digital copy of their bachelor's thesis or an abstract of it as a zip or pdf file. If the bachelor's program is not yet completed and/or if a copy of the thesis cannot be provided, applicants have to submit a meaningful sample of their previous academic works.
3. Aptitude Assessment Commission

3.1 The aptitude assessment is administered by a commission that, as a general rule, consists of the dean of studies in charge of the Master’s Program in Transportation Systems, at least two members of the university faculty and at least one research assistant. At least half of the commission members must be university faculty members. A student representative shall contribute to the commission in an advisory capacity.

3.2 The members are appointed by the faculty council in consultation with the dean of studies. At least one faculty member is appointed as deputy member of the commission. As a rule, the commission will be chaired by the dean of studies. Procedural regulations will be in accordance with article 41 of the BayHSchG as last amended.

4. Admission to the Aptitude Assessment Procedure

4.1 Admission to the aptitude assessment requires that all documents stated in no. 2.3 have been submitted fully completed and in due time.

4.2 Applicants who have fulfilled the requirements will take part in the aptitude assessment according to no. 5.

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

5. Procedure of the Aptitude Assessment

5.1 First level of the Aptitude Assessment Process

5.1.1 On the basis of the required written application documents pursuant to no. 2.3, the commission evaluates the applicants' qualification for the program, according to no. 1 (first level of the aptitude assessment process). The commission has to evaluate the submitted documents on a scale from 0 to 100 points, where 0 is the worst and 100 is the best obtainable result:

The following evaluation criteria are to be considered:

a) Subject-related Qualifications

1. The curricular analysis is not performed by schematic comparison of the modules, but based on competencies. It is aligned to the subject areas pursuant to § 36, to the chosen specializations and examination subjects as well as to the scientific works or projects produced during the previous academic education (see no. 2.3.5 portfolio). The applicant receives 60 points at maximum; competencies can be proved in the following areas:

1. Subject-related basics in engineering science: In this field there can be achieved 40 points at maximum.

<table>
<thead>
<tr>
<th>Subject group „Subject-related basics in engineering science“</th>
<th>Points at max.</th>
<th>ECTS</th>
<th>Points at max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Algorithmic, Informatics, Programming, Computer-aided Simulation</td>
<td>10</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>2. Drive Engineering, Automation Engineering, Energy Technology, Automotive Engineering</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>3. Communication Technology, Communications Engineering, Control Technology/ Cybernetics, Circuit Technology, Sensor Technology</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>4. Bridge Construction, Geographic Information Systems, Surveying</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>
2. Subject-related basics, special skills in the field of “Mobility and Transportation”: In this field there can be achieved 40 points at maximum.

<table>
<thead>
<tr>
<th>Subject group „Mobility and Transportation“</th>
<th>Points at max.</th>
<th>ECTS</th>
<th>Points at max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Urban Development/ Urban Planning</td>
<td>10</td>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>2. Transportation Planning</td>
<td>12</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>3. Traffic Engineering and Control</td>
<td>12</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>4. Transportation Infrastructure</td>
<td>16</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

For the subject related qualifications, there can be achieved 60 points at maximum.

b) Final Grade

1. For every tenth grade better than 3.0, the applicant receives one point. 2. The maximum amount of points is 20. 3. There are no negative points distributed. 4. For foreign degrees, the final grade will be converted by using the Bavarian formula.

c) Motivation Letter

1. The written motivation letter will be evaluated by two commission members on a scale from 0 to 20 points. 2. The content of the motivation letter will be evaluated according to the following criteria:

   1. Ability to write according to correct spelling and grammar rules of the English language;
   2. Ability to formulate the application request in a factually founded way;
   3. Ability to present the relation between personal interests and the contents of the Master’s Program in Transportation Systems as well as the respective job description in a well-structured way;
   4. Ability to justify the particular eligibility and the exceptional motivation and commitment for the Master’s program in a convincing way by means of arguments and meaningful examples (see 2.3.3);
   5. Ability to linguistically highlight essential aspects of the motivation in an appropriate way.

3. The commission members evaluate the mentioned criteria independently; all criteria have the same weighting. 4. The number of points is determined by the arithmetic mean of the individual scores, remaining decimal places are to be rounded up.

5.1.2 1. The applicant's number of points is determined by the sum of the individual scores. 2. Remaining decimal places are to be rounded up.

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

5.1.4 1. Unqualified applicants with an overall score less than 60 points will receive a rejection letter signed by the president of the university, stating the reasons for rejection and providing instructions about available legal remedies. 2. Signing powers can be delegated. 3. Upon request, applicants with claims on compensation for detrimental effects on the grounds of disability, chronic or longer-term disease will be invited to the second level of the aptitude assessment, in case they would reach the second level or receive direct admission if they obtained the best achievable grade in their study degree certificate. 4. The request must include respective proofs.

5.2 Second level of the Aptitude Assessment Process

5.2.1 1. The remaining applicants are invited to an aptitude interview. 2. Within the second level of the aptitude assessment the qualification obtained during the previous education as well as the result of the aptitude interview are evaluated, where the qualification obtained during the previous education must be considered equally ranked. 3. The date of the aptitude interview is to be announced at least one week in advance. 4. The time window for potential aptitude interviews to be held must be determined before the closing date for applications. 5. The applicant has to keep the fixed date for the interview. 6. If the applicant is prevented from partaking in the aptitude interview for reasons beyond his/her control, a makeup date can be arranged for at the latest two weeks before the start of the lecture period, given that a reasonable application is submitted.

5.2.2 1. The aptitude interview is held individually for each applicant. 2. The interview lasts at least 20 minutes and 30 minutes at maximum. 3. Contents of the interview are the following main topics:
1. The exceptional motivation and commitment for the Master of Science Program in Transportation Systems pursuant to the criteria mentioned in no. 2.3.3 for the evaluation of the motivation letter,
2. Reflecting own talents and skills and connecting them with the objectives of the Master’s program – with regards to the offered fields of study (specialization) within the Master’s program,
3. Explanations about the topic of the final thesis of the Bachelor’s program,
4. Basic and implementation-related questions from the field of transportation engineering for evaluation of the technical qualifications.

Subjects of the interview can also be the submitted documents pursuant to 2.3. Technical knowledge which is part of the Master’s Program in Transportation Systems will not be counted. With the consent of the applicant a student can be admitted as a listener.

5.2.3 1The aptitude interview is carried out by at least two commission members. 2The commission members independently evaluate each of the four issues; all issues have the same weighting. 3Every member records the result of the aptitude interview on a scale from 0 to 80, where 0 is the worst and 80 the best obtainable result. 4The number of points is determined by the arithmetic mean of the individual scores. 5The remaining decimal places are to be rounded up.

5.2.4 1The result of the second level is determined by the sum of the number of points in No. 5.2.3 and the sum of the number of points in No. 5.1.1.1 (subject-related qualifications) and no. 5.1.1.2 (final grade). 2Applicants who obtained 115 or more points will be classified as eligible.

5.2.5 1The applicant will be informed about the results of the aptitude assessment ascertained by the commission in writing. 2The notification letter is to be signed by the president of the university. 3Signing powers can be delegated. 4A rejection letter must state the reasons for rejection and providing instructions about available legal remedies.

5.2.6 Admissions to the Master’s Program in Transportation Systems apply to all subsequent applications for the program.

6. Minutes
1Minutes about the aptitude assessment procedure are to be produced; wherein the day, place and length of the aptitude assessment, the names of the commission members, the names of the applicants and the evaluation by the commission members as well as the overall result must be evident. 2The significant reasons and the topics of the interview with the applicants must be evident within the minutes; significant reasons and topics can be written down in point form.

7. Repetition
Applicants that were not able to demonstrate eligibility for the Master’s Program in Transportation Systems, can register anew once for the aptitude assessment.