Information from the Bauhaus-Universität Weimar
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ACADEMIC REGULATIONS

☐ The President The Chancellor	Study regulations for the consecutive degree programme *»Digital Engineering«* leading to a Master of Science	Issue 13/2023
	Comp. Dept./Unit Faculty of Civil Engineering / Faulty of Media Phone 4415 / 3708	Date 3 March 2023

The Bauhaus-Universität Weimar, based on the approved examination regulations for the »*Digital Engineering*« degree programme with the Master of Science degree, as authorized by the President, establishes the following study regulations for the »*Digital Engineering*« degree programme with the Master of Science degree, in accordance with § 3 Para 1 in conjunction with § 38 Para 3 of the Thuringian Higher Education Act of May 10, 2018 (GVBl. p. 149), last amended by Article 1 of the Act of December 7, 2022 (GVBl. p. 483).
The Faculty Boards of Media and Civil Engineering adopted the regulations on 11.01.2023.
The regulations were approved by the President of the Bauhaus-Universität Weimar on 03.03. 2023.

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§ 1 – Scope

These study regulations govern the objectives, contents, and structure of the degree programme in the English-language degree programme »*Digital/ Engineering*« leading to the degree of Master of Science (M. Sc.) on the basis of the current version of the associated examination regulations.

§ 2 – Admissions requirements

(1) The prerequisite for admission to the degree programme is a first university degree in a relevant principal subject, completed with an overall grade of at least 2.3, a degree from a university of applied administrative sciences or a degree from a state or state-recognised university of cooperative education. The following degree programmes are considered to be relevant in terms of principal subject: civil engineering, mechanical engineering, computer science, computer science of media and other technical and scientific degree programmes from the subject areas of engineering or computer science.
The examination committee decides on the comparability of degrees and exceptions and may determine additional requirements to be met by the applicant.

(2) If the first university degree is not based on a final academic project, the applicant must submit other academic work they have produced.

(3) Proof must be provided of proficiency in English to Level B2 of the Common European Framework of Reference for Languages (CEFR) in the form of:

a) Mother tongue fluency (higher education entrance eligibility or first professional qualification obtained in an English-speaking country) or
b) One of the following internationally recognised certificates:
   - TOEFL (internet-based score of 85 or higher)
   - Cambridge First Certificate in English (FCE)
   - IELTS, band 6.5 (at least 6.0 in each sub-area)

   or equivalent

(4) The applicant must submit a one-page letter of motivation in English. This letter of motivation should include an overview of the applicant's previous academic and professional/practical training history, such as projects and/or internships related to construction or computer science in civil engineering, experiences abroad during the first degree programme, student extracurricular activities and/or academic activities. All activities shall be documented. Following on from this, the student's personal future (research) outlook is
to be presented with reference to the focal points of the degree programme.

(5) If the selection committee does not come to a clear decision on the basis of the available documents, an interview may be conducted to clarify the suitability of the applicant.

(6) Applicants are selected by a selection committee consisting of two examiners from the »*Digital/ Engineering*« degree programme, one from Computer Science of Media and one from Civil Engineering. The selection committee determines which applicants fulfil the necessary requirements according to Para 1 to 5 and determines the basic modules to be completed individually for the adaptation qualification from the subject area »*Fundamentals*«.

§ 3 – Start of studies

Admission is generally for the winter semester and is valid for 2 semesters. Students can begin their studies in the first semester at the beginning of either the winter or summer semester (matriculation).

§ 4 – Duration and workload

(1) The standard study period is four semesters. A total of 120 credits must be completed for the Master's degree programme.

(2) The degree programme can be studied part-time according to § 10 of the applicable matriculation regulations of the Bauhaus-Universität Weimar.

§ 5 – Subject and objectives

(1) The »Digital Engineering« Master's degree programme aims to provide an intensive, research-oriented and closely supervised in-depth study experience in which technical and methodological competence already acquired in a first university degree programme is further developed in computer-based modelling, simulation and visualisation of engineering problems as well as in the methods of data handling related to information theory that are required in this context.

(2) The core of the »*Digital Engineering«* degree programme is the teaching of the methods required for comprehensive digitalisation of design, production and utilisation processes in engineering. Digital technologies and interactive design environments enable the creation of predictive models, comparison of design variants, and support for design processes. The models and complex simulation methods required for this should be able to be evaluated in terms of their accuracy, and the influence of influencing variables that lead to stochastic scatter should be identified and evaluated. The large amounts of data acquired are to be reliably handled and processed for decision-making.
Graduates thus acquire a high level of skill in recognizing engineering and methodological relationships, understanding the potential for engineering modelling using different model concepts, and presenting and interpreting complex results.

(3) Moreover, students are empowered to fulfil their scientific, social and ecological responsibilities, and to actively participate in shaping civil society.

(4) Students should be empowered to comprehend and deal with research questions. They will be able to understand application-specific problems and independently develop solutions. They should possess the ability to evaluate various approaches to a solution and make a well-justified decision in favour of an alternative that can be easily understood by others.

(5) This project-oriented degree programme empowers students to collaborate effectively in teams while also cultivating their ability to work independently. Additionally, it encourages students to develop their skills in providing and receiving professional criticism. Students should be able to present their findings in a comprehensible manner and identify points of contact beyond the boundaries of their subject.

(6) The degree of »Master of Science« is awarded upon successful completion of the Master's examination.

§ 6 – Degree structure and content

(1) The degree programme comprises modules totalling 120 credits. One credit corresponds to a student workload of approx. 30 hours of in-class instruction and self-study as well as exam preparation and taking.

(2) English is the teaching and examination language.

(3) The teaching content is imparted in modules. These constitute a combination of time-limited, self-contained, methodological or content-oriented courses. Credits are assigned to modules based on their associated workload. They are concluded with a module examination, which consists of one or more examinations.

Credits are then awarded on this basis. A module comprises a study effort of six credits or a multiple thereof. In individual cases (such as language courses), smaller units can also be offered.
There are three types of modules:

1. Basic modules (known as »requirement modules«) serve as a compulsory requirement for bringing all students up to a certain level of prior subject knowledge and are determined by the selection committee
2. Compulsory elective modules must be selected by the students within a thematically limited range
3. Elective modules may be freely chosen by students from the range of Master's modules offered by the Bauhaus-Universität Weimar. Language courses in English or German within the scope of no more than 6 credits can also be taken and recognised as elective modules.

(4) To ensure that all students have the necessary prior subject knowledge, the students are required to complete basic modules worth 18 credits, which compensate for any deficiencies in their existing qualifications. These credits must be completed in the first three study semesters. A selection committee determines the basic modules to be completed on a case-by-case basis based on the study content completed as part of the previous degree.

(5) Modules are differentiated according to content in three subject areas: »Fundamentals (F)«, »Engineering Methods (EM)« and »Computer Science Methods (CSM)«. Within the framework of the basic modules (»Fundamentals«), students are to be taught the essential components of the two main parts of the programme (Engineering Sciences (EM) and Computer Science (CSM)) that are missing from their existing knowledge in each case. From each of the other two subject areas (EM and CSM), the student must select, take and successfully complete elective modules totalling 36 credits for EM and 18 credits for CSM. The module catalogue lists the subject areas and the modules available for selection.

(6) In addition to the general orientation of »*Digital Engineering*«, the following »profile lines« can currently be selected as part of a specialisation (for more in-depth work and greater focus): »*Materials and Structures (S+M)*« and »*Mobility and Transport (M+T)*«. Within the scope of the degree programme (120 credits in total), a total of at least 60 credits within the topic area are required in order to be able to successfully complete a profile line. The modules thematically assigned to the profile lines are listed in the module catalogue. In addition, the following applies:

1. Engineering Methods: students must complete at least 18 credits within a profile line.
2. Computer Science Methods: students must complete at least 12 credits within a profile line.
3. Project: if the project is thematically within a profile line, 12 credits can be recognised for the profile line.
4. Master's module: the Master's module must align thematically with the intended profile line and be recognized for 24 credits.
5. Elective modules: if elective modules are thematically within a profile line, a maximum of 12 credits, 6 credits per elective module, can be recognised for the profile line.

(7) Examples of the curriculum to be individually configured, including the profile lines, are listed in the module catalogue.

(8) During the degree programme, students are required to complete a project worth 12 credits. If the project aligns thematically with a profile line, it is possible to receive recognition for 12 credits towards that profile line. The project can be completed externally with industrial partners, in consultation with the academic advisor.

(9) The programme concludes with the Master's module (24 credits). It consists of the Master's thesis and its defence (21 credits) as well as preparatory research (3 credits). If a profile line is pursued, the Master's module is aligned to this in terms of content and is fully recognised (24 credits) for the profile line.

§ 7 – Language requirements

(1) All courses, all examinations and the final thesis are usually completed in English.

(2) For admission to the Master's thesis, English knowledge of competence level C1 of the Common European Framework of Reference for Languages CEFR is mandatory and required and must be documented by:

a) Native language skills (attainment of a university entrance qualification or a first professional qualification in an English-speaking country) or
b) One of the following recognised certificates:
   - IELTS: band 7.0 or better
   - TOEFL Internet-based score: 94 or better
   - Cambridge Certificate in Advanced English

   (CAE) or equivalent.

(3) For admission to the Master's thesis, German knowledge of competence level A1 of the Common European Framework of Reference for Languages CEFR is mandatory and must be documented.

(4) Students have the opportunity to obtain these certificates prior to writing their Master's thesis (usually semesters 1 to 3) by attending courses and taking the corresponding examination at the Language Centre of the Bauhaus-Universität Weimar. These courses can be counted as part of the elective module up to a maximum of 6 credits.

§ 8 – Studying abroad

(1) The degree programme's international orientation means that students may complete a portion of their academic work abroad. Credits are awarded for the academic work completed abroad as per § 9 of the examination regulations.

(2) Students must organise their stay abroad for themselves. The Student Advisory Service or the International Office of the Bauhaus-Universität Weimar provides support, especially regarding the crediting of coursework and the general organisation of studies.

(3) Before commencing their stay abroad, students must submit a learning agreement so that the academic achievements later obtained abroad can be recognised and credited to the degree programme. The student must coordinate with their academic advisor and the responsible professors well in advance of the start of their study abroad programme.

§ 9 – Compensation for disadvantages

(1) Students may apply for compensation for disadvantages. The disadvantage must be credible; a doctor's note may be required for this or, in justified individual cases, an official medical certificate.

(2) Support and advice for students with disabilities and chronic illnesses, including all questions relating to potential compensation for disadvantage, are provided by general advising as well as the Studentenwerk Thüringen.

(3) When designing the study process, including the teaching and learning forms, the specific requirements of students who are restricted in their opportunities for organising their studies (e.g. disabled or chronically sick students) due to special circumstances are taken into account. Students must not experience any disadvantages from utilising maternity, parental or care leave. The departmental academic advisor can advise on this.

(4) The responsible examination committee shall decide on the compensation for disadvantages based on the student's application. The student may propose a particular form of compensation. The request is to be made in writing, the decision is to be notified in writing, and any refusal is to be justified in writing.

§ 10 – Master's degree completion

The Master's degree is completed with the Master's examination, which comprises the Master's thesis, including the preparatory research and the defence.

§ 11 – Academic advising

(1) An overview of the individual teaching and research areas of »Digital Engineering« and the progression of the Master's programme is provided at the beginning of the first semester.

(2) Either the advisor or the degree programme director conducts individual advising according to the subject.

(3) Professors and academic employees from the Faculties of Media and Civil Engineering provide individual academic advising for students.

(4) At least once per semester, the lecturers hold a discussion round with student representatives on the content and structure of the degree programme.

§ 12 – Equal opportunity clause

Designations made under these regulations apply equally to all genders.

§ 13 – Entry into effect and expiry

These regulations come into force on the first date of the month following their announcement by the Bauhaus-Universität Weimar and apply for the first time for the winter semester 2023/24.

Faculty board resolution dated 11 January 2023

Prof. Dr Lorenz Engell, Dean
of the Faculty of Media

Faculty board resolution dated 11 January 2023

Prof. Dr. Tom Lahmer
Dean of the Faculty of Civil Engineering

The statutes are approvable Dr. Steffi

Heine,
Legal Adviser

Approved:
Weimar, 3 March 2023

Peter
Benz,
President

Appendix: Curriculum

In the 1st to 4th semesters, a total of 120 credits (ECTS) must be earned from the three subject areas of Fundamentals (18 ECTS), Engineering Methods (36 ECTS) and Computer Science Methods (18 ECTS), as well as elective modules (12 ECTS), a project (12 ECTS) and the Master module (24 ECTS).

The modules offered for each subject area are announced in the module catalogue and in the current course catalogue. Each module ends with an examination. Upon admission to the degree programme, three basic modules (also known as supplementary modules) in the subject area »Fundamentals« must be individually
determined and completed. All other courses are offered as compulsory elective modules. Electives may include Master's courses at the Bauhaus-Universität Weimar and language courses in English or German with a maximum of 6 ECTS.

The Master's module includes the preparatory research, the Master's thesis and its defence.

Name	*ECTS*
Fundamentals (F)	18
Engineering Methods (EM)	36
Computer Science Methods (CSM)	18
Elective Modules	12
Project	12
Master Module	24
Total	120