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Master's degree

**Digital Engineering**

**Bauhaus-Universität Weimar • Weimar**

### Overview

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<th><strong>Degree</strong></th>
<th>Master of Science (MSc) in Digital Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teaching language</strong></td>
<td>• English</td>
</tr>
<tr>
<td><strong>Languages</strong></td>
<td>Modules are held in English (100%).</td>
</tr>
<tr>
<td><strong>Programme duration</strong></td>
<td>4 semesters</td>
</tr>
<tr>
<td><strong>Beginning</strong></td>
<td>Winter and summer semester</td>
</tr>
<tr>
<td><strong>Application deadline</strong></td>
<td>Applicants who graduated outside of Europe: 15 July for the following winter semester or 15 January for the following summer semester</td>
</tr>
<tr>
<td></td>
<td>Applicants who graduated in Europe and do not need a visa: 30 September for the following winter semester or 31 March for the following summer semester</td>
</tr>
<tr>
<td><strong>Tuition fees per semester in EUR</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Combined Master's degree / PhD programme</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>Joint degree / double degree programme</strong></td>
<td>No</td>
</tr>
</tbody>
</table>

**Description/content**

The use of digitally connected systems is increasing in every industry. The developments currently unfolding under the buzzword "Industry 4.0" are essentially based on the comprehensive digital representation of every step in the value chains in industrial production. From the planning phase to the design/draft and production process and the monitoring of products over their service life, virtual product and process models are networked with each other to expedite development processes, raise product quality, and optimise production. That is why these developments require well-trained specialists at the interface of computer science and engineering. This course of study, which was jointly developed by participants from the professorships of Civil Engineering, Computer Science and Media at the Bauhaus-Universität Weimar, is designed to provide you flexible and interdisciplinary training to meet the challenges you will face in the professional world of tomorrow. The Digital Engineering Master’s programme places a high premium on introducing you to current research issues that are jointly defined and supervised by industry partners at an early state. The Digital Bauhaus Lab is a state-of-the-art university research facility offering optimal conditions for success.
The consecutive Digital Engineering Master’s programme combines academically specialised expertise from the Civil Engineering, Computer Science and Media disciplines. The coursework is centred on a practical transfer of methodical interrelations between Engineering and Computer Science for complete digitalisation of design, manufacturing, production and maintenance processes. In this international Master’s programme, you will use a range of modelling concepts as a basis for experimentation with complex processes in computer-aided modelling, simulation and visualisation of engineering problems. In addition, you will deepen your knowledge of information theory methods of data generation and data handling. The aim is the representation, interpretation, evaluation, and optimisation of interdisciplinary processes in construction, mechanical engineering and other industrial fields.

This prepares graduates of the English-language Digital Engineering Master’s programme in a targeted way for work in the field of virtual product and process modelling and optimisation. They are active in a diverse range of fields such as technical administration, model management, engineering analysis and consulting, and technical data analysis as well as software and product development for digital networking in industry.

Course Details

Course organisation

The Master’s programme comprises lectures, tutorials, seminars, and a group project as well as a Master’s thesis. In four semesters, a total of 120 credits must be earned in the following subject areas: Fundamentals (18 ECTS), Modelling (18 ECTS), Simulation and Validation (18 ECTS), Visualisation and Data Science (18 ECTS), Electives (12 ECTS), Project (12 ECTS), and Master Module (24 ECTS).

For an overview on the offered modules in each area, see: https://www.uni-weimar.de/en/civil-engineering/studies/master-degree-programmes/digital-engineering/curriculum/.

Group projects are offered by many professors each semester.

The elective module (12 ECTS) provides students with the opportunity to select courses from other degree programmes and departments alongside the general catalogue of courses offered in Computer Science and Media and Civil Engineering on a Master’s level. The elective module also allows for the inclusion of a range of courses from the fields of Media Studies, Media Art and Design, and Media Management as well as from the Department of Architecture and Urbanism, and the Department of Art and Design, or other fields in Civil Engineering.

The third semester is an ideal semester for students to spend abroad, since it offers greater flexibility with respect to the choice of classes. The fourth and final semester is reserved for the Master’s thesis project.

The standard duration of studies for the Digital Engineering Master’s programme is four semesters, leading to a Master of Science degree. All Master’s courses are offered in English.

For information about part-time studies, please contact the International Counsellor for details: https://www.uni-weimar.de/en/media/international/.

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Types of assessment

Credits are earned through project presentations, marked assignments, and written and oral exams.

A Diploma supplement will be issued

Yes

International elements

• Language training provided
### Costs / Funding

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition fees per semester in EUR</td>
<td>None</td>
</tr>
<tr>
<td>Semester contribution</td>
<td>The semester contribution amounts to approx. 170 EUR per semester. This is a contribution to student services and the student council. It includes free regional transport by buses and trains, student discounts for meals at the university cafeteria, theatre and museum tickets as well as access to the university sports complex. The additional fee for the student ID (&quot;Thoska&quot;) is 20 EUR (one-time only fee).</td>
</tr>
<tr>
<td>Costs of living</td>
<td>In Weimar, living expenses tend to be lower than in larger German cities. We recommend that students plan about 700 EUR per month. This includes the costs for rent, food, transportation, recreation, insurance, medical treatment, clothing, phone, Internet access, and learning materials.</td>
</tr>
<tr>
<td>Funding opportunities within the university</td>
<td>Yes</td>
</tr>
<tr>
<td>Description of the above-mentioned funding opportunities within the university</td>
<td>There are scholarships granted by Bauhaus-Universität Weimar as well as scholarships granted by the International Office, which particularly supports international students and students going abroad for studies or internships. Please see: <a href="https://www.uni-weimar.de/en/university/international/to-weimar/">https://www.uni-weimar.de/en/university/international/to-weimar/</a>.</td>
</tr>
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</table>

### Requirements / Registration

#### Academic admission requirements

**Prerequisites**

1. To be eligible for admission to this programme, a candidate must have attained with an overall final grade of at least 2.3 - his or her first subject-related degree from an institution of higher education (e.g., Bachelor of Science), a degree from a Technical College for Administration ("Verwaltungsfachhochschule") or a degree from a public or state accredited university of cooperative education ("Berufsakademie"). "Subject related" applies to degree programmes in Civil Engineering, Mechanical Engineering, Computer Science, Computer Science and Media, and other technical-scientific degree programmes from the areas of Engineering or Computer Science. The examination committee decides on the equivalence of degrees and exceptions and may also state additional requirements to be met by the student.

2. If the first degree does not involve a final scientific thesis, the candidate has to submit another piece of scientific report that the student has authored himself or herself.

3. To be eligible for admission to this programme, a candidate must provide proof of English language proficiency at the B2 level (see below)

4. The candidate must submit a one-page letter of motivation in English. The letter of motivation must include an overview of the previous academic and vocational/practical training, such as completed projects related to construction informatics and/or internships, international experience during the first degree programme, student activities, and/or academic work. Documentation of all activities is to be provided. The letter of motivation must also detail the personal future (research) perspectives about the main areas of study.
If the selection committee is not able to reach a unique consensus based on the available documents, an interview may be conducted to reveal the candidate’s competences.

The selection of applicants is conducted by a selection committee, which comprises two professors, one of each is either from Civil Engineering or Computer Science, of the degree programme "Digital Engineering". The selection committee decides which applicants meet the necessary requirements (sections 1-5) and determines which modules from the thematic area "Fundamentals" are to be completed individually in order to achieve the adaptation of qualifications.

*These regulations are subject to the condition that the Academic and Examination Regulations are approved by the President of the Bauhaus-Universität and published as a statute.

<table>
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<tr>
<th>Language requirements</th>
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| To be eligible for admission to this programme, a candidate must provide proof of English language proficiency at the B2 level as put forth by the Common European Framework of Reference for Languages (GER) in the form of:  
- proof of mastery as a native speaker (acquisition of a certificate of higher education entrance qualification or first-level professional qualification (i.e., undergraduate degree) from an English-speaking country) or  
- proof by means of one of the following internationally recognised certificates  
  - TOEFL (Internet-based score 85 or better)  
  - Cambridge Certificate First Certificate in English (FCE)  
  - IELTS, band 6.5 (at least 6.0 in each individual band)  

or by means of an equivalent certificate.

<table>
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| Applicants who graduated outside of Europe: 15 July for the following winter semester or 15 January for the following summer semester  
Applicants who graduated in Europe and do not need a visa: 30 September for the following winter semester or 31 March for the following summer semester |

<table>
<thead>
<tr>
<th>Submit application to</th>
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</table>
| Applicants who graduated outside of Europe should apply online at [http://www.uni-assist.de.](http://www.uni-assist.de)  
Applicants who graduated in Europe and do not need a visa should apply online at: [http://www.uni-weimar.de/online-bewerbung](http://www.uni-weimar.de/online-bewerbung) or at [https://weimar.gomovein.com/locallogin/5873933e547cd074f8b4567/eng](https://weimar.gomovein.com/locallogin/5873933e547cd074f8b4567/eng). |

**Services**

**Possibility of finding part-time employment**

There are opportunities for students to find teaching and research assistantships at the university or part-time jobs with local companies. Basic English is spoken nearly everywhere, as the historic city of Weimar attracts many visitors from all over the world. However, once in Weimar, you should acquire some knowledge of the German language to enhance your chances to find a job and to simplify your daily life. Jobs are offered on the "Pinnwand" message board and by the Studierendenwerk Student Service.

As a student, you are allowed to earn as much as you wish. International students are only permitted to work in Germany with a work permit. The student visa allows a maximum of 120 full days (or 240 half days) of work per year.

**Accommodation**

You can find accommodation in Weimar through Studierendenwerk Thüringen (student services Thuringia). Studierendenwerk administers approx. 1,100 apartments in the city at various locations and catering to different needs and preferences. Monthly costs for accommodation range between 105 and 280 EUR per month depending on size and location. The university itself does not provide accommodation.
Bauhaus-Universität Weimar

Bauhaus-Universität Weimar is a small and very international university with a highly distinctive spectrum of subjects. Situated in the historic city of Weimar, Germany, it originated from two progressive institutions: The Weimar Saxon-Grand Ducal Art School and the "Staatliches Bauhaus".

Different personalities from various countries have shaped the institution and developed ideas known and respected worldwide. At Bauhaus-Universität Weimar, we continue to follow a unique path that offers unparalleled opportunities by combining science and technology with art and design.

We see our university as a "Bauhaus of the 21st century" - open, experimental, innovative in the technical as well as in the aesthetic sense, and free from any imitation of the past. The university's main fields of study and research are architecture, civil engineering, art and design as well as media.

We offer an ideal space for creative academic and artistic work, supported by laboratories, workshops, studios, libraries and a favourable student-teacher ratio. Bauhaus-Universität Weimar is connected worldwide through a large network of partners, which our students benefit from through programmes such as study abroad periods as well as international projects and excursions. Among more than 200 international partners are universities and schools in Ethiopia, France, Italy, Japan, Romania, the Russian Federation, Switzerland, and the USA.
Here are some important facts from the history of the university: In 1919, Walter Gropius created the Bauhaus in Weimar – four years later, he called for a search for the "new unity of art and engineering". That meant combining the vanguard of art and design with modern industry. With this approach, the Bauhaus became the most famous school of architecture, art, and design in the 20th century.

Our university flourishes through its experimental environment, familiar atmosphere and especially through the people, who study, research and work here at the university. The best way is to experience this special atmosphere yourself. Visit us, for example, at the annual Bauhaus Summer School, and learn about what lies behind the following numbers (2018):

Four faculties – Architecture and Urbanism, Civil Engineering, Art and Design, Media
39 degree programmes
3,825 students including doctoral students
30% international students
76 professors, 12 junior professors
more than 200 partner universities and more than 500 student exchanges

University location
The historic city of Weimar is a cozy town that has had a profound influence on Europe. This becomes most evident in architecture, art and design, music, and literature.

Weimar is situated right in the middle of Thuringia, the "green heart of Germany", and is about 300 km from both the German capital, Berlin, and the German financial centre, Frankfurt am Main. Today, Weimar is a lively town with about 65,000 inhabitants and a town centre where you can reach everything within 15 minutes. The green areas of the town, such as the park on the river Ilm, include many sights, e.g., Goethe’s summer house and the palaces of Tiefurt, Ettersburg, and Belvedere. Among many others, the famous German writers Johann Wolfgang von Goethe and Friedrich Schiller walked in the park along the River Ilm. The famous pianist and composer Franz Liszt stimulated modern music, and the architects Walter Gropius and Henry van de Velde initiated modernism.

Weimar has much to offer for art lovers and culture lovers, revellers, lovers of nature, and gourmets. There are more than 20 museums, three cinemas, a national theatre and various cabaret theatres, student clubs, concerts, and multifaceted cultural events such as the traditional folk event and the "Zwiebelmarkt", not to mention Thuringian delicacies like "Rostbratwurst" (sausage), "Rostbrätel" (marinated grilled meat), and "Thüringer Klöße" (dumplings). During the summer, Weimar hosts the annual Bauhaus Summer School, Yiddish Summer Weimar (featuring klezmer music), and several art festivals. Other highlights include the "backup" film festival and Master classes at the "Hochschule für Musik Franz Liszt". In the "International Student Barometer" survey from 2016/2017, 95.4 percent of international students commend the exceptional quality of life in the city of Weimar. We hope to welcome you to Weimar soon!
Contact

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Course website: https://www.uni-weimar.de/en/civil-engineering/studies/master-degree-programmes/digital-engineering/
Prof Dr-Ing Christian Koch

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Email digeng@medien.uni-weimar.de

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