DEPARTMENT OF CIVIL ENGINEERING

Course Details				
Code	**Academic Year**			**Semester**
BAU357	3			Fall
Title	**T**	**A**	**L**	**ECTS**
Construction Informatics	3	1	1	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	This course aims to utilize information technologies in construction engineering processes, apply digital data management methods, employ building information modeling (BIM) techniques, and integrate smart construction systems.					
Content	The course covers fundamental concepts of information systems in construction engineering, building information modeling processes, database management, and software applications. Additionally, it includes digital transformation practices in construction projects, cloud-based data sharing, and the use of emerging technologies such as artificial intelligence and the Internet of Things (IoT).					
Prerequisites	-					
Coordinator	Prof.Dr. Murat HAMDERİ					
Lecturer(s)	Prof.Dr. Murat HAMDERİ					
Assistant(s)	-					
Work Placement	-					

Recommended or Required Reading	
Books / Lecture Notes	Informationsverarbeitung in Bauunternehmen Struktur der Informationen zu rBearbeitung betriebswirtschaftlicher und baubetrieblicher Aufgaben Autoren: Huhnt, Wolfgang Eastman, C., Teicholz, P., Sacks, R., & Liston, K. (2011). BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers, and Contractors. Wiley. Turk, Z. (2016). Construction Informatics: Applications in Engineering and Construction. Routledge.
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition

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Mathematics und Basic Sciences	20	%
Engineering	40	%
Engineering Design	40	%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	40
Quiz		
Assignments		
Attendance		
Recitations		
Projects		
Final Exam	1	60
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	3	42
Self-Study	13	7	91
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations	14	1	14
Laboratory	14	1	14
Projects			
Final Exam	1	4	4
		Total Work Load	**168**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

1	Can explain the use of information technologies in construction engineering projects.
2	Can develop building information modeling (BIM) processes.
3	Can utilize digital data management and construction software.

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4	Can analyze smart construction systems and emerging technologies.
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Weekly Content	
1	Introduction to Construction Informatics
2	Principles of Building Information Modeling (BIM)
3	Data Management in Construction Projects
4	Software Applications in Construction Engineering
5	Digital Transformation and Smart Construction Systems
6	Cloud-Based Data Sharing in the Construction Industry
7	Artificial Intelligence and Internet of Things (IoT) Applications
8	Midterm Exam
9	Digital Twins and Simulations
10	Data Analytics and Big Data Applications in Construction Engineering
11	Construction Robots and Automation Systems
12	Use of Virtual Reality (VR) and Augmented Reality (AR)
13	Cybersecurity and Risk Management in Construction Projects
14	Ethics and Regulatory Issues in Construction Informatics
15	General Evaluation and Project Presentations
16	Final Exam

Contribution of Learning Outcomes to Program Objectives (1-5)

	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**
1	5	5	3	5	3	3	
2	5	5	3	5	3	3	
3	5	5	3	5	3	3	
4	5	5	3	5	3	3	
5							
6							

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Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	Res. Assist. Halit Emre Uygun
Date of Compilation:	27.02.2026