School of Fine Arts Design and Architecture / Urban Design and Landscape Architecture

2023 - 2024 Academic Year

DATA DRIVEN SMART CITIES

Syllabus

Course Description					
Name	**Code**	**Semester**	**T+A Hour**	**Credit**	**ECTS**
DATA DRIVEN SMART CITIES	KTP3215129	Spring Semester	3+0	3	4

Prerequisites Courses	
Recommended Elective Courses	
Language of Instruction	Turkish
Course Level	First Cycle (Bachelor's Degree)
Course Type	Elective
Course Coordinator	Assist.Prof. Mustafa ERDEM
Name of Lecturer(s)	Assist.Prof. Şehnaz CENANİ DURMAZOĞLU
Assistant(s)	
Aim	Main objective of the course is to provide students with an understanding of smart city and big data concept, give them the confidence and skills to learn new smart city and big data technologies, and encourage them to apply recently acquired knowledge to critical problem-solving in order to design smart cities with the use of (big) data technologies and therefore enhance the quality-of-life in the cities.
Course Content	This course contains; Aim & Scope of the Course; Introduction to Data-Driven Smart City Technologies,The Fundamentals of Data-Driven Smart City Technologies,Smart City Technologies,The Fundamentals of Big Data Technologies,Urban Big Data and Its Applications,Smart Governance: Decision Making in Smart Cities,Sustainable Development Goals (SDG) for Sustainable and Smart Cities; Smart Healthcare Applications,Smart Healthcare Applications for Sustainable and Smart Cities,Smart Urban Energy Systems and Smart Mobility Applications,Data Privacy and Security,Smart Living: Livability of Cities,Presentations,Presentations,Reviews and Discussions.

Course Learning Outcomes	**Teaching Methods**	**Assessment Methods**
Develops skills to understand smart city and big data technologies.	10, 14, 18, 5, 9	C, D, E
Discusses smart city and big data technologies critically	10, 14, 18, 5, 9	C, D, E
Identify the role of information technologies in building smart cities.	10, 14, 18, 5, 9	C, D, E
Effectively and creatively applies big data technologies and their integration into a broader context.	10, 14, 18, 5, 9	C, D, E
Develops an individual and/or team research project that will be finalized and presented in an original, academic study or design.	10, 14, 18, 5, 9	C, D, E

Teaching Methods	10: Discussion Method, 14: Self Study Method, 18: Micro Teaching Technique, 5: Cooperative Learning, 9: Lecture Method
Assessment Methods	C: Multiple-Choice Exam, D: Oral Exam, E: Homework

Lecture Schedule

Sequence	Topics	Preliminary Preparation
1	Aim & Scope of the Course; Introduction to Data-Driven Smart City Technologies	
2	The Fundamentals of Data-Driven Smart City Technologies	
3	Smart City Technologies	
4	The Fundamentals of Big Data Technologies	
5	Urban Big Data and Its Applications	
6	Smart Governance: Decision Making in Smart Cities	
7	Sustainable Development Goals (SDG) for Sustainable and Smart Cities; Smart Healthcare Applications	
8	Smart Healthcare Applications for Sustainable and Smart Cities	
9	Smart Urban Energy Systems and Smart Mobility Applications	
10	Data Privacy and Security	
11	Smart Living: Livability of Cities	
12	Presentations	
13	Presentations	
14	Reviews and Discussions	

Evaluation Methods	Weight(%)
Midterm Exam	50
General Exam	50

Resources
1-Batty, M. (2018). Inventing Future Cities, MIT Press, Cambridge, MA.;
2-Batty, M. (2017), The New Science of Cities, MIT Press, Cambridge, MA.;
3-Batty, M. (2013). Big data, smart cities and city planning. Dialogues in Human Geography, 3(3), 274-279.;
4-Batty, M. (2012). Smart Cities, Big Data, Environment and Planning B, 39, 413-415.;
5-Giffinger, R., Fertner, C., Kramar, H., Kalasek, R., Pichler- Milanovic, N., & Meijers, E. (2007). Smart Cities: Ranking of European Medium-Sized Cities. Vienna. Austria: Centre of Regional Science (SRF), Vienna University of Technology.;
6-Goldsmith, S., & Crawford, S. (2014). The responsive city: Engaging communities through data-smart governance. John Wiley & Sons.;
7-Kitchin, R., & McArdle, G. (2016). What makes Big Data, Big Data? Exploring the ontological characteristics of 26 datasets. Big Data & Society, 3(1), 2053951716631130.;
8-Kitchin, R. (2014). The real-time city? Big data and smart urbanism, GeoJournal (2014) 79, 1–14.;
9-Kylili, A. & Fokaides, P.A. (2015). European smart cities: The role of zero energy buildings, Sustainable Cities and Society, 15, 86-95.;
10-Mayer-Schönberger, V., & Cukier, K. (2013). Big data: A revolution that will transform how we live, work, and think. Houghton Mifflin Harcourt.