

School of Fine Arts Design and Architecture / Architecture

2023 - 2024 Academic Year

DATA DRIVEN SMART CITIES

Syllabus

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
DATA DRIVEN SMART CITIES	MIM3115129	Fall 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			

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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.