

School of Fine Arts Design and Architecture / Architecture (English)

2023 - 2024 Academic Year

DATA DRIVEN SMART CITIES

Syllabus

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
DATA DRIVEN SMART CITIES	ARC3115245	Fall Semester	3+0	3	4
Prerequisites Courses					
Recommended Elective Courses					
Language of Instruction	English				
Course Level	First Cycle (Bachelor's Degree)				
Course Type	Elective				
Course Coordinator	Assist.Prof. Şehnaz CENANİ DURMAZOĞLU				
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 data-driven 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 and 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, 19, 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, 19: Brainstorming 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 and 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-Goldsmith, S., & Crawford, S. (2014). The responsive city: Engaging communities through data-smart governance. John Wiley & Sons.	
6-Halegoua, G. R. (2020). Smart Cities. The MIT Essential Knowledge Series, The MIT Press.	
7-Kitchin, R. (2014). The real-time city? Big data and smart urbanism, GeoJournal (2014) 79, 1–14.	
8-Mayer-Schönberger, V., & Cukier, K. (2013). Big data: A revolution that will transform how we live, work, and think. Houghton Mifflin Harcourt.	