

Course Description	
Course Code	YS 412
Course Name	SMART CITY APPLICATIONS
Prerequisite Courses	No preconditions are required.
Language of the Course	The English
Course Coordinator	
Instructor(s)	
Course Assistants	
The aim of the course	This course will introduce the concept, framework, and IoT technologies of smart cities in the above areas, as well as course project integrating with several assignments to offer practical skills training. Throughout the course, students will learn the IoT technologies in designing and implementing solutions for future smart and sustainable cities. Students are encouraged to learn practical skills to adopt technological solutions to their proposed smart city applications to further develop their innovation. Students will learn these topics through lectures, assignments, self-study, project, and presentation.
Course Content	There are six major areas including 1) Smart Mobility, 2) Smart Living, 3) Smart Environment, 4) Smart People, 5) Smart Government, and 6) Smart Economy. This course aims to provide students with a fundamental understanding of Internet of Things (IoT) technologies including sensors, electronics, communication (e.g. 5G), networking, data processing, cloud computing, Artificial Intelligence, etc.. IoT is the key technology for Smart City future applications / Future City applications.

Weekly Course Content	
Week 1	Introduce IoT Technologies theory and industrial examples, as well as the applications and future trends in smart cities with the practical examples.
Week 2	Introduce IoT Technologies theory and industrial examples, as well as the applications and future trends in smart cities with the practical examples.
Week 3	Introduce IoT Technologies theory and industrial examples, as well as the applications and future trends in smart cities with the practical examples.
Week 4	Introduce IoT Technologies theory and industrial examples, as well as the applications and future trends in smart cities with the practical examples.
Week 5	Practical tutorial will introduce sensors, micro controller unit (MCU), communication platform to help students to make prototypes and demonstrations for Smart City applications.
Week 6	Practical tutorial will introduce sensors, micro controller unit (MCU), communication platform to help students to make prototypes and demonstrations for Smart City applications.
Week 7	Practical tutorial will introduce sensors, micro controller unit (MCU), communication platform to help students to make prototypes and demonstrations for Smart City applications.
Week 8	Midterm exam.
Week 9	Practical tutorial will introduce sensors, micro controller unit (MCU), communication platform to help students to make prototypes and demonstrations for Smart City applications.
Week 10	Practical tutorial will introduce sensors, micro controller unit (MCU), communication platform to help students to make prototypes and demonstrations for Smart City applications.
Week 11	Practical tutorial will introduce sensors, micro controller unit (MCU), communication platform to help students to make prototypes and demonstrations for Smart City applications.
Week12	Practical tutorial will introduce sensors, micro controller unit (MCU), communication platform to help students to make prototypes and demonstrations for Smart City applications.
Week 13	Practical tutorial will introduce sensors, micro controller unit (MCU), communication platform to help students to make prototypes and demonstrations for Smart City applications.
Week 14	-
Week 15	Final exam

Course Learning Outcomes	
1	The student will learn about the Introduction to Smart City Blueprint and the six major areas including 1) Smart Mobility, 2) Smart Living, 3) Smart Environment, 4) Smart People, 5) Smart Government and 6) Smart Economy
2	The student will learn about the Internet of Things Technologies for the above Smart City Future Applications including 1) System Design 2) Sensors and actuators, 2) Control interface, 3) Communication interface, 4) System Model, 5) Mobile Computing, and 6) Data Processing including Cloud Computing and Artificial Intelligence.
3	Students will form groups to collaborate on projects about future applications for Smart City by using the IoT technologies. The project includes several assignments with step-by-step guidelines to help students to learn and develop the solution for the Smart City application with team work experience.
4	Students will learn about how to propose a project topic, plan for the development, execute the plan and present the work done through this project based course that will help students to strengthen their organization and presentation skills by showing their work with demonstrations as well as question and answer experiences. Final exam will help students to apply the knowledge they learned in this course to a challenge of examination with quantified results.
5	-
6	-

Contribution of the Course to Program Qualifications			Contribution Level
01	The student will have the ability to apply analytical approach, mathematics and science knowledge in software and engineering issues.		4
02	The student will have the ability to identify, define, formulate and solve a problem in software and computer systems.		5
03	The student will have gains scientific research skills in software and engineering problems, has the ability to design a system, part or process.		4
04	The student will have the ability to use the design capability, techniques and tools required for engineering applications.		2
05	The student will have the ability to design, implement and interpret experimental work and software projects by analyzing the results.		4
06	The student will have the ability to work between disciplines and teamwork.		5
07	The student will have the ability to work in international environments and adapt to different cultures.		4
08	The student will have verbal and written communication skills in Turkish and English.		5
09	The student will have the awareness of the necessity of lifelong learning and the ability to realize it.		3
10	The student will gain knowledge of legal issues with the awareness of professional and ethical responsibility.		3
11	The student will have managerial skills (leadership, organization, time and risk management, quality awareness, efficiency, etc.).		5
12	The student will have the ability to participate in social activities, to acquire regular sports habits and to use time in the best way.		5
13	The student will have the ability to find unusual ways and produce projects.		3
14	The student will have professional self-confidence, being an entrepreneur and taking initiative.		3
15	It is sensitive about the problems of the age and looks after the national interests.		4

ECTS WORKLOAD			
	Number	Duration (hours)	Number*Duration
Face to face education	14	2	28
Out-of-class study time (pre-study, reinforcement)	14	1	14
Homeworks	5	2	10
Presentation / Seminar preparation	0	0	0
Quizzes	0	0	0
Preparation for midterm exams	1	10	10
midterm exams	1	2	2
Project (Semester assignment)	0	0	0
Lab	0	0	0
field work	0	0	0
Preparation for the final exam	1	12	12
Semester final exam	1	2	2
Research	5	2	10
TOTAL WORKLOAD			88
ECTS			3

Evaluation		
SEMESTER EVALUATION	Number	Contribution Percentage
Midterm	1	65
Quiz	0	0
Homework	5	35
SEMESTER TOTAL		100
Contribution rate of mid-term evaluations to success		40
Contribution rate of the final exam to success		60
GRAND TOTAL		100

RESOURCES	
Textbook	
Helpful Resources	