

Faculty	Faculty of Engineering	
Program	B.Sc. in Civil Engineering	Elective
	B.Sc. in Computer Engineering	Elective
	B.Sc. in Electrical-Electronics Engineering	Elective
	B.Sc. in Industrial Engineering	Elective
	B.Sc. in Mechanical Engineering	Elective

Course Code	COMP 468			
Course Title in English	Introduction to Internet of Things			
Course Title in Turkish	Nesnelerin İnternetine Giriş			
Language of Instruction	English			
Type of Course	Flipped Classroom			
Level of Course	Undergraduate			
Course Category (by % of Content)	Basic Science	Basic Engineering	Engineering Design	General Education
	-	40	60	-
Semester Offered	Spring			
Contact Hours per Week	Lecture: 3 hours	Recitation: -	Lab:-	Other:-
Estimated Student Workload	150 hours			
Number of Credits	6 ECTS			
Grading Mode	Standard Letter Grade			
Pre-requisites				
Expected Prior Knowledge	None			
Co-requisites	None			
Registration Restrictions	Only Undergraduate Students			
Overall Educational Objective	To learn and design the different aspects of the IoT, including end devices, connectivity, programming, and security and privacy implications, cloud structure and big data analysis.			
Course Description	This course is about to design IoT-related functions. In the course, we will discuss IoT concepts, and we will examine all the components of an IoT structure, including the 'things' that make up the Internet of Things, the connectivity between the things, cloud structure, and the added values. We will also examine cybersecurity and privacy issues, and highlight how IoT can optimize processes and improve efficiencies in your business.			
Course Description in Turkish	Nesnelerin İnterneti (IoT) hızlı bir şekilde genişliyor ve IoT'nin ne olduğunu, nasıl çalıştığını ve iş geliştirme gücünü nasıl kullanabileceğinin anlaşılması giderek önem kazanıyor. Bu ders, öğrencilerin IoT projeleri dizayn edebilmesini sağlayacaktır. Derste IoT ile ilgili kavramları inceleyeceğiz. Bu bileşenlerin nasıl birbirine bağlandıkları, nasıl iletişim kurdukları ve üretilen verilere katma değerlerinin nasıl olduğu da dahil olmak üzere Nesnelerin İnterneti'ni oluşturan olguları ele alacağız. Ayrıca, siber güvenlik ve gizlilik konularını da inceleyeceğiz ve IoT'nin işletmedeki süreçleri nasıl optimize edebileceğini ve verimliliği artırabileceğini vurgulayacağız.			
Course Learning Outcomes and Competences	Upon successful completion of the course, the learner is expected to:			
	<ol style="list-style-type: none"> 1. identify basic IoT design considerations and generate IoT basic designs; 2. compare different IoT connectivity systems, and design the basic network; 3. implement software solutions and Big Data architectures for IoT designs; 4. produce a complete and complex IoT prototype concept design. 5. present the IoT prototype work in front of the audience. 			

Relationship of the Course with the Student Outcomes	Level	Learning Outcome(s)	Assessed by
Student Outcomes	N=None S=Supportive H=High		Exam, Project, HW, Experiment, Presentation, etc.
(1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	H	1	Exam, Assignment
(2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	H	2,3,4	Exam, Term project
(3) an ability to communicate effectively with a range of audiences	S	5	Project, Presentation
(4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	-		
(5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	-		
(6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	-		
(7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies	-		
Prepared by and Date	Assoc. Prof. İlker Bekmezci / December 2019		
Semester	Spring 2019-2020		
Name of Instructors	Assoc. Prof. İlker Bekmezci		
Course Contents	Week	Topic	
	1.	Introduction	
	2.	Basic IoT Design Considerations and Strategies	
	3.	Review of Basic Network Concepts	
	4.	Wireless Communication	
	5.	Sensor Tech/Embedded Systems and Software	
	6.	Connectivity in IoT	
	7.	Cloud and Big Data	
	8.	Security in IoT	
	9.	Prototyping	
	10.	Home net IoT, Structural health IoT	
	11.	Industrial IoT , Connected Vehicles	
	12.	Smart City, Smart Buildings	
	13.	Smart City, Smart Buildings	
	14.	Military Applications/Advanced wireless sensor networks	
	15.	Final Exam/Project/Presentation Period	
	16.	Final Exam/Project/Presentation Period	
Required/Recommended Readings	Required: Internet of Things and Data Analytics Handbook, Hwaiyu Geng, Wiley Press, 1st Edition, 2017 Recommended: Internet of Things A to Z Technologies and Applications, Wiley Press, 2018.		
Teaching Methods	Lectures/contact hours using "flipped classroom" as an active learning technique		

Homework and Projects	A whole stack IoT project design (sensors, microprocessors, gateways, clouds and big data analysis)																		
Laboratory Work	-																		
Computer Use	Project and lectures																		
Other Activities	Readings																		
Assessment Methods	<table border="1"> <thead> <tr> <th>Types of assessment</th> <th>Number</th> <th>Ratio (%)</th> </tr> </thead> <tbody> <tr> <td>Term Project</td> <td>1</td> <td>50</td> </tr> <tr> <td>Assignments</td> <td>2</td> <td>10</td> </tr> <tr> <td>Presentation</td> <td>1</td> <td>10</td> </tr> <tr> <td>Midterm.</td> <td>1</td> <td>30</td> </tr> <tr> <td>Total</td> <td></td> <td>100</td> </tr> </tbody> </table>	Types of assessment	Number	Ratio (%)	Term Project	1	50	Assignments	2	10	Presentation	1	10	Midterm.	1	30	Total		100
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Term Project	1	50																	
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Midterm.	1	30																	
Total		100																	
Course Administration	<p>Instructor's office: A523 office hours: - email address: bekmezci@mef.edu.tr</p> <p>Missing a midterm: Provided that proper documents of excuse are presented, each missed midterm by the student will be given the grade of the final exam. No make-up will be given. Missing a final: Faculty regulations. A reminder of proper classroom behavior, code of student conduct: YÖK Regulations. Academic dishonesty and plagiarism: YÖK Regulations.</p>																		

ECTS Student Workload Estimation	Activity	No/Weeks	Hours			Calculation	Explanation
		No/Weeks per Semester (A)	Preparing for the Activity (B)	Spent in the Activity Itself (C)	Completing the Activity Requirements (D)		
	Lecture/Flipped Classroom	14	1	3	1	70	A*(B+C+D)
	Assignments	2	3	1	0	8	A*(B+C+D)
	Project	12	1	3	1	60	
	Midterm	1	10	1	1	12	A*(B+C+D)
	Total Workload					150	
	Total Workload/25					6	
	ECTS					6	