

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	CE 454			
Course Title in English	Building Cost Estimation and Analysis			
Course Title in Turkish	Bina Maliyet Tahmini ve Analizleri			
Language of Instruction	English			
Type of Course	Flipped Classroom/Lecture/Project			
Level of Course	Undergraduate			
Course Category (by % of Content)	Basic Science	Basic Engineering	Engineering Design	General Education
	-	100	-	-
Semester Offered	Fall - Spring			
Contact Hours per Week	Lecture: 3 hours	Recitation:	Lab:	Other:
Estimated Student Workload	114 hours			
Number of Credits	5 ECTS			
Grading Mode	Standard Letter Grade			
Pre-requisites	None			
Expected Prior Knowledge	None			
Co-requisites	None			
Registration Restrictions	Undergraduate & Graduate Students			
Overall Educational Objective	To become familiar with the fundamentals of cost estimation methods for buildings			
Course Description	This course will familiarize the student with cost estimation methods, classification of work items, quantity estimation methods for construction, unit cost analysis methods, placement of reinforcement concerning Turkish standards (TS 500), preparation of interim and final bill and acceptance, the factors effecting the general cost and cost-price relation.			
Course Description in Turkish	Bu derste öğrenciler yapı maliyet hesaplama yöntemleri, uygulamanın iş kalemlerine ayrılması, bina metrajı hesaplama usulleri, birim maliyet analizi, TS 500'e göre donatı yerleştirilmesi, geçici ve kesin kabul işlemleri, maliyeti etkileyen faktörlerin belirlenmesi ve maliyet-fiyat ilişkisi hakkında bilgi sahibi olmaktadır.			
Course Learning Outcomes and Competencies	<p>Upon successful completion of this course, the learner is expected to:</p> <ol style="list-style-type: none"> 1. describe the key aspects of work items, quantity estimation and unit cost analysis; 2. classify the work items of a construction; 3. evaluate quantity estimation for structures (building, highway, tunnel, bridge, industrial structure, etc.); 4. apply reinforcement placement concerning Turkish standards (TS 500); 5. execute unit cost analysis; 6. learn to prepare final bill; 7. learn interim and final acceptance; 8. apply cost estimation methods on a project. 			

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	1,2,3,4,5, 6,7	Exams
(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			
(3) an ability to communicate effectively with a range of audiences			
(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	S	8	Project
(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	Prof. Rifat Akbıyıklı / December 2019		
Semester	Spring 2019-2020		
Name of Instructor	Prof. Rifat Akbıyıklı		
Course Contents	Week	Topic	
	1.	Cost concepts, cost types and cost management	
	2.	Cost concepts, cost types and cost management	
	3.	Work items, quantity estimation methods for construction, unit cost analysis methods	
	4.	Formwork, concrete works and quantity estimation	
	5.	Reinforcement placement (TS 500), reinforcement works and quantity estimation	
	6.	Reinforcement placement (TS 500), reinforcement works and quantity estimation	
	7.	Case study on quantity estimation	
	8.	Construction material and workmanship cost estimation	
	9.	Earthworks cost estimation	
	10.	Construction site and project general cost estimation concepts	
	11.	Case study on unit cost analysis and bill of quantity	
	12.	General cost estimation and final bill preparation	
	13.	Interim and final bill and acceptance	
	14.	Interim and final bill and acceptance	
	15.	Final Exam/Project/Presentation period	
	16.	Final Exam/Project/Presentation period	
Required/Recommended Readings	Required: Akbıyıklı, R. (2017), "İnşaat Yönetimi – Metraj ve Maliyet Hesapları", Genişletilmiş 3. Baskı, 803 sayfa, Birsen Yayınevi, İstanbul. Recommended: 1. Ashworth, A. (1999), "Cost Studies of Building", Longman Scientific & Technical, Harlow, 3rd. Edition, UK.		

	<p>2. Dagostine, F.R. and Feigenbaum, L. (1999), "Estimating Building Construction", 5th Edition, Prentice-Hall Inc., New Jersey, USA.</p> <p>3. Gedes, S. (1996), "Estimating for Building and Civil Engineering Works", 9th. Edition, Butterworth Heinemann Ltd., Oxford, UK.</p> <p>4. Kwakye, A.A. (1994), "Understanding Tendering and Estimating", Gower Publishing Ltd., Aldershot, England, UK.</p> <p>5. Gransberg, D.D., Popescu, C.M. and Ryan, R.C. (2006), Construction Equipment Management for Engineers, Estimators and Owners, Taylor and Francis Group, CRC Press, Boca Raton, London, UK.</p> <p>6. Ostwald, P.F. (2001), Construction Cost Analysis and Estimating, Prentice Hall, New Jersey, USA.</p> <p>7. Nunnally, S.W. (1987), Construction Methods and Management, 2nd Edition, Prentice Hall, Englewood Cliffs, NJ, USA.</p> <p>8. Diamant, L. And Tumblin, C.R. (1990), Construction Cost Estimates, 2nd Edition, John Wiley and Sons, New York, USA.</p> <p>9. Popescu, C.M., Phaobunjong, K. And Ovararin, N. (2003), Estimating Building Costs, Marcel Dekker Inc., New York, USA.</p>
Teaching Methods	Lectures/contact hours using 'flipped classroom' as an active learning technique
Homework and Projects	Project
Laboratory Work	-
Computer Use	Microsoft Office Applications, Tools for construction management
Other Activities	-
Assessment Methods	Project 40% Midterm 30% Final 30%
Course Administration	<p>Instructor's office:</p> <p>Office hours:</p> <p>E-mail address:</p> <p>Rules for attendance: YÖK Regulations</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.</p> <p>Missing a final: Faculty regulations.</p> <p>A reminder of proper classroom behavior, code of student conduct: YÖK Regulations</p> <p>Statement on plagiarism: YÖK Regulations (http://www.mef.edu.tr/tr/yonetmelikler)</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	14		3		42	A*(B+C+D)
	Midterm, Quiz	1	12	2		14	A*(B+C+D)
	Project, Assignment	1	35			35	A*(B+C+D)
	Final Examination	1	20	3		23	A*(B+C+D)
	Total Workload					114	
	Total Workload/25					4,56	
	ECTS					5	