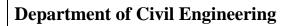
College of Engineering





CE 517 Computer Applications in Construction

CE 517	Computer Applications in Construc	etion	
Credit and	3/3 (Lectures), 0 (Tutorials), 0 (Laboratory)		
Contact hours			
Required, or	Required for a MSCE degree		
Elective			
Course	Microcomputer applications in construction management, planning,		
Description	scheduling, cost estimate, and risk analysis. Should also gain exposure to the		
	use of expert systems, data bases and other integrated packages	S.	
Prerequisites or Co-requisites	None		
Course Learning	Students completing this course successfully will be able to		
Outcomes		Related Program Outcomes	
	CLO1: Recognize and identify the most critical issues and challenges in planning and control any construction project by using the computer application.	K 1	
	CLO2: Apply the new technology in the field of construction engineering and management in real-life construction projects	S1	
	CLO3: Develop and apply various Software in real-life construction projects in the field of construction engineering and Management.	S1	
Student Outcomes related to this Course	 K1. Recognize advanced engineering knowledge, concepts and techniques interpret and analyze complex and real-life engineering problems. S1. Provide solution for complex and real-life engineering problems throug thinking and using modern engineering tools and identify its impact of ethical issues. 	th critical	
	List of Topics	Related CLOs	
	1. Course introduction, Syllabus overview, Construction Project Initiation	CL01	
	2. Project Time Management:		
	Network Diagrams: an overview for some project planning phases such WBS, logical relationship between activities, developing project network addition, this lecture will present the processes of developing the project networks via MS Project and Primavera. Critical-Path Analysis for Network Scheduling: Network Scheduling	k. In CLO3	
	Scheduling with Microsoft Project Software, Scheduling with P6 Software, Advanced Topics.		

Topics Covered	3. Project Cost Management: Project Financing and Schedule Integration: Project Cash Flow, Calculating the S-Curve, Overdraft Calculations and Interest Charges, and Using project management software to achieve these tasks.	CLO3	
	4. Resource Allocation and Leveling: Clarifying the processes of resource leveling and allocation. Using project management software for resource leveling and allocation. Time-Cost Tradeoff: Project Time-Cost Relationship, Existing TCT Techniques and software.	CLO3	
	 Construction Progress Control: Measuring Work Progress, Cost and Schedule Control, Schedule Updating, and Using project management software to achieve these tasks. 	CLO3	
	6. Cost Estimation : this lecture will clarify some aspect related to construction estimating and discussed some estimating commercial software such as Timberline and Autodesk Quantity Takeoff.	CLO3	
	7. Delay Analysis : This lecture will clarify some techniques for analyzing the delays in construction projects.	CLO2	
	8. Risk Analysis : this lecture will present an overview for risk analysis. In addition, the lecture will explain some techniques and software for risk analysis such as AHP and Expertchoice	CLO3	
	9. Building Information Modeling (BIM): This lecture will clarify the BIM and will presents some BIM tools that can be used for construction management field.	CLO3	
	10. Using BIM in Knowledge management Using BIM for Facility management	CLO2	
	11. Modeling and simulating the construction processes	CLO2	
	12. 3D Laser Scanners	CLO2	
Textbook(s) and Other Required Material	 Schwalbe, K. (2015). Information technology project management. Cengage Learning. Hegazy, T. (2002). Computer-Based Construction Project Management: Pearson New International Edition. Pearson Higher Ed. Paulson Jr, B. C. (1994). Computer applications in construction. McGraw-Hill, Inc. Williams, T. (2006). Information Technologies for Construction Managers, Architects a Engineers. Thomson Delmar Learning. 		
	 Hardin, B., & McCool, D. (2015). BIM and construction management: proven methods, and workflows. John Wiley & Sons International Project Management, Academic Press, 2003, Miner Media, Eng. International Case Studies, Bennet Lientz and Kathryn Rea, (ISBN-0-120449) 	Mgt 461,	
Grading System	Assignments 10%, Lecture Attendance 5% Project Work 25%, Midterm Exam 20% Final Exam 40%		
Instructors	Khalid S. Al-Gahtani, Associate professor, office# 2 A 15, email: kgahtani@ksu.edu.sa , Website: https://fac.ksu.edu.sa/kgahtani		
Date of Review	February, 2021		