

COURSE DESCRIPTION FORM

Course Code and Title	CHE476COMPUTER APPLICATIONS IN CHEMICAL ENGINEERING	
Course Semester	8	
Catalog Description (Content) of the Course	Use of computers in chemical engineering applications and design. Use of various programming techniques in estimation of transport properties, calculations of phase equilibria and design of unit operations in chemical processes.	
Main Textbook	1. Yeong Koo Y., Chemical Engineering Computation with MATLAB, CRC Press, 2016.	
Supporting Textbooks	1. Problem Solving In Chemical Engineering With Numerical Methods, Michael B. Cutlip, Mordechai Shacham, Prentice Hall PTR Intn Series, Upper Saddle River, NJ, 1999. 2. Dukkupati Rao V., Matlab Introduction with Applications, New Age, International Publishers, Hyderabad, 2010. 3. Mariano Martin M., Introduction to Software for Chemical Engineers, CRC Press, London, 2015. 4. Brian Hahn and Dan Valentine, Essential MATLAB for Engineers and Scientists, Academic Press, Elsevier, 2010.	
Course Credit (ECTS)	4	
Prerequisites of the Course (Compulsory attendance should be indicated here.)	There is no prerequisite for this course, Compulsory attendance (70 %)	
Type of the Course	Elective	
Instruction Language of the Course	English	
Object and Target of the Course	To show by numerous examples how to utilize computer in various applications of Chemical Engineering. To show how to make data analysis, parameter estimation of the models developed theoretically, simultaneous solution of algebraic equations required to define a system. To use simple and easily accessible programs in doing all these and to choose the examples which have direct application potentials.	
Learning Outcomes of the Course	To gain experience in using engineering programs like MATLAB . To learn basic and mathematical techniques in Chemical Engineering applications.	
Mode of Delivery	There is no prerequisite or co-requisite for this course	
Weekly Schedule of the Course	Weeks	Topics
	1	Parameter estimation, regression analysis; modeling of transport properties
	2	Parameter estimation, regression analysis; modeling of transport properties
	3	Solution of differential equations; Example from Heat Transfer
	4	Solution of differential equations; Example from Mass Transfer
	5	Solution of differential equations; Example from Heat and Mass Transfers
	6	Solution of simultaneous algebraic equations; Design of a pipe line net work
	7	Solution of simultaneous algebraic equations; Design of a pipe line net work
	8	Simulation of Heat Exchangers
	9	Simulation of Heat Exchangers
	10	Simulation of Absorption Columns
	11	Simulation of Absorption Columns
	12	Simulation of Distillation Columns
	13	Simulation of Distillation Columns
	14	Simulation of Distillation Columns

Educative Activities <i>(Credit will be determined based on the time given for these activities. Should be filled carefully.)</i>	Theoretical Study Hours of Course Per Week								
	Reading								
	Searching in Internet and Library								
	Preparing Reports								
	Preparing Presentation								
	Presentation								
	Mid-Term and Studying for Mid-Term								
Final and Studying for Final									
Assessment Criteria				Sayı	Toplam Katkı (%)				
	Midterm			2	25				
	Homework								
	Assignment								
	Projects			1	10				
	Practice								
	Quiz								
	Contribution of In-term Studies to Overall Grade			60					
	Contribution of Final Examination to Overall Grade			40					
	Attendance								
Workload of the Course	Ekinlik		Hafta sayısı	Süre Saat/Hafta	D.Sonu toplam iş yükü				
	Theoretical Study Hours of Course Per Week		14	3	42				
	Practising Hours of Course Per Week								
	Reading		7	2	14				
	Searching in Internet and Library		7	2	14				
	Designing and Applying Materials								
	Preparing Reports		1	6	6				
	Preparing Presentation		1	6	6				
	Presentation		1	1	1				
	Mid-Term and Studying for Mid-Term		2	6	12				
	Final and Studying for Final		1	5	5				
	Other								
	Total Workload				100				
	Workload / 25				4				
	ECTS Credit				4				
Course's Contribution To Program	Num.	Program Ourcomes			1	2	3	4	5
	1	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied information in these areas to model and solve engineering problems.						×	
	2	Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.						×	
	3	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose.					×		
	4	Ability to devise, select, and use modern techniques and tools needed for engineering practice; ability to employ information technologies effectively.						×	
	5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating engineering problems.					×		
	6	Ability to work efficiently in intra-disciplinary teams.			×				

	7	Ability to work efficiently in multi-disciplinary teams;	×			
	8	Ability to work individually.	×			
	9	Ability to communicate effectively in Turkish/English, both orally and in writing; Ability to write effective reports and comprehend written reports, make effective presentations,	×			
	10	prepare design and production reports, give and receive clear and intelligible instructions.		×		
	11	Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.			×	
	12	Awareness of professional and ethical responsibility.	×			
	13	Information about business life practices such as project management, risk management, and change management.	×			
	14	Information about awareness of entrepreneurship, innovation, and sustainable development.	×			
	15	Knowledge about contemporary issues and the global and societal effects of engineering practices on health, environment, and safety.	×			
	16	Knowledge about awareness of the legal consequences of engineering solutions.	×			
	17	Knowledge on standards used in engineering practice.	x			
Name of Lecturer(s) and Contact Information		1. Prof. Dr. Muzaffer BALBAŞI , mbalbasi@gazi.edu.tr				