

COURSE DESCRIPTION FORM	
Course Code and Title	KMP567- PROCESS FLOW DIAGRAMS
Course Semester	1
Catalog Content	Functions and hazards of basic process equipment, auxiliary process equipment and process service units. Formation of process flow charts. Interpretation of industrial flow diagrams. Process loss of containment.
Main Textbook	<ul style="list-style-type: none"> • Turton, R., Bailie, R.C., Whiting, W.B., Shaeiwitz, J.A., Bhattacharyya, D., Analysis, Synthesis, and Design of Chemical Processes, 4th ed., Pearson, New Jersey, 2013.
Supplementary Textbooks	<ul style="list-style-type: none"> • Peters, M.S., Timmerhaus, Klaus D., West, Ronald E. Plant Design and Economics for Chemical Engineers, 5th ed., McGraw-Hill, New York, 2003. • Seider, W.D., Seader, J.D., Lewin, D.R., Widagdo, S., Product & Process Design Principles, 3rd ed., Wiley, New York, 2010. • Sinnott, R.K. Coulson & Richardson Series: Chemical Engineering Design, 6th ed., Butterworth-Heinemann, Oxford, 2005. • Woods, R.W., "Rules of Thumb in Engineering Practice", 5th Ed. Wiley, Newyork, 2007.
Course Credit (ECTS)	6
Pre-Requisites And Co-Requisites	-
Type of the Course	Compulsory
Language of Instruction	Turkish
Object and Target of the Course	<ul style="list-style-type: none"> • To teach the analysis of flow charts of processes using chemicals.
Course Learning Outcomes	<ul style="list-style-type: none"> • Explains and evaluates flow diagrams. • Analyzes the flow charts of chemical processes. • Evaluates the deviation possibilities leading to the loss of containment.
Mode of Delivery	Lecture, Question & Answer, Demonstration
Weekly Schedule	<p>1st Week Basic Process Equipment, Functions and Hazards -Reactors, separation columns, furnace, mixing tanks, storage tanks, etc.</p> <p>2nd Week Auxiliary Process Equipment, Their Functions and Hazards -Heat exchanger, compressor, pump, fittings etc.</p> <p>3rd Week Process Services Units, Their Functions and Hazards -Energy production, service of heating and cooling</p>

agents (steam generation, hot oil, cooling water, waste management, etc.)

4th Week **Process Flow Diagrams Formation**

-Process Block Diagram; Determination of deviations from design values and measures in equipment

5th Week **Process Flow Diagrams Formation**

-Process Flow Diagram Formation and Equipment-Flow Tables; Effects of errors in process service units and auxiliary equipment on deviations from design values in main equipment

6th Week **Process Flow Diagrams Formation**

- Determination of Basic and Safety Equipped Process Control System

7th Week **Process Flow Diagrams Formation-Midterm**

8th Week **Process Flow Diagrams Formation**

9th Week **Process Flow Diagrams Formation**

-Relationship studies between Process Flow Diagrams and Process Block Diagrams with Piping and Instrumentation Diagrams

10th Week **Process Flow Diagrams Formation**

-Relationship studies between Process Flow Diagrams and Process Block Diagrams with Piping and Instrumentation Diagrams

11th Week **Process Loss Containment (LOC)**

12th Week **Project Presentations**

-Formation of Piping and Instrumentation Diagram from Process Flow Diagram in a sample production

13th Week **Project Presentations**

-Creating Process Flow Diagram and Route from Piping and Instrumentation Diagram in a sample production

14th Week **Project Presentations**

-Examination of Piping and Instrumentation Diagram in a sample production

	15 th Week	Final Exam			
Educative Activities	Theoretical Study Hours of Course Per Week : 3 Practical Study Hours of Course Per Week : - Reading : - Searching in Internet and Library : 3 Material Design and Application : 4 Preparing Reports : 3 Preparing Presentations : 2 Presentations : 1 Midterms and Studying for Midterms : 5 Final and Studying for Final : 2				
Assessment Criteria		Quantity	Total Contribution (%)		
	Midterms	1	20		
	Homework	2	20		
	Applications	-	-		
	Projects	2	20		
	Practices	-	-		
	Quizzes	-	-		
	Contribution of In-term Studies to Overall Grade		60		
	Contribution of Final Examination to Overall Grade	1	40		
	Attendance	-			
Workload of the Course	Activity	Total Number of Weeks	Duration (Weekly Hour)	Total Period Workload	
	Weekly Theoretical Course Hours	14	3	42	

	Weekly Practical Course Hours	-	-	-					
	Reading Tasks	-	-	-					
	Searching in Internet and Library	14	3	42					
	Material Design and Application	10	4	40					
	Preparing Reports	3	3	9					
	Preparing Presentations	2	2	4					
	Presentations	1	1	1					
	Midterms and Studying for Midterms	1	5	5					
	Final and Studying for Final	2	2	4					
	Other	-	-	-					
	Total Workload			147					
	Total Workload / 25			5,88					
	Course Credits (ECTS)			6					
Course's Contribution to Program	No	Program Learning Outcomes			1	2	3	4	5
	1	Developing undergraduate level competencies and deepening their knowledge to apply in the field of process safety				X			
	2	Understanding the undergraduate competencies and the interaction between the competencies gained in this program and the disciplines related to process safety				X			
	3	Using the expert level theoretical and applied knowledge acquired in the field of process safety						X	
	4	Developing the competencies gained at the undergraduate level and integrating the information gained in the field of process safety with the information from the relevant disciplines and creating new knowledge				X			
	5	Solving process safety problems using scientific research methods				X			

	6	Independently conducting studies that require expertise in the field of process safety	X					
	7	Developing new approaches to complex problems encountered in applications in the field of process safety		X				
	8	Taking responsibility and generating solutions for complex problems encountered in applications in the field of process safety	X					
	9	Taking initiative in environments that require resolution of problems related to process safety	X					
	10	Critically evaluating the information acquired about process safety and directing learning	X					
	11	Ability to systematically transfer the developments and own studies in the field of process safety in written, oral and visual forms						X
	12	Developing social relations and the set of values that direct these relationships with a critical approach and transforming them when necessary	X					
	13	Establishes oral and written communication using a foreign language (European Language Portfolio B2 level)	X					
	14	Uses computer software at the level required by the process safety field						X
	15	Uses advanced information and communication technologies at the level required by the field of process safety						X
	16	Collecting, interpreting, finalizing the data on process safety, applying and sharing them with respect to ethical values		X				
	17	Developing different perspectives on process safety issues, setting policies, making plans and evaluating the results within the framework of quality		X				

	18	Internalizing the knowledge gained in the field of process safety with the competencies gained at the undergraduate level, turning it into skills and using it in interdisciplinary studies	X					
Name of Lecturer(s) and Contact Information	Faculty Members of the Chemical Engineering Department							