

وزارة التعليم العالي والبحث العلمي
جهاز الإشراف والتسيير العلمي
دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الأكاديمي للعام الدراسي 2024-2025 للكليات والمعاهد

جامعة : جامعة سط العرب الأهلية

الكلية /المعهد : الكلية التقنية الهندسية

القسم العلمي : قسم هندسة تقنيات الوقود والطاقة

تاريخ ملء الملف : 2025/8/10

التوقيع :  اسم المعاون العلمي: أ. د. كمال السيد الجودي
التاريخ : 10/8/2025

التوقيع :  اسم رئيس القسم : أ. محمد عبد الرزاق عاظم
التاريخ : 10/8/2025

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي:

التاريخ : / /


مصادقة السيد العميد /

أ. م. د. هادي
أ. م. د. هادي
عميد الكلية التقنية الهندسية

10/8/2025



weekly lesson schedule

Course Lecturer	Asst.lec. maha munadhil salman
e-mail	Maha munadhil.ali@sa-uc.edu.iq
Title	Material and energy balance
Course Coordinator	Annual
Course Objective	Understanding the fundamentals of conservation of both Mass and Energy are fundamentals on which all Chemical Processing
Course Description	1- Understanding the fundamentals of conservation of both Mass and Energy are fundamentals on which all Chemical Processing is based. Being able to properly formulate and solve material and energy balances and in so doing integrate and interpret physical property data from different sources and in a variety of different units is an essential skills for an engineer. 2- To know the fundamental concept used when analysing the mass and energy flows in chemical processing 3- To knowledge the solve material and energy balances on chemical process systems(batch, semibatch, continuous, transient and steady state processes) and lays the foundation for subsequent in thermodynamics, unit operations and transport phenomena, sketch a flowchart and labels it. 4- To know solving process-related problems: breaking a process down into its components, establishing the relations between known and unknown process variables, assembling the information needed to solve for the unknowns using a combination of experimentation, empiricism, and the application of natural laws, and, finally, putting the pieces together to obtain the desired problem solution.

Textbook	Richard M. Felder and Ronald W. Rousseau,"ELEMENTARY PRINCIPLES OF CHEMICAL PROCESSES", Third Edition John Wiley & Sons, Inc., 2005 Edition, with Integrated Media and Study Tools.			
References	Mass and Energy Balancing Calculations for Plant Design, David Pritchard and Shaik Feroz, © 2021 Taylor & Francis Group, LLC			
final exam 60	project	daily exams	lab	Semester daily exams
	-10	10	10	10
General Notes				

The Republic of Iraq
Ministry of Higher Education
and Scientific Research
Scientific Supervision and
Evaluation Authority



University: Shatt Al-Arab University
College
College: Shatt Al-Arab University
College
Department: Department of
Computer Technology Engineering
The second stage
Name of the lecturers: Asst.prof. Dr.
Mazin Abdulalah Alawan
..Scientific title: Asst.prof

weekly lesson schedule

Week	Date	Topics Covered	Number of Hours	Notes
1	16-9-2024	Revision to Material Balances.	4	
2	23-9-2024	Material and energy balances on steady state processes. .identify a convenient basis of calculation calculate the degrees of freedom.	4	
3	30-9-2024	Multiple unit system involving reaction	4	
4	7-10-2024	recycle, and purge	4	
5	14-10-2024	Differential balance, integral balance,	4	

		unsteady state material balances on non-reactive systems,		
6	21-10-2024	Flow sheets,.	4	
7	28-10-2024	Balances for batch and continuous plants.	4	
8	5-11-2024	Elements of energy balances.	4	
9	12-11-2024	,Change in pressure at constant temperature-sensible heat, heat capacities.	4	
10	19-11-2024	Energy balance on single-phase systems, energy balance on phase change systems.	4	
11	26-11-2024	Heats of solution and mixing, latent heat of vaporization,	4	
12	3-12-2024	Enthalpy calculation. Concentration charts, Partial saturation and humidity, Psychometric charts	4	
13	10-12-2024	Heats of reaction, Heats of formation, heat of combustion, adiabatic systems	4	
14	17-12-2024	. unsteady state energy balances on reactive systems	4	

lecturers signature:

Head of Department signature: