



Ministry of Higher Education and
Scientific Research - Iraq
Al-Mustaqbal University
College for engineering
Department of Chemical Engineering and
petroleum industries



MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Principles of chemical engineering III		Module Delivery
Module Type	CORE		<input type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UOMU0102041		
ECTS Credits	5		
SWL (hr/sem)	120		
Module Level	2	Semester of Delivery	
Administering Department	Chemical engineering and petroleum industries	College	
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor	Lecturer: Dr. Abbas Khaleel Ibrahim Al-Gburi	e-mail	Abbas.khaleel.ibrahim@uomus.edu.iq
Peer Reviewer Name		e-mail	
Review Committee Approval		Version Number	

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Principles of chemical engineering III	Semester	1
Co-requisites module	None	Semester	
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	1- Have a deep knowledge, wide scope and improved understanding of the mechanisms in energy balance as well as a better insight into analytical and empirical methods applied in analysis of energy balance related problems. 2- Gain the knowledge necessary to apply the energy balance equation in open and closed systems. 3- To provide experience for students to solve energy balance for different process.		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Gain a general concept of energy balance. 2. An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics. 3. An ability to apply the engineering design and energy balance for different process to produce solutions that meet specified needs with consideration for public health and safety, and global, cultural, social, environmental, economic, and other factors as appropriate to the discipline. 4. An ability to function effectively as a member or leader of a team that establishes goals, plans tasks, meets deadlines, and creates a collaborative teams and inclusive environment.		
Indicative Contents المحتويات الإرشادية	<ul style="list-style-type: none"> • Energy balance for a closed system. • Energy balance for an open system. • Energy balances for steam turbine. • Energy balances for compressors. • Energy balances for pumps. • Mechanical Energy Balance. • Mechanical energy balance equation. • Bernoulli's Equation. 		
Learning and Teaching Strategies استراتيجيات التعلم والتعليم			
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple problems and design involving activities that are interesting to the students.		

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	75	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	120		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	15% (5)	4,8,12	LO2, LO3, LO4 and LO5
	Online assignments	2	10% (5)	Continuous	LO1-LO6
	Onset assignments	2	10% (5)	Continuous	LO1-LO6
	Report	1	5% (5)	14	LO1 and 6
Summative assessment	Midterm Exam	2hr	10% (10)	10	LO2, LO3, LO4 and LO5
	Final Exam	3hr	50% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Kinetic energy, potential energy.
Week 2	Steam turbine, boilers and coolers.
Week 3	Compressors, mechanical energy balance and Bernoulli's equation.
Week 4	Calculation enthalpy, heat capacity and change in enthalpy.
Week 5	Energy balance for open systems with multiple inputs and outputs.
Week 6	Calculation the heat of reaction and heats of formation.
Week 7	Heat of formation or element balance method.
Week 8	Concept of atomic and heat balances.
Week 9	Mathematical formula for atomic equilibrium.

Week 10	Enthalpy changes and mixing processes.
Week 11	Simultaneous energy balances
Week 12	Enthalpy changes and mixing processes.
Week 13	Enthalpy calculations and mixing processes.
Week 14	Energy balance for bioprocesses.
Week 15	Energy balance in the separation process.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	David M. Himmelblau and James B. Riggs, "Basic Principles and Calculations in Chemical Engineering", Seventh Edition, (2004).	Yes
Recommended Texts	David M. Himmelblau, "Basic Principles and Calculations in Chemical Engineering", Sixth Edition, (1996).	
Websites		

APPENDIX:

GRADING SCHEME مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 – 100	Outstanding Performance
	B - Very Good	جيد جدا	80 – 89	Above average with some errors
	C - Good	جيد	70 – 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 – 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				



ملاحظة: هذا النموذج تم وضعه وتقديمه من قبل مديرية ضمان الجودة في وزارة التعليم العالي والبحث العلمي