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Academic Program
And
Course Description Guide
Department of Oil Refining Technologies

2026/2025

Introduction

The educational program is considered a coordinated and organized package of academic courses that includes procedures and experiences organized in the form of academic vocabulary, the main purpose of which is to build and refine the skills of graduates, making them qualified to meet the requirements of the labor market. It is reviewed and evaluated annually through internal or external audit procedures and .programs such as the external examiner program

The description of the academic program provides a brief summary of the main features of the program and its courses, indicating the skills that students are working to acquire based on the objectives of the academic program. The importance of this description is evident because it represents the cornerstone of obtaining program accreditation, and the teaching staff participates in writing it under the supervision of .the scientific committees in the scientific departments

This guide, in its second edition, includes a description of the academic program after updating the vocabulary and paragraphs of the previous guide in light of the latest developments in the educational system in Iraq, which included a description of the academic program in its traditional form (annual, quarterly), in addition to adopting the description of the academic program circulated according to the book of the Department of Studies, T.M. 3 /3. 2906 on 5/3/2023 regarding programs .that adopt the Bologna Process as a basis for their work

In this area, we can only emphasize the importance of writing descriptions of academic programs and courses to ensure the smooth conduct of the educational .process

Concepts and terminology

Description of the academic program : The description of the academic program provides a concise summary of its vision, mission, and goals, including an accurate description of the targeted learning outcomes according to specific learning .strategies

Course description : Provides a necessary summary of the most important characteristics of the course and the learning outcomes that the student is expected to achieve, demonstrating whether he has made the most of the available learning .opportunities. It is derived from the program description

Program Vision: An ambitious picture for the future of the academic program to .be a developed, inspiring, motivating, realistic and applicable program

explains the objectives and activities necessary to **Program message:** It briefly .achieve them, and also identifies the program's development paths and directions

Program objectives: These are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and .observable

Curriculum structure: All courses/study subjects included in the academic program according to the approved learning system (semester, annual, Bologna track), whether it is a requirement (ministry, university, college, or scientific .department), along with the number of study units

that the **Learning outcomes:** A consistent set of knowledge, skills, and values student has acquired after the successful completion of the academic program. The learning outcomes for each course must be determined in a way that achieves the .program objectives

and learning strategies : They are the strategies used by a faculty member to and they are plans that are followed to , and learning develop student teaching reach learning goals. That is, it describes all classroom activities and extracurricular .to achieve the learning outcomes of the programme

Academic Program Description Form

University name: Al-Furat Al-Awsat Technical University

College/Institute: Technical Institute/Najaf

Scientific Department: Department of Oil Refining Technologies

Name of the academic or professional program: Technical Diploma in the Field of Oil Refining

Name of final certificate: Diploma Oil Refining Techniques

Academic system: Annual

Description preparation date: 2026

Date of filling the file: 25-5-2026

Signature:

Head of Department Name:

Assit. Prof. Dr. Salah M. Salih

Date: 10 -6-2025

Signature:

Scientific Associate Name:

Assit. Prof. Dr. Salah Mahdi Al-Adly

Date: -6-2025

Director of the Quality Assurance and University Performance Department

Dr. Zaid Abdukareem Alhamidawi

Date: -6-2026

Signature:

Approval of the Dean

Prof. Dr. Haider Hassan Abd Hussein

1. **See the program**
It is to provide and prepare graduates with high scientific competence in the fields of crime investigation, criminal investigations, fingerprinting, and how to collect, deal with, and analyze evidence that contributes to diagnosing perpetrators according to scientific foundations.

2. **Program message**
.State the program's mission as stated in the university's bulletin and website

3. **Program Goals**
General statements that describe what the program or institution intends to .achieve

4. **Program accreditation**
Does the program have program accreditation? From which side? both

5. **Other external influences**
The official sponsor of the program for forensic techniques is the Najaf Technical Institute and the Al-Furat Al-Awsat Technical University

6. Program structure				
* comments	percentage	Study unit	Number of courses	Program structure
Genral	%9	12	6	Enterprise requirements
Suport	%24	32	7	College requirements
Specialized	%67	94	10	Department requirements
/	/	Satisfied	/	summer training
/	/	/	/	Other

.Notes may include whether the course is core or elective *

7. Program description				
Year/level	Course or course code	Name of the course or course	Credit hours	
First year			theoretical	practical
		Petroleum Chemistry	**2**	**3**
		Light Oils	**3**	**3**
		Mass Transfer	**2**	**2**
		Engineering Drawing	**-**	**3**
		Computer Applications	**1**	**-**
		Industrial Management and Occupational Safety	**2**	**-**
		Mathematics	**2**	**-**
		Measurements	**1**	**2**
		Human Rights and Democracy	**1**	**-**
		Arabic 1	**1**	**-**
		English 1	**1**	**-**
		Workshop	**-**	**6**
Second year		Petroleum Refininy	**2**	**3**
		Heavy oils	**2**	**3**
		Heat transfer	**3**	**3**

		Petrochemicals	**2**	**3**
		Measurement and control technologies	**2**	**2**
		Industrial equipment	**2**	**2**
		Computer technology2	**1**	**-**
		Arabic language2	**1**	**-**
		English Language 2	**1**	**-**
		Crimes of the Ba'ath Regime	**1**	**-**
		Graduation Project	**-**	**2**

8. Expected learning outcomes of the programme	
Knowledge	
1 –Providing students with information and theoretical knowledge on relevant topics. 2 –Preparing students to continue their studies to higher levels. 3- Enhancing students' knowledge of most scientific terms in the specialty, facilitating their development process. 4- Providing students with knowledge of the field of oil refining and petrochemical industries.	
Skills	
1- Developing the student's skills and technical capabilities. 2- Skill in managing work sites and organizational processes. 3- Skill in using tools and knowledge at the appropriate time and place. 4- Providing graduates with technical and creative skills and abilities in the field of oil refining and petrochemical industries, as well as the ability to think systematically.	
Value	
1. Preparing highly qualified personnel specialized in oil refining technologies. 2. Continuous scientific development. 3. Engaging with practical realities within government institutions and the private sector. 4. Commitment to professional ethics.	

9. **Teaching and learning strategies**
- Theoretical lectures (Word, PDF, and PowerPoint formats), seminars, discussion groups, and practical training in science laboratories, scientific updates, summer training, educational videos, scientific trips, and field visits. - Learning and training in science laboratories, laboratories, and engineering workshops to acquire practical skills through student groups (team work).

10. Evaluation methods
1- Oral tests to assess the student's academic background. 2- Daily tests. 3- Midterm tests (written and practical) 4- Comprehensive (final) tests (written and practical) 5- Reports and projects

11. education institution						
Faculty members						
Scientific rank	**Specialization**		**Special requirements/skills (if (any**		**Preparing the teaching staff**	
	general	**private**			**Permanet staff employee**	**lecturer**
Assistant Professor	Chemical Engineering	Chemical			1	2
Assistant Professor	Chemistry	Polymer			1	-
Assistant Professor	Mechanical Engineering	Thermal/Power			3	1

teacher	Communications Engineering	Communications			3	1
Assistant teacher	Chemistry	Analytical			2	2
Assistant teacher	Mechanical Engineering	Mechanical			3	2

Professional development
Orienting new faculty members
There are some requirements that contribute to the development process for new faculty, including: 1- Teaching methods courses 2- Validity test 3- Arabic language, computer and other courses
Professional development for faculty members
The professional development process occurs in several ways 1- Various scientific courses 2- Workshops 3- Scientific seminars

12. **Acceptance standard**
First: Admission Requirements to the Institute: - Student admission requirements must be approved within the regulations of the Ministry of Higher Education and Scientific Research and Central Admissions. - Must be medically fit. Second: Admission Requirements to the Department: - Must be a graduate of a secondary school (Scientific/Applied) - Must be a graduate of a vocational secondary school (Oil Refining/Chemical/Petrochemical)

13. **The most important sources of information about the program**
1- The scientific curricula prescribed by the specialized sectoral committees in the engineering specialization/oil refining. 2- Amendments proposed by the department's faculty, not exceeding 20% of the prescribed curriculum, based on labor market requirements and scientific developments in various fields of science and modern industry. 3- Specialized seminars and training courses with beneficiary entities. 4- Iraqi public universities and international universities related to the specialization.

14. Program development plan
The program development plan depends mainly on two things 1- Continuous questionnaires from the labor market and graduates 2- Legal powers to amend curricula and obtain approvals from relevant authorities

Program skills chart															
				Learning outcomes required from the programme											
Year/level	Course Code	Course Name	Essential or optional ?	Knowledge				Skills				Value			
				A1	A2	A3	A4	B 1	B2	B3	B4	C1	C2	C3	C4
First year	Petroleum Chemistry		Specialized	*		*					*		*		
	Light Oils		Specialized		*	*		*				*			
	Mass Transfer		Specialized		*		*					*		*	
	Engineering Drawing		Support		*					*		*	*		
	Computer Applications		Support	*	*					*			*		
	Industrial Management and Occupational Safety		Support	*							*			*	
	Mathematics		Support	*	*										
	Measurements		Specialized	*		*	*								
	Human Rights and Democracy		General												
	Arabic 1		General	*		*			*	*					*
	English 1		Support	*							*			*	*
	Workshop		Specialized	*	*	*			*	*	*	*	*	*	*

- **Please check the boxes corresponding to the individual learning outcomes from the program subject to evaluation**

Program skills chart															
				Learning outcomes required from the programme											
Year/level	Course Code	Course Name	Essential or optional ?	Knowledge				Skills				Value			
				A1	A2	A3	A4	B 1	B2	B3	B4	C1	C2	C3	C4
Second year	Petroleum Refiniy		Specialized	√	√	√	√	√	√	√	√	√	√	√	√
	Heavy oils		Specialized	√	√	√	√	√	√	√	√	√	√	√	√
	Heat transfer		Specialized	√	√	√	√	√		√	√	√	√	√	√
	Petrochemicals		Specialized	√	√	√	√	√	√	√	√	√	√	√	√
	Measurement and control technologies		Specialized	√	√	√	√	√	√	√	√	√	√	√	√
	Industrial equipment		Specialized	√	√	√	√	√	√	√	√	√	√	√	√
	Computer technology2		Support	√	√	√	√	√			√	√	√	√	√
	Arabic language2		General	√	√	√	√	√	√	√	√	√	√	√	√
	English Language 2		General	√	√	√	√	√	√	√	√	√	√	√	√
	Crimes of the Ba'ath Regime		General	√	√	√	√	√	√	√	√	√	√	√	√
	Graduation Project		Support	√	√	√	√	√		√	√	√	√	√	√

- **Please check the boxes corresponding to the individual learning outcomes from the program subject to evaluation**

اسم المادة	باللغة العربية	كيمياء نفط	السنة الدراسية	الساعات الأسبوعية			
	English	Petroleum chemistry		ن	ع	مج	عدد الوحدات
لغة التدريس	اللغة العربية		الأولى	2	3	5	10

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs)	Teaching Method	Assessment Method
1	2	Historical Introduction	Learn a brief historical summary and economic evolution of crude oil	Theory + Practical	Real-time questions, assignments, quizzes, monthly exams, reports
2	2	Crude Oil Formation	Learn about the geochemical stages and theories of crude oil formation and accumulation	Theory + Practical	Real-time questions, assignments, quizzes, monthly exams, reports
3	2	Crude Oil Evaluation	Learn about the standard analytical methods of crude oil grading and evaluation	Theory + Practical	Real-time questions, assignments, quizzes, monthly exams, reports
4	2	Crude Oil Specifications	Learn about the physical and chemical specifications of distinct crude oil types	Theory + Practical	Real-time questions, assignments, quizzes, monthly exams, reports
5-6	2	Distillation Curves	Learn about standard distillation curves calculation and profiling (TBP, ASTM, EFV)	Theory + Practical	Real-time questions, assignments, quizzes, monthly exams, reports
7	2	Refining Product Properties	Learn about the properties of refining fractions (properties and testing of liquefied petroleum gases)	Theory + Practical	Real-time questions, assignments, quizzes, monthly exams, reports
8	2	Refining Product Properties	Learn about the properties of refining fractions (properties, octane ratings of naphtha and gasoline)	Theory + Practical	Real-time questions, assignments, quizzes, monthly exams, reports

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs)	Teaching Method	Assessment Method
9	2	Refining Product Properties	Learn about the properties of refining fractions (properties and combustion criteria of kerosene and jet fuel)	Theory + Practical	Real-time questions, assignments, quizzes, monthly exams, reports
10	2	Refining Product Properties	Learn about the properties of refining fractions (properties and cetane index of heavy and light diesel fuel)	Theory + Practical	Real-time questions, assignments, quizzes, monthly exams, reports
11-16	2	Solid & Semi-Solid Properties	Learn about solid and semi-solid petroleum products characterization (wax, asphalt, bitumen)	Theory + Practical	Real-time questions, assignments, quizzes, monthly exams, reports
17-30	2	Phase Behavior	Learn about hydrocarbon phase behavior, vapor-liquid equilibrium (VLE), and PVT properties	Theory + Practical	Real-time questions, assignments, quizzes, monthly exams, reports

الساعات الأسبوعية				السنة الدراسية	زيوت خفيفة	باللغة العربية	اسم المادة
عدد الوحدات	مج	ع	ن		Light oil	English	
12	6	3	3	الأولى	اللغة العربية		لغة التدريس

Week	Unit / Topic Name	Required Learning Outcomes	Teaching / Learning Methods	Evaluation Methods	Hours (Th. / Pr.)
1 - 5	Introduction to Crude Oil	Composition and definition of crude oil	Theory / Practical Sessions	Ad-hoc questions, homework assignments, short quizzes, monthly exams, weekly reports	3 / 3
6 - 10	Crude Oil Conditioning for Refining	Gas-oil separation plants (GOSP)	Theory / Practical Sessions	Ad-hoc questions, homework assignments, short quizzes, monthly exams, weekly reports	3 / 3

Week	Unit / Topic Name	Required Learning Outcomes	Teaching / Learning Methods	Evaluation Methods	Hours (Th. / Pr.)
11 - 16	Production and Purification Units of Light Distillates	Types of refineries, principles of the distillation process, atmospheric distillation unit	Theory / Practical Sessions	Ad-hoc questions, homework assignments, short quizzes, monthly exams, weekly reports	3 / 3
17 - 23	Chemical Additives & Laboratory Testing	Types of performance-improving materials for petroleum derivatives	Theory / Practical Sessions	Ad-hoc questions, homework assignments, short quizzes, monthly exams, weekly reports	3 / 3
24 - 30	Supplementary Production Units	• Isomerization unit • Alkylation unit • Polymerization unit • Hydrogen production	Theory / Practical Sessions	Ad-hoc questions, homework assignments, short quizzes, monthly exams, weekly reports	3 / 3

اسم المادة	للغة العربية با	الرياضيات	السنة الدراسية	الساعات الأسبوعية			
	English	Computer technologies		ن	ع	مج	عدد الوحدات
لغة التدريس	اللغة العربية		الأولى	1		1	2

Week	Hours	Subject / Topic	Intended Learning Outcomes (ILOs)	Teaching Method	Assessment Method
1-5	2	Calculus / Differentiation	Limits / Derivatives definitions and fundamental rules	Theory	Real-time questions, assignments, quizzes, monthly exams, reports
6-10	2	Calculus / Differentiation	Slope calculation, geometric and physical derivative applications (speed, acceleration)	Theory	Real-time questions, assignments, quizzes, monthly exams, reports
11	2	Calculus / Differentiation	Maximum and Minimum problems, Optimization, Critical and Inflection points analysis	Theory	Real-time questions, assignments, quizzes, monthly exams, reports

Week	Hours	Subject / Topic	Intended Learning Outcomes (ILOs)	Teaching Method	Assessment Method
12	2	Calculus / Differentiation	The mean value theorem and applications. L'Hôpital's rule for evaluating indeterminate limits	Theory	Real-time questions, assignments, quizzes, monthly exams, reports
13-14	2	Calculus / Integration	Integration (Antiderivatives), Rules of Integration, Basic Differential equations, Indefinite integration	Theory	Real-time questions, assignments, quizzes, monthly exams, reports
15-16	2	Calculus / Integration	First fundamental theorem of integral calculus, Rules of definite and indefinite integrals	Theory	Real-time questions, assignments, and quizzes
17-19	2	Calculus / Integration	Approximation methods of definite integral. Transcendental functions differentiation & integration (ln(x), e^x, a^x, log(x))	Theory	Real-time questions, assignments, quizzes, monthly exams, reports
20-23	2	Inverse Trigonometric Functions	The Inverse of Trigonometric functions: Evaluation of Domain, Range, algebraic properties, and graphs	Theory	Real-time questions, assignments, quizzes, monthly exams, reports
24	2	Methods of Integration	Advanced integration techniques: Integration by parts, partial fractions, reduction formulas, integration by substitution, and improper integrals	Theory	Real-time questions, assignments, quizzes, monthly exams, reports
25	2	Methods of Integration	Advanced integration techniques application and rigorous practice problems	Theory	Real-time questions, assignments, quizzes, monthly exams, reports
26-27	2	Calculus / Integration	Engineering applications on definite integral: Areas under curves, rotational volumes, surfaces area, arc length	Theory	Real-time questions, assignments, quizzes, monthly exams, reports
28	2	Matrices / Determinants	Determinants properties, evaluation techniques, and linear system applications	Theory	Real-time questions, assignments, quizzes, monthly exams, reports
29	2	Matrices / Determinants	Matrices algebra, inverses, Cramer's rule, and application to multi-variable equations	Theory	Real-time questions, assignments, quizzes, monthly exams, reports

Week	Hours	Subject / Topic	Intended Learning Outcomes (ILOs)	Teaching Method	Assessment Method
30	2	Differential Equations	First-order ordinary differential equations formulation and analytical solution methodologies	Theory	Real-time questions, assignments, quizzes, monthly exams, reports

اسم المادة	باللغة العربية	القياسات ونقل الملكية	السنة الدراسية	الساعات الأسبوعية			
	English	Measurement and custody		ن	ع	مج	عدد الوحدات
لغة التدريس	اللغة العربية		الأولى	1	2	3	6

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
1-5	3	Terms & Definitions	Introduction to terms & definitions; Methods & Devices of Measuring; Measurement Types; Pressure measurement; Temperature measurement.	Theory + Practical	Quizzes, Monthly Exams, Weekly Reports

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
6-10	3	Meter-Based Measurements	Factors affecting flow measurement in meters; Safety & accuracy requirements for custody transfer measurements using meters; Meter types & operating principles (Positive Displacement meters).	Theory + Practical	Quizzes, Monthly Exams, Weekly Reports
11	3	Flowmeter Technologies	Ultrasonic meters, Vortex meters, Differential Pressure meters, and other types of flowmeters.	Theory + Practical	Quizzes, Monthly Exams, Weekly Reports
12	3	Tank Types & Safety	Tank types, technical terminology for level measurement, and safety & accuracy requirements for custody transfer measurements via tanks.	Theory + Practical	Quizzes, Monthly Exams, Weekly Reports
13-15	3	Automatic Level Measurement	Automatic level measurement: 1. Float and tape method, 2. Electromechanical method, 3. Hydrostatic method, 4. Hybrid method, 5. Microwave level measurement.	Theory + Practical	Quizzes, Monthly Exams, Weekly Reports

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
16	3	Marine Vessel Tanks	Automatic level measurement systems and level tracking inside marine tanker vessels.	Theory + Practical	Quizzes, Monthly Exams, Weekly Reports
17-19	3	Sampling & Density Analysis	Sampling: 1. Sampling methods, 2. Qualitative measurements, 3. Density and relative density determination methods.	Theory + Practical	Quizzes, Monthly Exams, Weekly Reports
20-23	3	Qualitative Petroleum Tests	Water and sediment determination methods; Ash percentage determination; Viscosity testing; Sulfur content determination.	Theory + Practical	Quizzes, Monthly Exams, Weekly Reports
24	3	Calibration & Verification	Meter calibration and meter factor determination; Classes of calibration; Mass/Gravimetric calibration; Volumetric calibration.	Theory + Practical	Quizzes, Monthly Exams, Weekly Reports
25	3	Tank Calibration Methods	Tank calibration methods: Strapping method for cylindrical storage tanks; Calibration of vertical cylindrical tanks using the reference line method.	Theory + Practical	Quizzes, Monthly Exams, Weekly Reports

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
26-30	3	Advanced Calibration Systems	Calibration of vertical cylindrical tanks by optical triangulation; Optical line-of-sight method (EODR electronic method); Calibration of transmitters (Pneumatic and Electronic).	Theory + Practical	Quizzes, Monthly Exams, Weekly Reports

اسم المادة	للغة العربية با	الرسم الهندسي	السنة الدراسية	الساعات الأسبوعية			
	English	**Engineering Drawing**		ن	ع	مج	عدد الوحدات
لغة التدريس	**اللغة العربية**		**الأولى**		**3**	**3**	**6**

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
1	3	Engineering Drawing Foundations	Introduction to engineering drawing principles and sheet planning.	Practical	In-class assignments, Quizzes, Monthly Exams

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
2-3	3	Instruments & Formatting	Engineering graphic instruments and their appropriate handling/usage.	Practical	In-class assignments, Quizzes, Monthly Exams
4-5	3	Line Geometries & Dimensions	Engineering drawing lines (types, weights, and dimensional definitions).	Practical	In-class assignments, Quizzes, Monthly Exams
6-8	3	Graphic Geometry Shapes	Graphic Geometry: Constructing shapes, angles, tangents, and polygons.	Practical	In-class assignments, Quizzes, Monthly Exams
9-10	3	Orthographic Projections	Graphic Projection Theory: Orthographic projections and view planning.	Practical	In-class assignments, Quizzes, Monthly Exams
11-30	3	Advanced Isometric & Assembly	Advanced projection layouts, sectional views, isometric sketching, and industrial application assemblies.	Practical	Drawing portfolio evaluations, exams

اسم المادة	باللغة العربية	حقوق الانسان	السنة الدراسية	الساعات الأسبوعية			
	English	Human rights		ن	ع	مج	عدد الوحدات
لغة التدريس	اللغة العربية		الأولى	1		1	2

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
1-15	1	Human Rights Definitions	Historical evolution and international definitions of primary civil, economic, and political rights.	Theory	Written Exams, Oral Questions
16-30	1	Democracy & State Structures	Types of government; mechanisms of parliamentary and democratic governance; election systems and constitutional voting rights.	Theory	Written Exams, Reports

اسم المادة	للغة العربية	إدارة صناعية وسلامة مهنية	السنة الدراسية	الساعات الأسبوعية			
	English	Industrial management & Occupational Safety		ن	ع	مج	عدد الوحدات
لغة التدريس	اللغة العربية		الأولى	2		2	4

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
1-15	2	Industrial Management Foundations	Systems approach to industrial plants; continuous and intermittent production flows; cost estimations; fixed capital vs. working capital criteria.	Theory	Written Exams, Quizzes, Projects
16-30	2	Occupational Safety Engineering	Industrial plant safety codes; occupational hazard isolation; personal protective equipment (PPE); risk assessment matrices in chemical/oil refinery environments.	Theory	Written Exams, Case Studies, Quizzes

اسم المادة	للغة العربية	اللغة الإنكليزية(1)	السنة الدراسية	الساعات الأسبوعية			
	English	English		ن	ع	مج	عدد الوحدات
لغة التدريس	اللغة الأنكليزية		الأولى	1		1	2

Week	Hours	Unit / Topic Title	Teaching Method	Assessment Method
7-8	1	Unit 5: The way I live	Theoretical	Real-time questions, assignments, quizzes, monthly exams, reports
9-10	1	Unit 6: Everyday life	Theoretical	Real-time questions, assignments, quizzes, monthly exams, reports
11-12	1	Unit 7: Places I like	Theoretical	Real-time questions, assignments, quizzes, monthly exams, reports
13-15	1	Unit 8: My favorites	Theoretical	Real-time questions, assignments, quizzes, monthly exams, reports
16-19	1	Unit 9: Where I live	Theoretical	Real-time questions, assignments, quizzes, monthly exams, reports
20-23	1	Unit 10: Times past	Theoretical	Real-time questions, assignments, quizzes, monthly exams, reports
24-25	1	Unit 11: We had a great time!	Theoretical	Real-time questions, assignments, quizzes, monthly exams, reports
26-27	1	Unit 12: I can do that!	Theoretical	Real-time questions, assignments, quizzes, monthly exams, reports
28-29	1	Unit 13: Please and thank you	Theoretical	Real-time questions, assignments, quizzes, monthly exams, reports
30	1	Unit 14: Here and now	Theoretical	Real-time questions, assignments, quizzes, monthly exams, reports

اسم المادة	للغة العربية	انتقال المادة	السنة الدراسية	الساعات الأسبوعية			
	English	Mass transfer		ن	ع	مج	عدد الوحدات
لغة التدريس	اللغة العربية / الانكليزية		الأولى	2	2	4	8

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
1	4	Introduction to Mass Transfer	Definitions of mass transfer, transport mechanisms, similarities with heat and momentum transfer, and engineering applications in refining.	Theory + Practical	Quizzes, Weekly Reports
2	4	Mass Transfer Rate & Flux in Gases	Calculation of mass transfer rate and diffusion flux in gases, and diffusivity coefficients in binary gas mixtures.	Theory + Practical	Quizzes, Weekly Reports, Monthly Exam
3	4	Multi-component Systems & Maxwell Theory	Study of multi-component systems and the application of Maxwell Theory in molecular diffusion.	Theory + Practical	Quizzes, Weekly Reports
4	4	Diffusion in Binary Liquid Mixtures	Calculation of mass transfer rate and diffusion flux in binary liquid mixtures.	Theory + Practical	Quizzes, Weekly Reports, Monthly Exam

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
5	4	Empirical Correlations for Diffusion Rate	Extraction of diffusion rates and utilization of empirical correlations to determine diffusivity coefficients in liquids.	Theory + Practical	Quizzes, Weekly Reports
6-8	4	Convective Mass Transfer Coefficients	Convective mass transfer principles, dimensionless groups (Sherwood, Schmidt, Reynolds numbers), film theory, and boundary layer correlations.	Theory + Practical	Quizzes, Weekly Reports, Monthly Exam
9-11	4	Interphase Mass Transfer	Two-film theory, overall mass transfer coefficients, driving forces, and local vs. overall resistance calculations in packed towers.	Theory + Practical	Quizzes, Weekly Reports
12-15	4	Gas Absorption Operations	Equilibrium solubility of gases in liquids, material balances for packed and tray absorption columns, operating lines, and minimum solvent flow rates.	Theory + Practical	Quizzes, Weekly Reports, Mid-Term Exam

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
16-18	4	Design of Absorption Columns	Calculation of packed column height, Number of Transfer Units (NTU), Height of a Transfer Unit (HTU), flooding velocity, and pressure drop parameters.	Theory + Practical	Quizzes, Weekly Reports
19-22	4	Distillation Fundamentals	Vapor-liquid equilibrium (VLE), ideal solutions (Raoult's Law), relative volatility, non-ideal systems, and batch distillation (Rayleigh equation).	Theory + Practical	Quizzes, Weekly Reports, Monthly Exam
23-26	4	Continuous Fractionation Column	Fractionating column design using the McCabe-Thiele method, feed line (q-line) dynamics, total and minimum reflux ratios, and optimum reflux selection.	Theory + Practical	Quizzes, Weekly Reports
27-28	4	Liquid-Liquid Extraction	Principles of liquid-liquid extraction, ternary phase diagrams, industrial extraction equipment (mixer-settlers, packed columns), and solvent selection criteria.	Theory + Practical	Quizzes, Weekly Reports, Monthly Exam

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
29	4	Drying Operations	Principles of drying, equilibrium moisture content, rate of drying curves, constant and falling rate periods, and industrial dryer configurations.	Theory + Practical	Quizzes, Weekly Reports
30	4	Course Review & Final Framework	Comprehensive synthesis of mass transfer units, practical laboratory project presentations, and final academic course content review.	Theory + Practical	Final Practical & Written Exams

اسم المادة	باللغة العربية	تكرير النفط	السنة الدراسية	الساعات الأسبوعية			
	English	Petroleum Refinery		نظري	عملي	المجموع	عدد الوحدات
لغة التدريس	اللغة العربية / الانكليزية		الثانية	2	3	5	10

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
1	5	Evaluation of Crude Oil Intro	Historical and technological introduction to crude oil refining.	Theory + Practical	Written + Practical Exam
2	5	Evaluation Frameworks	Methods of crude evaluation and formal classification indices of petroleum.	Theory + Practical	Written + Practical Exam
3	5	Petroleum State Mixes	Calculation methods and plotting curves of multi-component petroleum state mixes.	Theory + Practical	Written + Practical Exam
4	5	Fraction Analysis	Chemical analysis methods of crude petroleum fractions.	Theory + Practical	Written + Practical Exam
5	5	Preheating Units	Introduction to preheating and processing units for crude feedstocks.	Theory + Practical	Written + Practical Exam
6	5	Heater Heat Transfer	Conduction, convection, and radiation profiles inside process heaters.	Theory + Practical	Written + Practical Exam

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
7	5	Pipe Still Furnaces	Pipe Still Heater configuration, mechanics, and industrial configurations.	Theory + Practical	Written + Practical Exam
8	5	Thermal Efficiencies	Thermodynamic calculations of furnace heat balances and efficiency.	Theory + Practical	Written + Practical Exam
9	5	Crude Distillation Basics	Introduction to atmospheric and vacuum fractional distillation.	Theory + Practical	Written + Practical Exam
10	5	Column Material Balances	Heat and material balances across fractionating columns.	Theory + Practical	Written + Practical Exam
11	5	Reflux System Kinds	Kinds of reflux systems (hot, cold, and circulating reflux).	Theory + Practical	Written + Practical Exam
12	5	Reflux Ratio Dynamics	Quantitative evaluation and regulation of reflux flow ratios.	Theory + Practical	Written + Practical Exam
13	5	Side-Draw Columns	Side-draw product criteria and column temperature profile lines.	Theory + Practical	Written + Practical Exam
14	5	Fraction Cutting Calculations	Analytical calculation of side temperature and fraction cutting.	Theory + Practical	Written + Practical Exam

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
15	5	Refinery Troubleshooting	Troubleshooting and solving industrial distillation column unit problems.	Theory + Practical	Written + Practical Exam
16	5	Thermal Cracking Process	Process requirements and product advantages of thermal cracking.	Theory + Practical	Written + Practical Exam
17	5	Heavy Oil Coking Basics	Coking definition and evaluation of heavy oil coking process feedstocks.	Theory + Practical	Written + Practical Exam
18	5	Coking Plant Units	Major coking units: Delayed Coking, Fluid Coking, and flexi-coking configurations.	Theory + Practical	Written + Practical Exam
19	5	Visbreaking Kinetics	Introduction to visbreaking kinetics and the principal decomposition reactions occurring during visbreaking operations.	Theory + Practical	Written + Practical Exam
20	5	Fluid Catalytic Cracking (FCC)	Introduction to Fluid Catalytic Cracking (FCC) and Moving-Bed Catalytic Cracking; catalyst regeneration cycles.	Theory + Practical	Written + Practical Exam
21	5	LPG Gas Recovery	Liquefied petroleum gas recovery and production engineering.	Theory + Practical	Written + Practical Exam

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
22	5	LPG Sweetening Methods	LPG chemical sweetening and sulfur compound treatment.	Theory + Practical	Written + Practical Exam
23	5	LPG Fraction Storage	LPG fraction separation, high-pressure storage, and cylinder packaging loops.	Theory + Practical	Written + Practical Exam
24	5	Catalytic Reforming Units	Introduction and role of the Catalytic Reformer unit in high-octane gasoline production; feedstock preparation and catalytic conversion paths.	Theory + Practical	Written + Practical Exam
25	5	Acid Alkylation Systems	Acid-catalyzed alkylation processes (HF and H2SO4 systems) for premium fuel blending components.	Theory + Practical	Written + Practical Exam
26	5	Naphtha Isomerization	Isomerization of light naphtha fractions to boost product octane numbers.	Theory + Practical	Written + Practical Exam
27	5	Hydrogen Purity Generation	Hydrogen generation, processing, and high-purity cleaning steps for hydrotreaters.	Theory + Practical	Written + Practical Exam

اسم المادة	باللغة العربية	زيوت ثقيلة	السنة الدراسية	الساعات الأسبوعية			
	English	Heavy oil		نظري	عملي	المجموع	عدد الوحدات
لغة التدريس		اللغة العربية / الانكليزية	الثانية	2	3	5	10

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
28	5	Octane Product Blending	Octane blending mathematics and final product specification adjustments.	Theory + Practical	Written + Practical Exam
29	5	Refinery Utility Networks	Refinery utility networks and industrial manufacturing protocols for base lubricating oils.	Theory + Practical	Written + Practical Exam
30	5	Dewaxing Loops	Solvent dewaxing process mechanics and cold-filtration processing loops.	Theory + Practical	Written + Practical Exam

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs)	Teaching Method	Assessment Method
1	2	Heavy Oils	Introduction to heavy oil industry	Theoretical Lectures	Oral + Presentation
2	2	Lubricating Oils	Functions, properties, and composition of lubricating oils	Theoretical Lectures	Oral + Presentation
3	2	Lubricating Oil Production	Vacuum Distillation Unit	Theoretical Lectures	Oral + Presentation
4	2	Lubricating Oil Production	Operating variables of vacuum distillation processes	Theoretical Lectures	Oral + Presentation

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs)	Teaching Method	Assessment Method
5	2	Lubricating Oil Production	Propane Deasphalting Unit (PDA)	Theoretical Lectures	Oral + Presentation
6	2	Lubricating Oil Production	Operating conditions, general problems, and supporting equipment for PDA unit	Theoretical Lectures	Oral + Presentation
7	2	Lubricating Oil Production	Furfural Solvent Extraction Unit	Theoretical Lectures	Oral + Presentation
8	2	Lubricating Oil Production	Furfural solvent specifications and operating conditions for the furfural extraction unit	Theoretical Lectures	Oral + Presentation
9	2	Lubricating Oil Production	Dewaxing Unit	Theoretical Lectures	Oral + Presentation
10	2	Lubricating Oil Production	General specifications of solvents and operating conditions for the dewaxing unit	Theoretical Lectures	Oral + Presentation
11	2	Lubricating Oil Production	Hydrotreating Unit for oil and wax	Theoretical Lectures	Oral + Presentation
12	2	Lubricating Oil Production	Hydrogenation equations for sulfur, nitrogen, and olefin compounds, and operating conditions for the hydrotreating unit	Theory + Practical	Oral + Presentation
13	2	Quiz	First Continuous Assessment Evaluation	Quiz	Quiz
14	2	Improving Additives for Lube Oils	Detergents and Dispersants	Theoretical Lectures	Oral + Presentation
15	2	Improving Additives for Lube Oils	Antioxidants and Extreme Pressure (EP) additives	Theoretical Lectures	Oral + Presentation
16	2	Improving Additives for Lube Oils	Rust inhibitors and Viscosity Index (VI) improvers	Theoretical Lectures	Oral + Report
17	2	Improving Additives for Lube Oils	Pour point depressants and Anti-foam agents	Theoretical Lectures	Oral + Presentation
18	2	Improving Additives for Lube Oils	Metal deactivators and Corrosion inhibitors	Theoretical Lectures	Oral + Presentation
19	2	Laboratory Tests for Lube Oils	Viscosity and Viscosity Index (VI)	Theoretical Lectures	Oral + Presentation
20	2	Laboratory Tests for Lube Oils	Sulfur content evaluation parameters	Theoretical Lectures	Oral + Report

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs)	Teaching Method	Assessment Method
21	2	Laboratory Tests for Lube Oils	Pour point and Carbon residue tests	Theoretical Lectures	Oral + Presentation
22	2	Laboratory Tests for Lube Oils	Freezing point and Auto-ignition temperature determination	Theoretical Lectures	Oral + Presentation
23	2	Laboratory Tests for Lube Oils	Pour point and Flash point metrics	Theoretical Lectures	Oral + Report
24	2	Laboratory Tests for Lube Oils	Cloud point and Color scale verification	Theoretical Lectures	Oral + Presentation
25	2	Quiz	Second Continuous Assessment Evaluation	Quiz	Quiz
26	2	Classification of Lube Oils	Classification standard of base oils	Theoretical Lectures	Oral + Presentation
27	2	Classification of Lube Oils	Classification standard of finished commercial oils	Theoretical Lectures	Oral + Presentation
28	2	Classification of Lube Oils	Energy-conserving lubricants and formulation	Theoretical Lectures	Oral + Presentation
29	2	Classification of Lube Oils	Final types of lubricating oils and their specialized chemical properties	Theoretical Lectures	Oral + Presentation
30	2	Classification of Lube Oils	Multi-grade automotive and engine oils criteria	Theoretical Lectures	Oral + Presentation

اسم المادة	باللغة العربية	معدات صناعية	السنة الدراسية	الساعات الأسبوعية			
	English	Industrial tools		نظري	عملي	المجموع	عدد الوحدات
لغة التدريس	اللغة العربية / الانكليزية		الثانية	2	2	4	8

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs)	Teaching Method	Assessment Method
1	2	Pumps	Definition of the pump and its operational benefits	Theoretical Lectures	Oral
2	2	Parts and Types of Pumps	Pump components, mechanical working principles, and types of pumps	Theoretical Lectures	Oral + Presentation
3	2	Pump Failures	Common malfunctions in industrial pumps and systematic maintenance methods	Theoretical Lectures	Oral + Report
4	2	Compressors	Introduction to industrial air and gas compressors	Theoretical Lectures	Oral
5	2	Positive Displacement Compressors	Working principle and classification of positive displacement compressors	Theoretical Lectures	Oral
6	2	Positive Displacement Compressors	Malfunctions in positive displacement compressors and maintenance guidelines	Theoretical Lectures	Oral + Report
7	2	Centrifugal / Turbo Compressors	Centrifugal compressors, aerodynamic working principles, and industrial types	Theoretical Lectures	Oral
8	2	Engines / Motors	Introduction to prime movers, mechanical engines, and motors	Theoretical Lectures	Oral
9	2	Turbine Engines	Introduction to turbine-driven systems and engine configuration	Theoretical Lectures	Oral
10	2	Steam Turbine Engines	Thermodynamic introduction to steam turbine engines and applications	Theoretical Lectures	Oral
11	2	Gas Turbine Engines	Introduction to gas turbine cycles, engines, and operational plants	Theoretical Lectures	Oral + Report

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs)	Teaching Method	Assessment Method
12	2	Calculation Circuits	Diesel engines thermodynamics and layout calculation circuits	Theory + Practical	Written + Practical
13	2	Quiz	Mid-term course evaluation	Quiz	Quiz
14	2	Tanks / Storage Vessels	Introduction to industrial storage tanks and safety parameters	Theoretical Lectures	Oral
15	2	Tanks / Storage Vessels	Atmospheric pressure tanks design and utilization	Theoretical Lectures	Oral
16	2	Tanks / Storage Vessels	Floating roof storage tanks mechanisms and vapor loss control	Theoretical Lectures	Oral + Report
17	2	Tanks / Storage Vessels	High pressure storage tanks and pressurized containment vessels	Theoretical Lectures	Oral
18	2	Reactors	Introduction to chemical reactors and kinetics foundation	Theoretical Lectures	Oral
19	2	Reactors	Chemical reactor design principles, mass balances, and geometry	Theoretical Lectures	Oral
20	2	Reactors	Classification and types of chemical reactors (batch, CSTR, PFR)	Theoretical Lectures	Oral + Report
21	2	Industrial Chillers / Freezers	Introduction to industrial chillers, cooling cycles, and heat sinks	Theoretical Lectures	Oral
22	2	Industrial Chillers / Freezers	Refrigeration mediums, environmental impacts, and thermodynamic fluids	Theoretical Lectures	Oral
23	2	Industrial Chillers / Freezers	Most important industrial refrigeration fluids and selection matrices	Theoretical Lectures	Oral + Report
24	2	Industrial Chillers / Freezers	Secondary cooling and refrigeration mediums (brines and glycol)	Theoretical Lectures	Oral
25	2	Quiz	Second term periodic evaluation	Quiz	Quiz
26	2	Pressure Permeation Devices	Pressure permeation equipment and mass transfer components	Theoretical Lectures	Oral
27	2	Pressure Permeation Devices	Vacuum pumps, jet pumps, and gas aspirators / ejectors	Theoretical Lectures	Oral

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs)	Teaching Method	Assessment Method
28	2	Curriculum Review	Review and synthesis of pump and compressor frameworks	Curriculum Review	Curriculum Review
29	2	Curriculum Review	Review and synthesis of reactor and vessel frameworks	Curriculum Review	Curriculum Review
30	2	Curriculum Review	Comprehensive course curriculum review and final preparation	Curriculum Review	Curriculum Review

اسم المادة	باللغة العربية	انتقال حرارة	السنة الدراسية	الساعات الأسبوعية			
	English	Heat transfer		نظري	عملي	المجموع	عدد الوحدات
لغة التدريس	اللغة العربية / الانكليزية		الثانية	3	3	6	12

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs)	Teaching Method	Assessment Method
1	3	Concepts and Mechanisms of Heat Flow	Understanding and applying the lecture principles	Theoretical Lectures	Oral Evaluation
2	3	Heat Transfer in Boiling and Condensation	Understanding fluid phase transitions and thermal fluxes	Theoretical Lectures	Oral + Presentation
3	3	Conduction - Basic Equations	Deriving Fourier's law and boundary conditions	Theoretical Lectures	Oral + Report
4	3	Generalised One Dimensional Heat Conduction Equation	Applying differential thermal conduction balances	Theoretical Lectures	Oral Evaluation
5	3	Steady State Conduction Without Heat Generation	Solving temperature profiles across standard geometries	Theoretical Lectures	Oral Evaluation
6	3	Plane Wall Conduction	Analyzing thermal circuits and series-parallel plane matrices	Theoretical Lectures	Oral + Report
7	3	Thermal Contact Resistance	Evaluating solid-solid interface drops and conduction impediments	Theoretical Lectures	Oral Evaluation
8	3	Steady State Conduction With Heat Generation	Solving inner core volumetric heat generation profiles	Theoretical Lectures	Oral Evaluation
9	3	Hollow Cylinder with Heat Generation	Solving temperature profiles for specified surface states	Theoretical Lectures	Oral Evaluation

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs)	Teaching Method	Assessment Method
10	3	Heat Transfer from Extended Surfaces	Analyzing fin performance, efficiency, and heat loss enhancement	Theoretical Lectures	Oral Evaluation
11	3	Generalised One Dimensional Equation (Extended)	Fins of uniform cross-sectional area and optimization	Theoretical Lectures	Oral + Report
12	3	Principles of Convection	Introduction to hydrodynamic and thermal boundary layers	Theory + Practical	Written + Practical Exam
13	3	External Flow Convection	Flow over flat plates, cylinders, and tube banks parameters	Theoretical Lectures	Quiz Evaluation
14	3	Natural Convection	Free convection mechanisms, buoyancy forces, and Grashof parameters	Theoretical Lectures	Oral Evaluation
15	3	Condensation and Boiling Kinetics	Analyzing pool boiling curve phases and film condensation models	Theoretical Lectures	Oral Evaluation
16	3	Thermal Radiation: Properties and Processes	Emissivity, absorptivity, blackbody radiation laws, and intensity	Theoretical Lectures	Oral + Report
17-18	3	Thermal Radiation: Enclosure Exchange	View factor derivation and gray surface radiation exchanges	Theoretical Lectures	Oral Evaluation
19	3	Heat Exchangers	Classification of industrial recovery units, parallel and counter flows	Theoretical Lectures	Oral Evaluation
20	3	Heat Exchanger Design and Selection	Industrial sizing criteria and fluid arrangement constraints	Theoretical Lectures	Oral + Report
21	3	Multipass and Cross Flow Heat Exchangers	Correction factors applications for shell-and-tube setups	Theoretical Lectures	Oral Evaluation
22	3	Requirements of Good Heat Exchanger	Analyzing fouling factor, pressure drops, and economy indices	Theoretical Lectures	Oral Evaluation
23	3	Temperature Measurement of a Gas by Thermocouple	Combined convective and radiation heat transfer corrections	Theoretical Lectures	Oral + Report
24	3	Advanced Combined Thermal Corrections	Error elimination in high-temperature industrial gas readings	Theoretical Lectures	Oral Evaluation
25	3	Mechanism of Nucleate Boiling	Analyzing critical heat flux constraints and bubbles dynamics	Theoretical Lectures	Quiz Evaluation
26	3	Solar Radiation	Solar constants, solar angles, and flat plate collector tracking	Theoretical Lectures	Oral Evaluation
27	3	Overall Heat Transfer Coefficient	Deriving composite thermal network resistances (U coefficient)	Theoretical Lectures	Oral Evaluation
28	3	Log Mean Temperature Difference Method	Applying LMTD sizing and performance rating solutions	Theoretical Review	Curriculum Synthesis
29	3	Practical Applications of Heat Exchangers	Refinery pre-heat train networks and condenser operations	Theoretical Review	Curriculum Synthesis

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs)	Teaching Method	Assessment Method
30	3	Heat Pipes	Two-phase closed loop thermosyphons and ultra-high conductivity	Theoretical Review	Curriculum Synthesis

اسم المادة	باللغة العربية	تقنيات القياس والسيطرة	السنة الدراسية	الساعات الأسبوعية			
	English	Control and Measurement		نظري	عملي	المجموع	عدد الوحدات
لغة التدريس		اللغة العربية / الانكليزية	الثانية	2	2	4	8

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
1	4	Measurement Objectives	Objectives of measurement and control technology, and standard technical terms.	Theory + Practical	Written + Practical Exam
2	4	Precision and Tolerance	Error types, calculation of precision, accuracy, and instrument tolerance standards.	Theory + Practical	Written + Practical Exam
3	4	Transmitters & Records	Signal transmitters, direction guides, recorders, and standardization units.	Theory + Practical	Written + Practical Exam
4	4	Ohm's & Capacitor Principles	Principles of electricity; electrical energy and power; Ohm's law, resistors, and capacitors.	Theory + Practical	Written + Practical Exam

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
5	4	AC & DC Electromagnetism	Magnetism, electromagnetism, Direct Current (DC), Alternating Current (AC), and inductors.	Theory + Practical	Written + Practical Exam
6	4	Kirchhoff's Networks	Complex networks and circuits analysis using Kirchhoff's laws.	Theory + Practical	Written + Practical Exam
7	4	AVO Multimeters & Metrics	Electrical measuring meters: operation of Voltmeters (V), Ammeters (A), and AVO multimeters.	Theory + Practical	Written + Practical Exam
8	4	Wheatstone Balance Bridges	Power measurement circuits and bridge-balancing techniques using Wheatstone bridges.	Theory + Practical	Written + Practical Exam
9	4	Transformer Wire Layouts	Electrical transformers: building layout, wire connections, and functional steps.	Theory + Practical	Written + Practical Exam
10	4	Industrial Motors & Generators	Electrical machines: industrial generators and motors operation principles.	Theory + Practical	Written + Practical Exam
11	4	Automated Control Loops	Advanced principles of instrument operation and automated measurement loops.	Theory + Practical	Written + Practical Exam

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
12-30	4	Mechanical Pressure Control	Mechanical pressure measurements, industrial gauges, electronic sensors, timers, and pneumatic/hydr aulic loop regulators.	Theory + Practical	Written + Practical Portfolio

اسم المادة	باللغة العربية	تطبيقات الحاسوب/2	السنة الدراسية	الساعات الأسبوعية			
	English	Computer application/2		نظري	عملي	المجموع	عدد الوحدات
لغة التدريس		اللغة العربية / الانكليزية	الثانية	1	-	1	2

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
1-10	1	Excel Refinery Metrics	Microsoft Excel advanced engineering projects, formula auditing, data charts, and automated refinery metrics.	Theory + Demo	Practical Quizzes, Assignments
11-20	1	Access Databases & Presentations	Microsoft Access database configuration for plant tracking; PowerPoint master layout designs for scientific project reporting.	Theory + Demo	Practical Quizzes, Projects

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
21-30	1	Network Topologies & Mail	Computer local networks (LAN), hardware topology, secure internet browsing, and official corporate E-mail communication protocols.	Theory + Demo	Written Tests, Reports

اسم المادة		السنة الدراسية	الساعات الأسبوعية			
باللغة العربية	جرائم البعث		نظري	عملي	المجموع	عدد الوحدات
English						
لغة التدريس	اللغة العربية / الانكليزية	الثانية	1	-	1	2

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
1-17	1	Political & Civic Violations	Analysis of human rights violations, tracking international definitions of war crimes, forced displacements, and militarization of civic society.	Theory	Written Evaluation
18	1	Scorched Earth Policies	Destruction of cities and local villages under scorched earth military policies.	Theory	Written Evaluation

Week	Hours	Unit / Topic Title	Intended Learning Outcomes (ILOs) / Main Vocabulary	Teaching Method	Assessment Method
19	1	Environmental Ahwar Disaster	Draining of the southern Iraqi Marshes (Ahwar eco-disaster parameters).	Theory	Written Evaluation
20	1	Agricultural Groves Destruction	Bulldozing of domestic date palm groves, native trees, and seasonal crops.	Theory	Written Evaluation
21-29	1	Mass Graves Forensics	Comprehensive multi-week systematic analysis of mass graves, tracking forensics, legal case mapping, and humanitarian impact (Parts 1 to 9).	Theory	Written Evaluation
30	1	Course Content Review	Final framework synthesis, reporting outcomes, and academic course content review.	Theory	Written Final Exam