Academic program description form

University name: Tikrit University College/Institute: College of Education for Pure Sciences Scientific Department: Department of Physics Name of academic or professional program: Bachelor's degree Name of final degree: Bachelor of Physics Academic system: annual

Description preparation date: The beginning of the 2024-2025 academic year Date of filling the file: 12/1/2025

Signature: Juff

Name of Department Head: Assist. prof. Mohsen Hassan Ali Date: 19 / 1/2024

Signati Name an Scientific Assis Prof. Dr. Mohammad Ahmed Jassim Date: 19 / 1/2024

Check the file by:

Quality Assurance and Performance Evaluation Division Name of the Director of the Quality Assurance and Performance Evaluation Division: Assist. Prof. Muammar Abdulaziz Kamel

Date: 1/19/2025

the signature

Professor Doctor ALi Abdul Majeed Shihab College of Education for Pure Sciences

Authentication of the Dean

1. see the program

Improving the level of performance in the various fields of physical sciences mechanics, optics, electricity, magnetism, atomic and nuclear physics, quantum and solid physics, lasers and electromagnetism, taking into account the need to keep pace with the development witnessed by the higher educational renaissance by finding the best services and equipment for academic cadres of faculty members, Providing training and development opportunities for technicians and administrators, and graduating job creators instead of graduating job seekers, by qualifying them in the pregraduation and basic education stages on research and development skills, innovation, entrepreneurship, and entrepreneurship, and involving students in everything that would develop their skills and help them be creative. Innovation, not just presentation, and transforming knowledge into wealth through research, development and innovation.

2. Program message

Graduating qualified students who possess scientific logical thinking and scientific research skills in science. The department provides the best modern scientific technologies for educational services to students at the university and higher education levels, and works to develop skills that enable them to integrate into all fields accurately and effectively. It supports the movement of scientific research and cognitive interaction in order to continuously communicate with scientific and cultural development in the world, It meets the renewed needs of society in a way that achieves comprehensive and sustainable human development and enables national, regional and global competition and the transformation of knowledge into wealth through research, development and innovation, and the growing role of partnerships between research, development and innovation in universities on the one hand and production and service institutions on the other hand. Meeting the country's need for competent and qualified scientific cadres. To be future leaders in the field of education, By creating the appropriate scientific environment for scientific and skill growth and offering high-quality academic programs that keep pace with the developments of the times

3. Program objective

1. Preparing specialized cadres to support educational institutions

- 2. That the student is able to use the knowledge he has received
- 3. That the student is able to benefit from knowledge and how to employ it
- 4. That the student acquires the skill of education and teaching

5. That the student can embody the knowledge he has acquired and develop it in the profession he is pursuing

6. Graduating qualified students to complete their postgraduate studies (Master's - PhD) in various specializations of physics

4. Program accreditation

Ministry of High Education and Scientific research

5. Other External Influences

6. Program Structure **Program Structure** Number of **Study Unit** Percentage Notice Courses 5 12 7% Essential Enterprise requirements Essential 12 50 29% College requirements 64% Essential 21 110 Department requirements Summer training Other

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

7. Program Description

Credi	t hours	Name of the course	Course	Year/level
Practical	Theoretical		Code	
2	3	Electric and magnetic	ELP021	First
	2	Heat and properties of matter	THP041	First
	3	Mathematics	MAP031	First
2	3	Mechanics	MEP011	First
-	2	Arabic	Ar 017	First
-	2	Calculators	C 016	First
	1	Educational psychology	Psy 017	First
-	2	Foundations of education	F 016	First
-	1	Human rights and democracy	Hr 013	First
2	3	Electric and magnetic	ELP032	Second
2	3	Optics	OPP012	

-	3	Mathematics	MAP022	Second
-	2	Sound and wave motion	WMP042	Second
-	2	astronomy	SSP052	Second
-	2	psychology	Psy 017	Second
-	2	Scientific research method	Srm 015	Second
-	2	Educational administration	Eda 015	Second
2	3	Electronics	ELP013	Third
	3	Thermodynamics	THP033	Third
2	3	Atomic and molecular	ATP023	Third
-	3	Analytical mechanics	AM P043	Third
-	2	Teaching methods	Tem 018	Third
-	2	Counseling and mental health	Com 019	Third
		nealth		
-	3	Solid state	SOP024	Fourth
2	3	Nuclear	NUP014	Fourth
-	3	Quantum physics	QUP034	Fourth
-	2	Laser	LAP044	Fourth
-	3	Electromagnetic theories	EMR46	Fourth
-	2	View and apply	Va 019	Fourth
-	2	Measurement and evaluation	Me 018	Fourth

8. Expected learning outcome of the programmer

Knowledge

Cognitive Goals	1- Enabling students to know the importance of studying physics
	2- Enabling students to know the historical role of Arab scientists in
	the field of physics
	3-Enabling students to overcome the difficulties that hinder their
	studies
	4- Enabling students to formulate observable and measurable cognitive
	and behavioral goals
	5- Enabling students to know the importance of classroom activity and
	how to activate it in school life
	6- Enabling students to know the impact of scientific knowledge of
	physics in developing intellectual aspects

Skills						
General an	nd qualifying skill	1-Learning about m	-			
goals		2-Knowing everyth rapid development	-	ld of physics t	o keep pace w	1th the
		3- Holding scientifi		inars and wor	kshops	
The p	rogram's skill				1	
objectives	-	2- The student mu	st have the abilit	ty to employ	practical labo	oratory
		skills	thorse the shilites t			
Values		3- The student must	t nave the ability t	o link causes	to causes	
values						
Education	al values	Continuous innovat Competing in the	-		ing to standa	ords of
		excellence.	education moust	ry and adner	ing to standa	105 01
9. Teachir	ng and Learning s	trategies				
1- The intr	oductory method					
2- Lecture	•					
	l application in lab	oratories				
	ion and dialogue	oracones				
5- Flipped	•					
	ation methods					
1- Weekly re	eports					
2- Practical	-					
3- Weekly, 1	nonthly and annual te	sts				
4- Graduatio						
5- Field visit						
11. Facult	-					
Faculty m	embers					
	the Teaching		Specializ	ation		Scie
staff						ntif
		Requirements/			name	ic
Lecturer	permanent	Skills (if any)	Private	General	nunic	
	•					ran
						k
	✓		Nano	Physics	Nadeem	prof

	Electronics	sciences	Khaled	
			Hassan	
\checkmark	Nuclear	Physics	Asmaa	prof
		sciences	Ahmed	
			Aziz	
✓	Solid/Solid	Physics	Abdullah	prof
		sciences	Mahmoud	
			Ali	
\checkmark	Solid	Physics	Niran Fadel	prof
		sciences	Abdul-	
	0.111	DI :	Jabbar's	C
↓ ↓	Solid	Physics	Adnan	prof
		sciences	Raad Ahmed	
	Solid	Physics	Khaled	prof
	SUIU	sciences	Hamdi	PIOL
		501011005	Rezig	
	offspring	Physics	Mohsen	Assi
	BB	sciences	Hassan Ali	st.
				Prof
✓	Solid	Physics	Ayed	Assi
		sciences	Najm Saleh	st.
				Prof
\checkmark	solid/materials	Physics	Muammar	Assi
		sciences	Abdulaziz	st.
			Kamel	Prof
\checkmark	Solid	Physics	Hanan	Assi
		sciences	Reda Abdel	st.
	Nonotoshuolosu	Dhavaiaa	Ali	Prof
	Nanotechnology	Physics sciences	Qahtan Novan	Assi st.
		sciences	Abdullah	st. Prof
	Solid	Physics	Walaa	Assi
	Solid	sciences	Mahfouz	st.
		Selences	Muhammad	Prof
			Amin	
✓	Solid	Physics	Rasha	Assi
		sciences	Hamed	st.
			Ahmed	Prof
	Lasers and	Physics	Qasim	Assi
	molecular	sciences	Hammadi	st.
	spectra		Mahmoud	Prof
	Solid	Physics	Ibrahim Kl. 1 C	Assi
		sciences	Khalaf	st. Drof
	Solid	Dhusias	Salman Planet	Prof
	50110	Physics sciences	David is	Assi st.
		501011005	safe	st. Prof
✓	Solid	Physics	Abbas	1101
	50114	sciences	Kasoub	Teac
			Jarallah	her
\checkmark	Nanotechnology	Physics	Alaa Yusuf	Teac
	- 01	4		J

	and renewable	sciences	Ali	her
	energies	sciences	7 111	ner
✓	Solid	Physics	Hassan	Teac
		sciences	Hamada	her
			Ali	
✓	Methods of	Physics	Ahmed	Teac
	teaching	sciences	Talab Sabar	her
	physics Solid	Dhavaiaa	Shahad	Teac
	Solid	Physics sciences	Ahmed	her
		sciences	Dhiab	lici
✓	Solid	Physics	Khaled	Teac
		sciences	Majoul	her
			Turkish	
✓	Solid	Physics	Ali Hussein	Teac
		sciences	Muhammad	her
✓	Solid	Physics	Omar Adel	Teac
	~	sciences	Jadaan	her
	Solid	Physics	Safa Khalil	Assi
		sciences	Ibrahim	st. Teac
				her
	Solid	Physics	Amna Raad	Assi
	, cond	sciences	Dahham	st.
				Teac
				her
✓	Nuclear	Physics	Hafsa Taha	Assi
		sciences	Ahmed	st.
				Teac
	0 -1: 1	Dhave	A 1: -	her
	Solid	Physics sciences	Alia Muhammad	Assi st.
		sciences	Alwan	St. Teac
			1 XI VY AII	her
✓	English	Physics	Roula	Assi
		sciences	Fawaz	st.
			Hammad	Teac
				her
	Solid	Physics	Mustafa	Assi
		sciences	Wathiq	st.
			Fathi	Teac
	Nuclear	Dhysics	Rafid Sami	her
	Nuclear	Physics sciences	Hamid	Assi st.
		sciences	Talliu	Teac
				her
		1		

Professional development

Orienting new Faculty members

New, visiting, full-time and other faculty members are guided by integrating them with experienced ones to provide them with the skills required in the teaching strategies approved within the educational program and continuous monitoring of the development of their cognitive level and the extent of their acquisition of the skills required for the scientific subject, in addition to the central courses that are held at the institution and college levels.

Professional development for Faculty members

The plan and arrangements for academic and professional development for faculty members include setting an annual plan for professional development, such as preparing an annual research plan for each teacher, as well as seminars, workshops, scientific courses, and activities that serve the community. It also includes developing a teaching and learning strategy through modern teaching methods such as brainstorming, group work, and the discussion and learning strategy. Discovery and inductive teaching strategy, To obtain learning results, their efficiency can be evaluated and measured through approved tests within the approved program.

The results of learning and professional development are evaluated through the evaluation of the faculty member by the department head, as well as a questionnaire distributed to students in coordination with the Quality Division in the college and under the supervision of the Quality Department at the university.

12. Acceptance criterion

(Central admission)

13. The most important sources of information about the program

Ministry of High education and Scientific research

14. Program development plan

Forming committees in the scientific department whose mission is to follow up the program and conduct a comprehensive review and any developments that occur to it. .2
 A questionnaire about students' opinions at the end of each semester about the academic program.

3- A questionnaire of faculty members' opinions at the end of each semester about the best ways to develop courses and teaching methods. .4

4- Coordination with the Quality Division at the university to follow up on the implementation of the academic program in the department

5- Conduct a comprehensive review of the program.

Lea	rning	T OUT	ome	s requ	ired	from	the r		-	II SK	ills C	Chart			
Lea	-	ues				ills			now	ledg	ge.	Essential or optional	Name course	Course code	Year/level
C4	C3	C2	C1	B4	B3	B2	B1	A4	A3	A2	A1				
*	*	*	*		*	*	*	*	*	*	*	Essential	Electric and magnetic	ELP021	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Heat and properties of matter	THP041	First
*	*	*	*		*	*	*	*	*	*	*	Essential	mathematics	MAP031	year
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Mechanics	MEP011	
*		*	*	*	*	*	*	*	*	*	*	Essential	Arabic	Ar 017	
*	*	*		*	*	*	*	*	*	*	*	Essential	Calculators	C 016	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Educational psychology	Psy 017	
*		*	*		*	*	*	*	*	*	*	Essential	Foundations of education	F 016	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Human rights and democracy	Hr 013	
	*	*	*		*	*	*	*	*	*	*	Essential	English language	442EL	
* P	lease	check	the bo	oxes c	orresp	onding	g to th					itcomes froi Chart	m the program bei	ng assessed	

					Lear	ning o	outcor	nes	requi	ired	from	the progra	ım		
	Val	lues			Ski	lls		Kı	now	ledg	ge	Essential or optional	Name course	Course code	Year/le vel
C4	C3	C2	C1	B4	B3	B2	B1	A 4	A 3	A 2	A 1				
*	*	*	*		*	*	*	*	*	*	*	Essential	Electric and magnetic	ELP03 2	
*	*	*	*		*	*	*	*	*	*	*	Essential	Optics	OPP01 2	2nd /
*	*	*	*		*	*	*	*	*	*	*	Essential	mathematics	MAP02 2	year
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Sound and wave motion	WMP0 42	
*		*	*		*	*	*	*	*	*	*	Essential	astronomy	SSP05 2	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	psychology	Psy 017	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Scientific research method	Sci 015	
*	*		*	*	*	*	*	*	*	*	*	Essential	Educational administrati on	Ed 015	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	English language	443EL	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	The crimes of the Baath regime		

							Pro	orar	n Sk	ille (ha	rt			
					Lear	ning (0				the prog	ram		
		ues			Ski	-			now			Essenti al or option al	Name course	Course code	Year/ level
C4	C3	C2	C1	B4	B3	B2	B1	A 4	A 3	A 2	A 1				
*	*	*	*		*	*	*	*	*	*	*	Essential	Electronics	ELP013	
*	*	*	*		*	*	*	*	*	*	*	Essential	Thermodyn amics	THP033	3 rd /
*	*	*	*		*	*	*	*	*	*	*	Essential	Atomic and molecular	ATP023	year
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Analytical mechanics	AM P043	
*		*	*		*	*	*	*	*	*	*	Essential	Teaching methods	Tm 018	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Counseling and mental health	Cm 019	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	English language	444EL	

							Pro	gran	n Sk	ills (Cha	rt			
					Lear	ning o	outcoi	nes	requi	ired	from	the pro	gram		
	Val	lues			Ski	lls		Kı	now	ledg	ge	Essenti al or option	Name course	Course code	Year/le vel
C4	C3	C2	C1	B4	B3	B2	B1	A 4	A 3	A 2	A 1	al			
	*	*	*		*	*	*	*	*	*	*	Essenti al	Solid state	SOP024	
*	*	*	*		*	*	*	*	*	*	*	Essenti al	Nuclear	NUP014	4 th /yea
*	*	*	*		*	*	*	*	*	*	*	Essenti al	Quantum physics	QUP034	r
*	*	*	*		*	*	*	*	*	*	*	Essenti al	Laser	LAP044	
		*	*	*	*	*	*	*	*	*	*	Essenti al	Electroma gnetic theories	EMR46	
*	*	*	*		*	*	*	*	*	*	*	Essenti al	View and apply	Va 019	
*	*	*	*		*	*	*	*	*	*	*	Essenti al	Measurem ent and evaluation	Me 018	
	*		*	*	*		*	*	*	*	*	Essenti al	English language	445EL	

Course description form

1-Course Name

Mechanics / First Stage

2 -Course Code

Bsc

3-Semester / Year

2024/2023

4-Date of preparation of this description

2023/3/9

5-Available forms of attendance

Daily

6- Number of study hours (total) / Number of units (total)

60 hours

7- Name of the course supervisor (if more than one name is mentioned

Assistant Professor Dr.muaamar A.kamil muaamar.a.kamil@tu.edu.iq

8 -Course objectives	
Objectives of the study subject	 Identify the types of motion. Study the motion of projectiles, falling objects and planets. Study the types and direction of forces. Study the types of torques applied to objects. Study the effect of terrestrial and linear acceleration on the motion of objects. Motion of fluids. Waves and wave motion
9- Teaching and learning strategies	
Lecture style, discussing with students, and asking and exchanging questions with students	Strategy

-Course str	ucture				
Week	Hours	Name of the unit or topic	Required learning outcomes	Learning method	Evaluation method
First	3	Physical	Basic concepts	Lecture	Daily and
		quantities	_		monthly exan
					assignments a
					reporting
Second	3	International	Basic concepts	Lecture	Daily and
		System of			monthly exan
		Units			assignments a
					reporting
Third	3	Arithmetic	How to deal	Lecture	Daily and
		operations on	with		monthly exan
		vectors	directional		assignments a
			quantities		reporting
Fourth	3	Finding the	Getting to	Lecture	Daily and
		unit matrix	know matrices		monthly exan
		and			assignments a
		mathematical			reporting
		operations		-	
Fifth	3	equations of	Recognizing	Lecture	Daily and
		motion	regular		monthly exan
			motion		assignments a
C! (1			D · ·	T (reporting
Sixth	3	Rotational	Recognizing	Lecture	Daily and
		motion	rotational		monthly exan
		equations	motion		assignments a
Seventh	3	Instantaneous	Find out the	Lecture	reporting
Seventii	3	and	instantaneous	Lecture	Daily and monthly exan
		instantaneous	speed		assignments a
		velocity	speed		reporting
		equations			reporting
Eighth	3	Motion in a	Movement	Lecture	Daily and
Burn		straight line		Lecture	monthly exan
		Straight mit			assignments a
					reporting
Ninth	3	Rotational	Movement	Lecture	Daily and
-	-	motion			monthly exan
					assignments a
					reporting
Tenth	3	free fall	One-way	Lecture	Daily and
			movement		monthly exan
					assignments a
					reporting
Eleventh	3	Projectiles	Movement in	Lecture	Daily and
			a plane		monthly exan
					assignments a
			1	1	reporting

Twelfth	3	Relative velocity	Movement in a plane	Lecture	Daily and monthly exams assignments and
Thirteenth	3	Newton's first law	Moving objects	Lecture	reporting Daily and monthly exams assignments and reporting
Fourteenth	3	Newton's second law	Moving objects	Lecture	Daily and monthly exams assignments an reporting
Fifteenth	3	Newton's third law	Moving objects	Lecture	Daily and monthly exams assignments an reporting
Sixteenth	3	Static and static friction	Legitimate friction	Lecture	Daily and monthly exams assignments an reporting
Seventeenth	3	Constant force work	Work and energy	Lecture	Daily and monthly exams assignments an reporting
Eighteenth	3	variable power work	Work and energy	Lecture	Daily and monthly exams assignments an reporting
Nineteenth	3	Restoring force and spring constant calculation	Work and energy	Lecture	Daily and monthly exams assignments an reporting
Twentieth	3	Center of mass of a particle and two point particles	Motion of a system of particles	Lecture	Daily and monthly exams assignments an reporting
Twenty-one	3	Principle of conservation of linear momentum	Motion of a system of particles	Lecture	Daily and monthly exams assignments an reporting
Twenty-Two	3	Elastic and inelastic collision	Collisions	Lecture	Daily and monthly exams assignments an reporting
Twenty-Three	3	Collisions in the Rutherford plane and scattering	Collisions	Lecture	Daily and monthly exams assignments an reporting

					1
Twenty-Four	3	angular	Rotational	Lecture	Daily and
		velocity	motion		monthly exams,
					assignments and
					reporting
Twenty-Five	3	The	Rotational	Lecture	Daily and
		relationship	motion		monthly exams,
		between			assignments and
		rotational and			reporting
		translational			
		motion			
Twenty-Six	3	Simple	Vibrational	Lecture	Daily and
		vibrational	motion		monthly exams,
		motion			assignments and
		equations			reporting
Twenty-Seven	3	Flexibility and	Liquids	Lecture	Daily and
		density			monthly exams,
					assignments and
					reporting
Twenty-eight	3	Pressure and	Liquids	Lecture	Daily and
		Archimedes'			monthly exams,
		Principle			assignments and
					reporting
Twenty-nine	3	Wave motion	Waves	Lecture	Daily and
-					monthly exams,
					assignments and
					reporting
Thirty ¹	3	Thermal	the heat	Lecture	Daily and
-		equilibrium			monthly exams,
		and its			assignments and
		equations			reporting

Daily exams score: 5, Homework and reports score: 10, Monthly exams score: 35

Final exam score: 50

12-Learning and teaching resources

Required textbooks (methodology if	Mechanics for primary grades
available)	
Main References (Sources)	muhammad Qaysarun Mirza / 200
Recommended supporting books and	References and reports on the web page
references (scientific journals, reports	

Course description form

		cours	e u			
1- Course na	me					
Electric/first	class					
2- Course	code / AT	P023				
Bachelor's						
3- Semeste	r / year					
2024/2023						
4- Date this	descriptio	on was pre	par	red		
2023/9/3						
5- Availabl	e attendan	ce forms				
Day						
6- Number	of study h	ours (total) / 1	number of units (total)		
90 hour	•					
7- Name of	the course	e administ	rato	or (if more than one name is	s mentioned	l)
Name:- Ass	sist. Prof. l	Dr:- Hanar	n R	idha , Email:- <u>dr.hanan.ridh</u>	a@tu.edu.iq	
9 Course o	hisstings					
8- Course of Objectives	ž	lv.	St	tudy the charge and mate	rial	
subject	of the stue	l y		he meaning of the law of t		field
subject				auss law		nena
				he meaning of electric pot	ential	
				he law of capacitance	, ciitiui	
				he insolaters and its prop	erties	
				he properties of current a		nce
9- Teaching	g and learn	ing strates				
Strategy	2			ecture style, discussing with	n students, a	and asking
			an	nd exchanging questions wi	th students	C
10- Course	Structur	e				
Week	Hours	Name o	f	Required learning	Learnin	Evaluatio
		the unit	or	outcomes	g	n method
		topic			method	
First	3	Basic		Structural material	Lecture	Daily and
		concepts	5			monthly
						exams, assignments
						and
						reporting
Second	3	Basic		The charge and material	Lecture	Daily and
		concepts	5			monthly
						exams,
						assignments

					and
					reporting
Third	3	The know	charge	Lecture	Daily and
		kind of the	_		monthly
		charge			exams,
					assignmen
					and
					reporting
Fourth	3	The know of	Semiconductors, conductor	Lecture	Daily and
		the kind of	s and insoulater		monthly
		material			exams,
					assignmen
					and
					reporting
Fifth	3	The know of	The movment equations	Lecture	Daily and
		the regular			monthly
		movment			exams,
					assignmen
					and
					reporting
Sixth	3	Coulums	Coulums law	Lecture	Daily and
		law			monthly
					exams,
					assignmen
					and
					reporting
Seventh	3	Know of the	Charge,current	Lecture	Daily and
		units of the			monthly
		mesurments			exams,
					assignmen
					and
					reporting
Eighth	3	The electric	Electric field	Lecture	Daily and
		field			monthly
					exams,
					assignmen
					and
					reporting
Ninth	3	Electric	Electric field intensity	Lecture	Daily and
		field			monthly
		intensity			exams,
					assignmen
					and
					reporting
Tenth	3	Point	Point charge	Lecture	Daily and
		charge			monthly
					exams,
					assignmen
					and
					reporting
Eleventh	3	Continuos	Continuos surface	Lecture	Daily and
		surface			monthly
					exams,

					assignments and
					reporting
Twelfth	3	The solution	Excersice solution	Lecture	Daily and
		of the			monthly
		excersice			exams,
					assignments
					and
					reporting
Thirteenth	3	capacetance	capacetances	Lecture	Daily and
		S			monthly
					exams,
					assignments
					and
T				.	reporting
Fourteenth	3	kind of the	Kind of the capacetance	Lecture	Daily and
		capacetance			monthly
					exams,
					assignments
					and
				.	reporting
Fifteenth	3	Double	Double panel of	Lecture	Daily and
		panel of	capacetance		monthly
		capacetance			exams,
					assignments
					and
<u>S'44</u>	2	Carls and a sl	Secharization and an an	T 4	reporting
Sixteenth	3	Spherical	Spherical capacetance	Lecture	Daily and
		capacetance			monthly
					exams,
					assignments and
					reporting
Seventeenth	3	Cylindrical	Cylindrical capacetance	Lecture	Daily and
Seventeentin	5	capacetance	Cymurical capacetance	Lecture	monthly
		capacetance			exams,
					assignments
					and
					reporting
Eighteenth	3	System	System partical movment	Lecture	Daily and
	•	partical			monthly
		movment			exams,
					assignments
					and
					reporting
Nineteenth	3	the factors	Factors effect on the	Lecture	Daily and
		effecting on	capacetance		monthly
		the	-		exams,
		capacetance			assignments
					and
					reporting
Twentieth	3	Connecting	Connecting of the	Lecture	Daily and
		of the	capacetance		monthly

		capacetance			exams, assignments and reporting
Twenty-one	3	Electrical energy	Electrical energy	Lecture	Daily and monthly exams, assignments and reporting
Twenty- Two	3	insulators	insulators	Lecture	Daily and monthly exams, assignment and reporting
Twenty- Three	3	Properties of the current and the resistance	Properties of the current and resistance	Lecture	Daily and monthly exams, assignments and reporting
Twenty- Four	3	potential	potential	Lecture	Daily and monthly exams, assignment and reporting
Twenty- Five	3	Oums law	Oums law	Lecture	Daily and monthly exams, assignment and reporting
Twenty-Six	3	Dc current	Dc current	Lecture	Daily and monthly exams, assignment and reporting
Twenty- nine	3	Learn about molecular physics and molecular bonds	molecular physics and molecular bonds	Lecture	Daily and monthly exams, assignment and reporting
Thirty ¹	3	Knowledge of molecular spectra	molecular spectra	Lecture	Daily and monthly exams, assignment and

re	orting	

11- Course Evaluation								
core for daily exams: 5, score for assignments and reports: 10, score for monthly exams: 35								
Final exam score: 50								
12- learning and Teaching Resources								
Dequired textbooks (methodology if any)	The baises of the electric and maginatic							
Required textbooks (methodology, if any)	The baiscs of the electric and maginatic							
Main references (sources)	No							
Recommended supporting books and	Nothing							
references (scientific journals, reports)								
Electronic references, Internet sites	General physics websites							

1- Course name

Heat and properties of Matter / First stage

2- Course code / THP041

Bachelor's

3- Semester / year

2023-2024

4- Date this description was prepared

3-9-2023

5- Available attendance forms

Day

6- Number of study hours (total) / number of units (total)

60 hour

7- Name of the course administrator (if more than one name is mentioned)

Name:- Assist. Prof. Dr:- Rasha Hamid Ahmed , Email:- rashahamed@tu.edu.iq

8- Course objectives

Objectives of the study subject	1- Learn about the laws of thermodynamics and
	how to use them.
	2- Adding the laws of heat and heat conversions
	to solving problems and linking them to daily
	life
	3- Developing thinking to understand states of
	matter and how to transform matter from one
	state to another
	4- Ability to solve energy and work problems
	5- Obtaining knowledge to determine the

Course description form

				mechanical proper nables students to unde that surrounds the 6- Understanding the materials and being al when dealing y	rstand the hem as well e magnetic ble to benef	environment as deal with society properties of it from them
		Strategy	L	9- Teachin ecture style, discussing and exchangin	with studen	- C
Week	Hours	Name of		Required learning	Learning	rse Structure
		the unit of topic	ſ	outcomes	method	method
First	2	Ch.1 / Temperatur	e	The temperature -1 scales Types of -2 thermometers.	Lecture	Daily and monthly exams, assignments and reporting
Second	2	Ch.1 / Temperatur	e	Effect of -3 temperature changes. Thermal -4 expansion. Mechanism of -5 heat transfer	Lecture	Daily and monthly exams, assignments and reporting
Third	2	Ch.1 / Temperatur	e	Low -6 temperatures Temperature -7 gradiant	Lecture	Daily and monthly exams, assignments

					and reporting
Fourth	2	Ch.2 / Heat and Phase Changes	Heat and its -1 effects Quantity of heat -2	Lecture	Daily and monthly exams, assignments and reporting
Fifth	2	Ch.2 / Heat and Phase Changes	Quantity of heat -3 Temperature -4 Specific of heat -5 materials	Lecture	Daily and monthly exams, assignments and reporting
Sixth	2	Ch.2 / Heat and Phase Changes	The Specific of heat materials-6heat materialsmeasurementThe mechanical equivalent of-7equivalent of heatPotential energy-8	Lecture	Daily and monthly exams, assignments and reporting
Seventh	2	Ch.2 / Heat and Phase Changes	The state -9 transformation The first law of -10 thermodynamics Application of -11 first law	Lecture	Daily and monthly exams, assignments and reporting
Eighth	2	Ch.3 / The Gases	The ideal and -1 real gases The kinetic -2 theory of gases	Lecture	Daily and monthly exams, assignments and reporting
Ninth	2	Ch.3 / The Gases	The gas law -3 Boyls law -4 Charles law -5 The gas constant -6	Lecture	Daily and monthly exams, assignments and reporting
Tenth	2	Ch.3 / The Gases	The Potential -7 energy of gas Relation -8 between Cp and	Lecture	Daily and monthly exams, assignments

			Cv		and reporting
Eleventh	2	Ch.4 / The	The density -1	Lecture	Daily and
		Liquids	The pressure of -2		monthly
			liquids		exams,
					assignments
					and reporting
Twelfth	2	Ch.4 / The	The surface -3	Lecture	Daily and
Wenth	-	Liquids	tension	Lettare	monthly
		Liquius	The liquid -4		exams,
			surface		assignments
			Suitace		and reporting
Thirteenth	2	Ch.4 / The	The capillarity -5	Lecture	Daily and
		Liquids	The viscosity -6		monthly
			-7		exams,
					assignments
					and reporting
Fourteenth	2	Ch.5 / The	Stress -1	Lecture	Daily and
		Mechanical	Strain -2		monthly
		Properties of			exams,
		Materials			assignments
					and reporting
Fifteenth	2	Ch.5 / The	Elasticity -3	Lecture	Daily and
		Mechanical	, Modulus of -4		monthly
		Properties of	Elasticity		exams,
		Materials			assignments
					and reporting
Sixteenth	2	Ch.5 / The	Youngs Modulus -5	Lecture	Daily and
	-	Mechanical	Poissons ratio -6		monthly
		Properties of			exams,
		Materials			assignments
		Waterials			and reporting
					and reporting
Seventeenth	2	Ch.5 / The	Torsional -7	Lecture	Daily and
		Mechanical	constant		monthly
		Properties of	Torsional Strain -8		exams,
		Materials			assignments
					and reporting
Eighteenth	2	Ch.6 / The	The magnetic -1	Lecture	Daily and
		Magnetic	moment of		monthly

		Properties of Materials	electron The angular -2 momentum of electron		exams, assignments and reporting
Nineteenth	2	Ch.6 / The Magnetic Properties of Materials	The relation -3 between (M) and (L) The magnetic -4 susceptibility	Lecture	Daily and monthly exams, assignments and reporting
Twentieth	2	Ch.6 / The Magnetic Properties of Materials	Classification of -5 magnetic materials The diamagnetic -6 materials The -7 paramagnetic materials The -8 ferromagnetic materials The anti9 ferromagnetic materials The -10 ferrimagnetic materials	Lecture	Daily and monthly exams, assignments and reporting
Twenty-one	2	Ch.6 / The Magnetic Properties of Materials	The magnetic -11 elements Magnetic -12 transition metals Magnetic rate -13 earth metals	Lecture	Daily and monthly exams, assignments and reporting
Twenty-Two	2	Ch.7 / The Electrical Properties of	The conductors -1 The -2 Semiconductors	Lecture	Daily and monthly exams, assignments

		Materials	The insulators -3		and reportin
Twenty- Three	2	Ch.7 / The Electrical Properties of Materials	Electrical -4 resistivity The -5 superconductivit Y	Lecture	Daily and monthly exams, assignments and reporting
Twenty-Four	2	Ch.7 / The Electrical Properties of Materials	Electric field -6 Capacitor -7	Lecture	Daily and monthly exams, assignments and reporting
Twenty-Five	2	Ch.7 / The Electrical Properties of Materials	Polarization -8 Dielectric -9 constant	Lecture	Daily and monthly exams, assignments and reporting
Twenty-Six	2	Ch.7 / The Electrical Properties of Materials	Dielectric -10 constant and Refractive index Electrical -11 breakdown	Lecture	Daily and monthly exams, assignments and reporting
Twenty- Seven	2	Ch.8 / The Plasma	The Plasma -1 Plasma -2 Production	Lecture	Daily and monthly exams, assignments and reporting
Twenty-eight	2	Ch.8 / The Plasma	Investigation of -3 Plasma Plasma and -4 magnetic field	Lecture	Daily and monthly exams, assignments and reporting
Twenty-nine	2	Ch.8 / The Plasma	Confinement of -5 Plasma	Lecture	Daily and monthly exams, assignments and reporting
Thirty	2	Ch.8 / The Plasma	The Earth -6 magnetic field	Lecture	Daily and monthly

Plasm	a exams, a assignments and reportin
11- Course Evaluation	
core for daily exams: 10, score for assignments a Final exam score: 50	nd reports: 10, score for monthly exams: 30
12- learning and Teaching Resources	
12- learning and Teaching Resources Required textbooks (methodology, if any)	Heat and properties of Matter / Dr. Kadhin Ahmed Mohammed
	Heat and properties of Matter / Dr. Kadhin Ahmed Mohammed Materials Science/ Maty Naser
Required textbooks (methodology, if any)	Ahmed Mohammed
Required textbooks (methodology, if any) Main references (sources)	Ahmed Mohammed Materials Science/ Maty Naser

Course Description for Foundations of Education - First Year

- 1. Course Title: Foundations of Education / First Year
- 2. Course Code: Bachelor's Degree
- 3. Annual Schedule: 2023/2024
- 4. Preparation Date for This Description: 27/4/2023
- 5. Attendance Formats Available: In-person
- 6. Total Study Hours / Units:
 - Total hours: 2
 - Total units: 4
- 7. Course Coordinator Name (if more than one, list all):

Name: Assistant Ahmed Taleb Sabar

Email: ahmed.s.m.o.j@tu.edu.iq

- 8. Course Objectives:
 - Define education.
 - Define Islamic-Arabic education.
 - Recognize education in some ancient civilizations.
 - Understand primitive education.
- 9. Teaching and Learning Strategies:
 - Lectures, student discussions, and question exchange.
- 10. Course Structure:

Week	Hours	Learning Outcomes	Unit/Topic	Teaching Method	Assessment Method
1	2	Understanding, Analyzing, Synthesizing	Historical overview of education	Lecture, Discussion	Daily and monthly exams, assignments
2	2	Understanding, Analyzing, Synthesizing	Educational objectives	Lecture, Discussion	Daily and monthly exams, assignments
3	2	Understanding, Analyzing, Synthesizing	Primitive education	Lecture, Discussion	Daily and monthly exams,

					assignments
4	2	Understanding,	Features of	Lecture	Daily and
4	2	Analyzing,	primitive	Lecture	monthly
		Synthesizing	education		exams,
		Synthesizing	education		assignments
5	2	Understanding,	Education in	Lecture,	Daily and
5	2	Analyzing,	ancient	Discussion	monthly
		Synthesizing	Mesopotamia	DISCUSSION	exams,
		Synthesizing	wesopotanna		assignments
6	2	Understanding,	Chinese	Lecture,	Daily and
0	2	Analyzing,	education	Discussion	monthly
		Synthesizing	cudeation	Discussion	exams,
		Synthesizing			assignments
7	2	Understanding,	Education	Lecture,	Daily and
,	-	Analyzing,	system in	Discussion	monthly
		Synthesizing	Sparta	Discussion	exams,
		Synthesizing	opurtu		assignments
8	2	Understanding,	Athenian	Lecture,	Daily and
5	2	Analyzing,	education	Discussion	monthly
		Synthesizing	cudeation	Discussion	exams,
		-,			assignments
9	2	Understanding,	Greek	Lecture,	Daily and
•	-	Analyzing,	education	Discussion	monthly
		Synthesizing			exams,
		- /			assignments
10	2	Understanding,	Islamic-	Lecture,	Daily and
		Analyzing,	Arabic	Discussion	monthly
		Synthesizing	education		exams,
		, 0			assignments
11	2	Understanding,	Stages of	Lecture,	Daily and
		Analyzing,	Islamic-	Discussion	monthly
		Synthesizing	Arabic		exams,
			education		assignments
12	2	Understanding,	Pre-Islamic	Lecture,	Daily and
		Analyzing,	education era	Discussion	monthly
		Synthesizing			exams,
					assignments
13	2	Understanding,	The era of	Lecture,	Daily and
		Analyzing,	Islam's	Discussion	monthly
		Synthesizing	emergence		exams,
					assignments
14	2	Understanding,	Righteous	Lecture,	Daily and
		Analyzing,	Caliphs and	Discussion	monthly
		Synthesizing	Umayyad		exams,
			eras		assignments
15	2	Understanding,	Era of	Lecture,	Daily and
		Analyzing,	development	Discussion	monthly
		Synthesizing	and		exams,
			prosperity		assignments
16	2	Understanding,	Era of decline	Lecture,	Daily and
		Analyzing,	and	Discussion	monthly
		Synthesizing	dissolution		exams,
					assignments
17	2	Understanding,	Prominent	Lecture,	Daily and

		Analyzing, Synthesizing	figures in Islamic- Arabic educational thought	Discussion	monthly exams, assignments
18	2	Understanding, Analyzing, Synthesizing	Ibn Khaldun	Lecture, Discussion	Daily and monthly exams, assignments
19	2	Understanding, Analyzing, Synthesizing	Ibn Sina	Lecture, Discussion	Daily and monthly exams, assignments
20	2	Understanding, Analyzing, Synthesizing	Al-Ghazali	Lecture, Discussion	Daily and monthly exams, assignments
21	2	Understanding, Analyzing, Synthesizing	Western educational figures	Lecture, Discussion	Daily and monthly exams, assignments
22	2	Understanding, Analyzing, Synthesizing	Plato	Lecture, Discussion	Daily and monthly exams, assignments
23	2	Understanding, Analyzing, Synthesizing	Jean-Jacques Rousseau	Lecture, Discussion	Daily and monthly exams, assignments
24	2	Understanding, Analyzing, Synthesizing	Pestalozzi	Lecture, Discussion	Daily and monthly exams, assignments
25	2	Understanding, Analyzing, Synthesizing	John Dewey	Lecture, Discussion	Daily and monthly exams, assignments
26	2	Understanding, Analyzing, Synthesizing	Al-Ghazali	Lecture, Discussion	Daily and monthly exams, assignments
27	2	Understanding, Analyzing, Synthesizing	Relationship between education and society	Lecture, Discussion	Daily and monthly exams, assignments
28	2	Understanding, Analyzing, Synthesizing	Relationship between education and the environment	Lecture, Discussion	Daily and monthly exams, assignments
29	2	Understanding, Analyzing, Synthesizing	Moral education	Lecture, Discussion	Daily and monthly exams, assignments

30	2	Understanding,	Education	Lecture,	Daily and
		Analyzing,	and	Discussion	monthly
		Synthesizing	economic		exams,
			development		assignments

11. Course Evaluation:

- Monthly exam score: 50

- Final exam score: 50

- 12. Learning and Teaching Resources:
 - Required textbooks (if applicable):

Foundations of Education for early grades.

- Main references (sources):

Al-Ibrashi, Mohammed Atiyah, *Jean-Jacques Rousseau: His Views on Education and Teaching*. Cairo: Dar Ihyaa Al-Kutub Al-Arabiya, 1951.

- Additional recommended references (scientific journals, reports, etc.): None.

نموذج وصف المقرر

1. Course Name:

English Language / First Stage

2. Course Code:

Undergraduate

3. Semester / Year: 2023-2024

4. Description Preparation Date:

5/9/2023

5. Available Attendance Forms:

Daily

6. Number of Credit Hours (Total) / Number of Units (Total) 60 hours

7. Course administrator's name (mention all, if more than one name)

Name: Assist. Teacher: Rola Fawwaz Hammad

Email: <u>rula.f.hammad@tu.e</u> <u>du.iq</u>

8. Course Objectives

Course Objectives	• learning the basics of English language
	\Box studying some tenses
	□ studying some English styles
	 studying some physical terms

9. Teaching and Learning Strategies

Lecture style, discussing with students, and asking questions to students

10. Course Structure

Week	Hours	Required Learning	Unit or subject	Learning	Evaluation
		Outcomes	name	method	method
First	2	Learn what is the basic	s Basics of	Lecture	Quiz
		of English Language	English		

Second	2	How and when this tense	Present	Lecture	Monthly exam
		is used	continuous tense		
Third	2	Training for reading	Reading	Lecture	Daily listening
Fourth	2	How and when this tense	Simple present	Lecture	Monthly&
		is used	tense		daily exam
Fifth	2	How this style is used	Zero	Lecture	Monthly&
			conditional (If clause)		daily exam
Sixth	2	How to use this style	Future passive	Lecture	Monthly&
					daily exam
Seventh	2	How to use this style	Present passive	Lecture	Monthly&
					daily exam
Eighth	2		First exam	Lecture	Monthly exam
Ninth	2	Knowing some physical terms	Terms	Lecture	Quiz
Tenth	2	Training for Speaking	Speaking	Lecture	Daily
					participants
Eleventh	2	Training for reading	Reading	Lecture	Daily
					participants
Twelfth	2	How to read decimal	Reading	Lecture	Monthly&
		numbers	decimals		daily exam
Thirteent	2	How to read years	Reading years	Lecture	Monthly&
h					daily exam
Fourteent	2	Knowing the time	Telling the	Lecture	Monthly&
h			time		daily exam

Fifteenth	2	How to use this type of Answer	Short Answer	Lecture	Monthly& daily exam
Sixteenth	2		Second exam	Lecture	Monthly exam
Seventeen th	2	Training for writing	Story time	Lecture	Monthly& daily exam
Eighteent h	2	Knowing some definitions	Definitions	Lecture	Monthly& daily exam
Nineteent h	2	How to use this style	Comparative	Lecture	Monthly& daily exam
Twentieth	2	How to use this style	Superlative	Lecture	Monthly& daily exam
Twenty first	2	Training for Reading	Reading	Lecture	Monthly& daily exam
Twenty second	2		Third Exam	Lecture	Monthly exam
Twenty third	2	Knowing the Meaning of some terms	Physical terms	Lecture	Monthly& daily exam
Twenty fourth	2	Reinforcement students' knowledge of vocabulary	Vocabulary	Lecture	Monthly& daily exam
Twenty fifth	2	Reinforcement students' knowledge	Synonyms	Lecture	Monthly& daily exam

Twenty sixth	2	Reinforcement students' knowledge	Antonyms	Lecture	Monthly& daily exam
Twenty seventh	2	Reinforcement students' knowledge	Matching	Lecture	Monthly& daily exam
Twenty eighth	2	Knowing some English styles of communication	Introduction	Lecture	Monthly& daily exam
Twenty ninth	2		Review	Lecture	
Thirtieth	2	Students' Evaluation	Fourth Exam	Lecture	Monthly exam

Course description form

	ne				
Mathematics					
2- Course cod	e				
MAP031					
3- Semester /	year				
2023-2024					
4- Date this de	scription wa	s prepared			
15/12/2023					
5- Available at	tendance for	rms			
weekly					
6- Number of s	study hours ((total) / number of	units (total)		
90 hour	-				
7- Name of the	e course adm	inistrator (if more	than one name is mention	ed)	
Name:- Dr. Ab	bas Kasoob	Jarallah , Email:-	abbas.g.kasoob@tu.edu.i	đ	
8- Course obje	ctives				
Objectives of t	he study sub	5	 Providing information t 		
			important mathematical to	pics and their	r relationship to
]	physics.		
9- Teaching an	d learning st	trategies			
Strategy	0		Using the face-to-face led	cture method	and giving
			- 4 - 1 4	1. 1	
			students opportunities to c		olve daily and
			monthly questions and tes		olve daily and
10 0 0					olve daily and
10- Course St			monthly questions and tes	ts	-
10- Course St Week	ructure Hours	Name of the un	monthly questions and tes	ts Learning	Evaluation
			it Required learning outcomes e Slope Intercept	ts	
Week	Hours	Name of the un or topic	it Required learning outcomes	ts Learning method	Evaluation method Daily and monthly
Week	Hours	Name of the un or topic	it Required learning outcomes e Slope Intercept	ts Learning method	Evaluation method Daily and monthly exams,
Week	Hours	Name of the un or topic	it Required learning outcomes e Slope Intercept	ts Learning method	Evaluation method Daily and monthly exams, assignments
Week First	Hours 3	Name of the un or topic slope	it Required learning outcomes e Slope Intercept Form Definition	ts Learning method Lecture	Evaluation method Daily and monthly exams, assignments and reporting
Week	Hours	Name of the un or topic	It Required learning outcomes e Slope Intercept Form Definition Slope between	ts Learning method	Evaluation method Daily and monthly exams, assignments and reporting Daily and
Week First	Hours 3	Name of the un or topic slope	it Required learning outcomes e Slope Intercept Form Definition	ts Learning method Lecture	Evaluation method Daily and monthly exams, assignments and reporting Daily and monthly
Week First	Hours 3	Name of the un or topic slope	It Required learning outcomes e Slope Intercept Form Definition Slope between	ts Learning method Lecture	Evaluation method Daily and monthly exams, assignments and reporting Daily and monthly exams,
Week First	Hours 3	Name of the un or topic slope	It Required learning outcomes e Slope Intercept Form Definition Slope between	ts Learning method Lecture	Evaluation method Daily and monthly exams, assignments and reporting Daily and monthly exams, assignments
Week First Second	Hours 3 3	Name of the un or topic slope	it Required learning outcomes e Slope Intercept Form Definition Form Definition Slope between Two Points	ts Learning method Lecture Lecture	Evaluation method Daily and monthly exams, assignments and reporting Daily and monthly exams, assignments and reporting
Week First	Hours 3	Name of the un or topic slope	It Required learning outcomes e Slope Intercept Form Definition Slope between	ts Learning method Lecture	Evaluation method Daily and monthly exams, assignments and reporting Daily and monthly exams, assignments and reporting Daily and
Week First Second	Hours 3 3	Name of the un or topic slope	it Required learning outcomes e Slope Intercept Form Definition Form Definition Slope between Two Points Slope of Vertical Lin Slope of Vertical	ts Learning method Lecture Lecture	Evaluation method Daily and monthly exams, assignments and reporting Daily and monthly exams, assignments and reporting Daily and monthly
Week First Second	Hours 3 3	Name of the un or topic slope	It Required learning outcomes e Slope Intercept Form Definition Form Definition Slope between Two Points Slope of Vertical Lin Slope of parallel	ts Learning method Lecture Lecture	Evaluation method Daily and monthly exams, assignments and reporting Daily and monthly exams, assignments and reporting Daily and monthly exams,
Week First Second	Hours 3 3	Name of the un or topic slope	it Required learning outcomes e Slope Intercept Form Definition Form Definition Slope between Two Points Slope of Vertical Lin Slope of Vertical	ts Learning method Lecture Lecture	Evaluation method Daily and monthly exams, assignments and reporting Daily and monthly exams, assignments and reporting Daily and monthly exams, assignments and reporting
Week First Second	Hours 3 3	Name of the un or topic slope	It Required learning outcomes e Slope Intercept Form Definition Form Definition Slope between Two Points Slope of Vertical Lin Slope of parallel	ts Learning method Lecture Lecture	Evaluation method Daily and monthly exams, assignments and reporting Daily and monthly exams, assignments and reporting Daily and monthly exams,
Week First Second Third	Hours 3 3 3	Name of the un or topic slope slope	it Required learning outcomes e Slope Intercept Form Definition Form Definition Slope between Two Points Slope of Vertical Lin Slope of parallel lines	ts Learning method Lecture Lecture Lecture	Evaluation method Daily and monthly exams, assignments and reporting Daily and monthly exams, assignments and reporting Daily and monthly exams, assignments and reporting
Week First Second Third	Hours 3 3 3	Name of the un or topic slope slope	it Required learning outcomes e Slope Intercept Form Definition Form Definition Slope between Two Points Slope of Vertical Lin Slope of parallel lines Slope of parallel for	ts Learning method Lecture Lecture Lecture	Evaluation method Daily and monthly exams, assignments and reporting Daily and monthly exams, assignments and reporting Daily and monthly exams, assignments and reporting Daily and monthly exams, assignments and reporting

					and reportin
Fifth	3	slope	the angle between	Lecture	Daily and
			two lines		monthly
					exams,
					assignment
					and reportin
Sixth	3	slope	the angle between	Lecture	Daily and
		-	two lines		monthly
					exams,
					assignment
					and reportin
Seventh	3	slope	Examples for the	Lecture	Daily and
			chapter one		monthly
			1		exams,
					assignment
					and reportin
Eighth	3	Trigonometric	Trigonometric	Lecture	Daily and
0		Functions	Functions		monthly
					exams,
					assignment
					and reportin
Ninth	3	Trigonometric	Trigonometric	Lecture	Daily and
	U	Functions	Functions Values	Lecture	monthly
		i unetions			exams,
					assignment
					and reportin
Tenth	3	Trigonometric	Trigonometric	Lecture	Daily and
I Chth	0	Functions	Functions Values	Lecture	monthly
		i unetions	i unedons vulues		exams,
					assignment
					and reportin
Eleventh	3	Trigonometric	Sum and	Lecture	Daily and
Lieventin	U	Functions	Difference	Lecture	monthly
		i unetions	Identities		exams,
			ruchtitics		assignment
					and reportin
Twelfth	3	Trigonometric	Double Angle	Lecture	Daily and
Iwenth	U	Functions	Identities	Lecture	monthly
		T universities	racintricos		exams,
					assignment
					and reportin
Thirteenth	3	Trigonometric	Triple Angle	Lecture	Daily and
	5	Functions	Identities	Liciult	monthly
		1 0110110	Identities		exams,
					assignment
					and reportin
Fourteenth	3	Trigonometric	Product identities	Lecture	Daily and
	3	Functions	1 Toutet Identities	Lecture	monthly
		runchons			•
					exams,
					assignment
Fiftconth	3	Triconorectuic	Examples for the	Locture	and reportin
Fifteenth	3	Trigonometric	Examples for the	Lecture	Daily and
		Functions basics			monthly

			chapter		exams,
			1		assignments
					and reporting
Sixteenth	3	Chapter 2	Monthly test	Lecture	Daily and
		1	5		monthly
					exams,
					assignments
					and reporting
Seventeenth	3	The Exponential	The Exponential	Lecture	Daily and
	-	Function	Function		monthly
					exams,
					assignments
					and reporting
Eighteenth	3	The Exponential	Exponent Rules	Lecture	Daily and
8		Function	-		monthly
			Chart and		exams,
			examples		assignments
			-		and reporting
Nineteenth	3	The logarithmic	The logarithmic	Lecture	Daily and
	-	function	function		monthly
					exams,
					assignments
					and reporting
Twentieth	3	Example and	Examples for the	Lecture	Daily and
	-	questions	chapter		monthly
		1	1		exams,
					assignments
					and reporting
Twenty-one	3	Monthly test	Monthly test	Lecture	Daily and
2		5	5		monthly
					exams,
					assignments
					and reporting
Twenty-Two	3	Derivatives	Derivatives	Lecture	Daily and
·					monthly
					exams,
					assignments
					and reporting
Twenty-	3	Derivatives	Differentiation of	Lecture	Daily and
Three			Trigonometric		monthly
			Functions		exams,
					assignments
					and reporting
Twenty-Four	3	Derivatives	The Product Rule	Lecture	Daily and
					monthly
					exams,
					assignments
					and reporting
Twenty-Five	3	Derivatives	Examples for the	Lecture	Daily and
-			chapter		monthly
			-		exams,
					assignments
					and reporting

Twenty-Six	3	Integration	Integration Rule	Lecture	Daily and
·		-			monthly
					exams,
					assignments
					and reporting
Twenty-	3	Integration	double integral	Lecture	Daily and
Seven					monthly
					exams,
					assignments
					and reporting
Twenty-eight	3	Integration	Triple Integral	Lecture	Daily and
					monthly
					exams,
					assignments
					and reporting
Twenty-nine	3	Integration	Examples for the	Lecture	Daily and
			chapter		monthly
					exams,
					assignments
					and reporting
Thirty	3	Integration	Monthly test	Lecture	Daily and
					monthly
					exams,
					assignments
					and reporting

11- Course Evaluation						
core for daily exams: 5, score for assignments and reports: 10, score for monthly exams: 35 Final exam score: 50 12- learning and Teaching Resources						
						Required textbooks (methodology, if any)
Main references (sources)	Calculus Basics by Khaled Qasim Samou, Calculus Theory by Freddie					
Recommended supporting books and references (scientific journals, reports)	Nothing					
Electronic references, Internet sites	General physics websites, Shum series in mathematics					

Course description form

	(Course descrip	tion	Iorm		
1- Course name						
Electricity / n ^{2d}						
2- Course code	e / ELP 032	2				
3- Semester / y	<i>y</i> ear					
2023/2024						
4- Date this dea	scription wa	as prepared				
3/9/2023						
5- Available at	tendance fo	orms				
Day						
6- Number of s	tudy hours	(total) / numbe	r of	units (total)		
60 hour						
7- Name of the	course adr	ninistrator (if m	ore	than one name	e is mention	ed)
		R. Ahmed, I				
8- Course obje	ctives					
Objectives of the		bject	Eleo	ctricity & magn	etism	
U U	-	U C		-	-	magnetic field
				udy the conserv		
				udying of attrac		Law
				udying Gauss s udy the columr		
				adying the poin		
				idying the Fara		
			Bay	vo s –savert law		
			App	olication of bay	ots savert la	W
9- Teaching an	d learning s	strategies	L			
Strategy		5114005105	Lec	ture style. disc	cussing with	students, and
6,				ing and exchai	0	
				lents	0 0 1	
10- Course Str	ructure					
Week	Hours	Name of the	e	Required	Learning	Evaluation
		unit or topi	C	learning	method	method
				outcomes		Dilli
First	2	Magnetic fiel	d		Lecture	Daily and monthly
						exams,
			1			CAdills,

				and reporting
Second	2	Magnetic flux	Lecture	Daily and
				monthly
				exams,
				assignmen
				and reporting
Third	2	Force on an charge	Lecture	Daily and
		moving in a		monthly
		magnetic field		exams,
				assignmen
				and reporting
Fourth	2	First Exam	Lecture	Daily and
				monthly
				exams,
				assignmen
				and reporting
Fifth	2	Movement of an	Lecture	Daily and
		electrically		monthly
		charged particle in		exams,
		a magnetic field		assignmen
		······································		and reporting
Sixth	2	Thomson's	Lecture	Daily and
	_	experiment to		monthly
		measure the ratio		exams,
		of electron charge		assignmen
		to it mass		and reporting
Seventh	2	Hall effect	Lecture	Daily and
	-			monthly
				exams,
				assignmen
				and reporting
Eighth	2	The force on	Lecture	Daily and
8		conductor in		monthly
		which an electric		exams,
		current in a		assignmen
		magnetic field		and reporting
Ninth	2	Torque on a coil	Lecture	Daily and
		through which an		monthly
		electric current in		exams,
		a magnetic passes		assignmen
				and reporting
Tenth	2	Second Exam	Lecture	Daily and
				monthly
				exams,
				assignmen
				and reporting
Eleventh	2	Movement coil	Lecture	Daily and
	-	galvanometer		monthly
		0		exams,
				assignmen
				and reportin
Twelfth	2	Bayo s –savert law	Lecture	Daily and
	-	Application of		monthly

		bayots savert law Magnetic induction of a moving electric change		exams, assignments and reporting
Thirteenth	2	The force between two long parallel straight wires , each of which is electric current Law of the - amper circle Applications of law of the amper circle	Lecture	Daily and monthly exams, assignments and reporting
Fourteenth	2	third Exam	Lecture	Daily and monthly exams, assignments and reporting
Fifteenth	2	Electric induced force thrust Fara day's law Measure B by using search coil Fara day's disc Electric generator	Lecture	Daily and monthly exams, assignments and reporting
Sixteenth	2	Mutual inductionSelf-inductionEnergy stored inthe magnetic fieldMagnetic energydensityLinking inductorsElectricaltransformer	Lecture	Daily and monthly exams, assignments and reporting
Seventeenth	2	The current Power in Ac circuitsThe effective value of the alternating current and alternating voltageVoltage difference direction chart Resounds	Lecture	Daily and monthly exams, assignments and reporting
Eighteenth	2	Four examination	Lecture	Daily and monthly exams, assignments

				and reporting
Nineteenth	2	Magnetic field	Lecture	Daily and
		_		monthly
				exams,
				assignments
				and reporting
Twentieth	2	Magnetic flux	Lecture	Daily and
		0		monthly
				exams,
				assignments
				and reporting
Twenty-one	2	Force on an charge	Lecture	Daily and
e e e e e e e e e e e e e e e e e e e		moving in a		monthly
		magnetic field		exams,
				assignments
				and reporting
Twenty-Two	2	First Exam	Lecture	Daily and
				monthly
				exams,
				assignments
				and reporting
Fwenty-Three	2	Movement of an	Lecture	Daily and
	-	electrically	Locture	monthly
		charged particle in		exams,
		a magnetic field		assignments
		u mugnette netu		and reporting
Twenty-Four	2	Thomson's	Lecture	Daily and
I wenty-Pour	-	experiment to	Decture	monthly
		measure the ratio		exams,
		of electron charge		assignments
		to it mass		and reporting
Twenty-Five	2	Hall effect	Lecture	Daily and
I wenty-Five	4	Han cirect	Decture	monthly
				exams,
				assignments
				and reporting
Twenty-Six	2	The force on	Lecture	Daily and
I WUILY-DIA	-	conductor in		monthly
		which an electric		exams,
		current in a		assignments
		magnetic field		and reporting
Twenty-Seven	2	Torque on a coil	Lecture	Daily and
1 wenty-Seven	4	through which an	Letture	monthly
		electric current in		exams,
		a magnetic passes		assignments
		a magnetic passes		and reporting
Twenty-eight	2	Second Exam	Lecture	Daily and
I wenty-eight	4	Second Exam	Lecture	monthly
				exams,
				assignments
Twonty ning	2	Movement coil	T astrong	and reporting
Twenty-nine	2		Lecture	Daily and
		galvanometer	1	monthly

				exams, assignments and reporting
Thirty ¹	2	Bayo s –savert law Application of bayots savert law	Lecture	Daily and monthly exams,
		Magnetic induction of a moving electric change		assignments and reporting

core for daily exams: 5, score for assignments and reports: 10, score for monthly exams: 35 Final exam score: 50

Required textbooks (methodology, if any)	
Main references (sources)	Electricity and magnetism
Recommended supporting books and	Nothing
references (scientific journals, reports)	
Electronic references, Internet sites	

		Course descrij	ption form		
1- Course name	;				
Sound and wav		U			
2- Course cod	le / ATP	023			
Bachelor's					
3- Semester /	year				
2024/2023					
	escription	n was prepared			
2023/9/3					
5- Available a	ttendanc	e forms			
Day					
	study ho	urs (total) / numbe	er of units (total)		
60 hour					
		administrator (if r			
Name:- Prof. I	Dr:- Nad	im Khalid Hassan	, Email:- <u>nadin</u>	<u>1kh4@tu.edu</u>	<u>.10</u>
8- Course obje	ectives		TT 1 4 10	· ·	
			. Understanding motion.	g basic conce	pts in wave
			. Studying free (Oscillation .	
			.Study of superp	osition of sir	nple
			harmonic motio	ns.	
			.Investigating da	mped Oscill	ation.
			.Exploring force	-	
			.Studying transv	erse waves i	n one
			dimension.	idinal wayo	(sound
			.Studying longit waves).	lumai waves	s (sound
			.General conside	erations in so	ound and
			wave phenomen	a.	
9- Teaching an	nd learni	no strategies			
Strategy			The lecture style,	discussing st	udents, asking
			and circulating qu	-	•
10- Course St		Nome of the		Loomin	Evolución
Week	Hour	Name of the un or topic	it Required learning	Learning method	Evaluation method
			outcomes		
First	2	Sound and wave motion	Basic concepts	Lecture	Daily and
		ΠΙΟΠΟΠ			monthly exams,

					assignments
					and reporting
Second	2	Sound and wave	Types of	Lecture	Daily and
		motion	Mechanical Wave		monthly
			Motion		exams,
					assignment
					and reportin
Third	2	Free Oscillation		Lecture	Daily and
			Equation of		monthly
			Simple Harmonic		exams,
			Motion		assignment
					and reportin
Fourth	2	Free Oscillation		Lecture	Daily and
			Energy of the		monthly
			Simple Harmonic		exams,
			Oscillator		assignment
					and reportin
Fifth	2	Free Oscillation	Applications of	Lecture	Daily and
	_		Simple Harmonic		monthly
			Motion		exams,
					assignment
					and reportin
Sixth	2	Superposition of	Principle of	Lecture	Daily and
	-	Simple Harmonic	Superposition	Lottare	monthly
		Motions –	Superposition		exams,
					assignment
					and reportin
Seventh	2	Superposition of	Superposition	Lecture	Daily and
Seventin	-	Simple Harmonic	Two Simple	Lecture	monthly
		Motions –	Harmonic		exams,
			Motions		assignment
			1120010115		and reportin
Eighth	2	Superposition of	Graphical	Lecture	Daily and
	_	Simple Harmonic	Method for	Lettare	monthly
		Motions –	Superposition		exams,
		TVIOU0115	Two		assignment
			Perpendicular		and reportin
			Simple		und reportin
			Harmonic		
			Motions		
Ninth	2	Damped Oscillation	The Force	Lecture	Daily and
	-	2 ampea Openiumon	Causing	Locuto	monthly
			Damped		exams,
			Oscillation		assignment
					and reportin
Tenth	2	Damped Oscillation	Equation of	Lecture	Daily and
	-	Zampea Osemanon	Damped	U	monthly
			Harmonic		exams,
			Motion		assignment
			TITUT		and reportin
Eleventh	2	Damped Oscillation	Solution of the	Lecture	Daily and
	-	Dumper Oscillation	Damped	Little	monthly

			Harmonic		exams,
			Motion		assignments
			Equation		and reporting
Twelfth	2	Forced Oscillation	Solution of the	Lecture	Daily and
	-		Forced Motion		monthly
			Equation		exams,
			Equation		assignments
					and reporting
Thirteenth	2	Forced Oscillation	Resonance and	Lecture	Daily and
	2	Forceu Oscination		Lecture	-
			Amplitude of Oscillation at		monthly
					exams,
			Resonance		assignments
				. .	and reporting
Fourteenth	2	Forced Oscillation	The	Lecture	Daily and
			Relationship		monthly
			Between		exams,
			Resonance		assignments
			Frequency and		and reporting
			the Natural		
			Frequencies of		
			the Oscillator		
Fifteenth	2	Transverse Waves	Transverse	Lecture	Daily and
		in One Dimension	Wave Motion		monthly
			in One		exams,
			Dimension		assignments
					and reporting
Sixteenth	2	Transverse Waves	Equation of	Lecture	Daily and
Sinteentin	-	in One Dimension	Transverse	Leeture	monthly
		In one Dimension	Wave Motion		exams,
			in a Oscillating		assignments
			String		and reporting
Seventeenth	2	Transverse Waves	Standing	Lecture	Daily and
Seventeentii	2	in One Dimension	Waves, Free	Lecture	monthly
		III One Dimension	Oscillation of a		•
			Stretched and		exams,
					assignments
			Finite-Length		and reporting
			String, and the		
	•		Sonometer	T . 4	
Eighteenth	2	Transverse Waves	Laws of	Lecture	Daily and
		in One Dimension	Oscillating		monthly
			Strings		exams,
					assignments
	_				and reporting
Nineteenth	2	Longitudinal	Longitudinal	Lecture	Daily and
		Waves (Sound	Waves in a		monthly
		Waves)	Metal Rod and		exams,
			a Column of		assignments
			Fluid		and reporting
Twentieth	2	Longitudinal	Equation of the	Lecture	Daily and
		Waves (Sound	Sound Wave in		monthly
		Waves)	Terms of		exams,
		,	Pressure		assignments
					and reporting

Twenty-one	2	Longitudinal	Standing	Lecture	Daily and
-		Waves (Sound	Longitudinal		monthly
		Waves)	Waves in		exams,
		,	Resonance		assignments
			Tubes		and reporting
Twenty-Two	2	Sound and the	Pitch,	Lecture	Daily and
1	-	Wave Phenomenon	Loudness,	Leevare	monthly
			Timbre, Pure		exams,
			(or Inaudible)		assignments
			Sounds		and reporting
			Sounds		and reporting
Twenty-Three	2	Sound and the	Decibel Scale,	Lecture	Daily and
v		Wave Phenomenon	Noise or		monthly
			Disturbance		exams,
			2 10001 001100		assignments
					and reporting
Twenty-Four	2	Sound and the	Factors	Lecture	Daily and
I wenty -1 Out	-	Wave Phenomenon	Affecting the	LUUIT	monthly
			Speed of Sound		exams,
			Waves in Air		assignments
			waves in Air		-
T-montry Eleve	2	Sound and the	Duon outlog of	Lecture	and reporting
Twenty-Five	2		Properties of Sound Waves	Lecture	Daily and
		Wave Phenomenon	Sound waves		monthly
					exams,
					assignments
		~			and reporting
Twenty-Six	2	Sound and the	Doppler Effect	Lecture	Daily and
		Wave Phenomenon			monthly
					exams,
					assignments
					and reporting
Twenty-Seven	2	Ultrasonic Waves	Mechanism of	Lecture	Daily and
		and Their	Generation of		monthly
		Applications	Ultrasonic		exams,
			Waves		assignments
			Components of		and reporting
			an Ultrasonic		
			Wave Device		
Twenty-eight	2	Ultrasonic Waves	Effect of	Lecture	Daily and
		and Their	Ultrasonic		monthly
		Applications	Waves on		exams,
			Biological Cells		assignments
					and reporting
Twenty-nine	2	Ultrasonic Waves	Behavior of	Lecture	Daily and
-		and Their	Ultrasonic		monthly
		Applications	Waves in the		exams,
			Human Body		assignments
					and reporting
Thirty	2	Ultrasonic Waves	Some	Lecture	Daily and
	-	and Their	Applications of	Locuto	monthly
		Applications	Ultrasonic		exams,
			Waves		assignments
			vv av CS		and reporting
			1		

core for daily exams: 5, score for assignments and reports: 10, score for monthly exams: 35 Final exam score: 50 12- learning and Teaching Resources					
Required textbooks (methodology, if any) Sound and Wave Motion Physics Amjad Gorgeah					
Main references (sources)	1. Mechanics and Properties of Matter , By: Kohle				
	2.Acoustics ,Shom Series				
Recommended supporting books and	Nothing				
references (scientific journals, reports)					
Electronic references, Internet sites	General physics websites				

Course description form						
1- Course name						
Optics / n ^{2d} stag	e					
2- Course cod	e / OPP 01	2				
3- Semester /	year					
2023/2024						
4- Date this de	scription w	as prepared				
3/9/2023						
5- Available at	tendance fo	orms				
Day						
6- Number of study hours (total) / number of units (total)						
90 hour	•					
7- Name of the course administrator (if more than one name is mentioned)						ed)
Name: Prof. dr.: Abdullah M. Ali , Email:- abdullah.ma1763@tu.edu.iq						
8- Course obje	ctives					
Objectives of the study subjectThe nature of light & Electromagnetic					agnetic	
			spectrum			
			Study the Refraction Reflection phenomena .Studying the lens & and its laws controlled			
			on that.			
			• Studying the mirrors and its laws controlled			
			on that.Study the aberration monochromatic ,			
				erical.		omatic,
			• sti	udying the diffr	_	rization.
			• studying the interference .			
9- Teaching an	d learning	strategies				
Strategy		0	Lec	ture style, disc	cussing with	students, and
			asking and exchanging questions with			
			students			
10- Course St		N. O.I		D. 1	T •	
Week	Hours	Name of th unit or topi		Required learning	Learning method	Evaluation method
		unit of topi		outcomes	memou	memou
First	3	THE NATURE			Lecture	Daily and
		AND PROPAGATIO	N			monthly exams,
		OF LIGHT				assignments

		The nature of Light		and reporting
		, wave from and		und reporting
		rays, Index of		
		refraction, The		
		electromagnetic		
		Spectrum,		
		problems .		
Second	3	REFLECTION	Lecture	Daily and
		AND REFRA		monthly
		CTION		exams,
		Reflection and		assignments
		refraction at plane		and reporting
		surface, the laws of		
		reflection and		
		refraction, Ray		
		treatment of		
		reflection and		
		refraction, the		
		principle of		
		Reversibility,		
		Fermats principle ,		
		problems.		
		problems.		
Third	3	SPHERICAL	Lecture	Daily and
1 mr u	5	SURFACES	Lecture	monthly
				•
		Focal points and		exams,
		Focal lengths,		assignments
		Image formation,		and reporting
		Virtual Images,		
		conjugate points		
		and planes,		
		Convention of		
		signs, Graphical		
		constructions, the		
		parallel Ray		
		method, Oblique –		
		Ray methods,		
		Magnification,		
		Reduced vergence,		
		Derivation of		
		Gaussian Formula,		
		problems .		
Fourth	3	First Exam	Lecture	Daily and
				monthly
				exams,
				assignments
				and reporting
Fifth	3	LENSES	Lecture	Daily and
		Thin lenses, focal		monthly
		points and focal		exams,
		lengths, Image		assignments
		Formation ,		and reporting

		Conjugates points and planes, the		
		parallel –Ray method, The		
		oblique- Ray		
		method Use of lens		
		formula, Lateral		
		Magnifiaction,		
		virtual Images , Lens Markers		
		formula, Thin –		
		Lens combinations,		
		the power of a thin		
		Lens, Derivation of		
		the Lens Makers		
		formula.		
		Thick Lenes, Two		
		spherical surfaces, Focal points and		
		principal points		
		,Generel thick –		
		Lens Formula		
Sixth	3	SPHERICAL	Lecture	Daily and
		MIRRORS Focal point and		monthly
		Focal Length,		exams, assignments
		Graphical		and reporting
		construction's,		1 C
		Mirror Formulas,		
		power of Mirrors,		
		Thick mirrors, Thick – Mirror		
		Formulas, other		
		thick Mirrors ,		
		problems		
Seventh	3	A BERRIONS OF	Lecture	Daily and
	C	LENSES AND	Locture	monthly
		MIRRORS		exams,
		A berrations,		assignments
		Spherical aberration		and reporting
		of a lens, Spherical aberration of		
		Mirrors, coma,		
		Astigmatism		
		,curvature of field ,		
		kinds of aberration.		
Eighth	3	Second Exam	Lecture	Daily and
0				monthly
				exams,
				assignments
	1			and reporting

Ninth	3	OPTICAL INSTRUMENTS The eye , Defects of vision , Spectacle , the simple microscope Magnifier , Refracting telescopes, Normal magnification , the reflecting telescope , camera, stops, the rangefinder, problems.	Lecture	Daily and monthly exams, assignments and reporting
Tenth	3	INTERFERENCEHuygen's principle , Young's Experiment , InterferenceFringes from a Double source , Intensity Distribution in the fringe system , , Coherent sources , Division of Amplitude. Fringes of Equal Inclination , Newton's Rings, problems.	Lecture	Daily and monthly exams, assignments and reporting
Eleventh	3	DIFFRACTION Fresnel fraunhofer diffraction , by a single slit, Further	Lecture	Daily and monthly exams, assignments and reporting
Twelfth	3	Investigation of single – slit	Lecture	Daily and monthly exams, assignments and reporting
Thirteenth	3	Third Exam	Lecture	Daily and monthly exams, assignments and reporting
Fourteenth	3	Aperture, Resolving power with a Rectangular Aperture, Chromatic	Lecture	Daily and monthly exams, assignments and reporting
Fifteenth	3	Resolving power of	Lecture	Daily and

		a prism,		monthly
		~ p,		exams,
				assignments
				and reporting
Sixteenth	3	Circular Aperture,	Lecture	Daily and
Sixteentii	3	Circular Aperture,	Lecture	monthly
				exams,
				assignments
				and reporting
Seventeenth	3	Diffraction pattern,	Lecture	Daily and
Seventeentii	3	Rectangular	Lecture	monthly
		Rectangular		
				exams,
				assignments
Fighteenth	3	Deceluing new of	Lastana	and reporting
Eighteenth	3	Resolving power of	Lecture	Daily and
		a Telescope		monthly
				exams,
				assignments
				and reporting
Nineteenth	3	, Resoling power of	Lecture	Daily and
		a Microscope,		monthly
				exams,
				assignments
				and reporting
Twentieth	3	The Double slit,	Lecture	Daily and
		qualitive Aspects of		monthly
		the pattern,		exams,
				assignments
	_			and reporting
Twenty-one	3	Derivation of the	Lecture	Daily and
		Equation for the		monthly
		Intensity,		exams,
				assignments
				and reporting
Twenty-Two	3	Comparsion of the	Lecture	Daily and
		sigle- slit		monthly
				exams,
				assignments
				and reporting
Twenty-Three	3	and Double – slite	Lecture	Daily and
				monthly
				exams,
				assignments
				and reporting
Twenty-Four	3	patterns,	Lecture	Daily and
		Distinction,		monthly
				exams,
				assignments
				and reporting
Twenty-Five	3	between	Lecture	Daily and
•		Interference and		monthly
		Diffraction		exams,
				assignments

				and reporting
Twenty-Six	3	problems.	Lecture	Daily and
				monthly
				exams,
				assignments
				and reporting
Twenty-Seven	3	POLARIZATION	Lecture	Daily and
		Polarization by		monthly
		Reflection,		exams,
		Representation of.		assignments
				and reporting
Twenty-eight	3	the Vibrations in	Lecture	Daily and
		light, polarization		monthly
		Angle and		exams,
		Brewsters law,		assignments
				and reporting
Twenty-nine	3	polarization by a	Lecture	Daily and
		pile of plates, law of		monthly
		Malus, polarization		exams,
		by Dichroic crystals		assignments
				and reporting
Thirty ¹	3	polarization by	Lecture	Daily and
		Double Refraction,		monthly
		polarization by		exams,
		scattering,		assignments
		problems		and reporting

core for daily exams: 5, score for assignments and reports: 10, score for monthly exams: 35 Final exam score: 50

Required textbooks (methodology, if any)	Whit ,optics
	SEARS
Main references (sources)	physical optics
Recommended supporting books and	Nothing
references (scientific journals, reports)	
Electronic references, Internet sites	Optics and Photonics (2007) Graham Smith · Terry
	A.King

نموذج وصف المقرر

1- course name

Astronomy- second stage

2- course code:

Bachelor's

3-Semester / year

2024/2023

4- Date this description was prepared

2023/9/3

5- Available attendance forms

daily

6- Number of study hours (total) / number of units (total

60 hours

7-Name of the course

administrator (if more than one name is mentioned)

Name: Assist prov.Dr. Kawkab Dawood Salim, e.mail: kawkab_badri@tu.edu.iq

8- Course objectives

Objectives of the study subject	 Learn about astrophysics. Study of the celestial sphere Study of galaxies, their speed and mass Study of stars, their masses, speeds and distances between them Study of planets, dwarf planets and asteroids Study of comets, meteors and meteors. Study of black holes and quasars. Study of dark matter
9- Teaching and learning strategies strategy	Lecture style, discussing with students, and asking and exchanging questions with students
Course Structure -10	

week	hours	Name of the	Required	Learning	Evalution
		unit	learning	method	method
			outcomes		
first	2	Unit one	الفصل	lecture	Daily and ¹
11.50	-		الأول Kepler's	icetuite	monthly exams
			laws, celestial		assignments
			sphere,		and reporting
			astronomical		unaroporung
			units		
second	2	Unit one	Celectial	lecture	Daily and
			coordinate		monthly exams
			system		assignments
			·		and reporting
third	2	Unit two	Physicsl	lecture	Daily and
			properties of		monthly exams
			sun and moon		assignments
					Daily and
					monthly exams
					assignments
					and reporting
					and reporting
fourth	2	Unit three	physical	Lecture	Daily and
			properties of		monthly exams
			planets		assignments
			-		and reporting
fifth	2	Unit four	optical	Lecture	Daily and
			properties of		monthly exams
			stars		assignments
					and reporting
sixth	2	Unit four	R-H diagram	Lecture	Daily and
			of stars and		monthly exams
			problems		assignments
					and reporting
seventh	2	Unit four	Types of stars	Lecture	Daily and
			and their life		monthly exams
			cycle		assignments
					and reporting
eight			1 st exam		الثامن
ninth	2	Unit five	the stars	Lecture	Daily and
			systems		monthly exams
					assignments
					and reporting
tenth	2	Unit five	Calculating	Lecture	Daily and
			the mass of		monthly exams
			stars in terms		assignments
			of the mass of		and reporting
1 (1		CI (1)	the sun	T (
eleventh	2	Sixth unit		Lecture	Daily and
			Optical		monthly exams
			properties of		assignments
4 1641	2	TT .•4 47	milkt way	T 4	and reporting
twelfth	2	Unit seventh	Types of	Lecture	Daily and

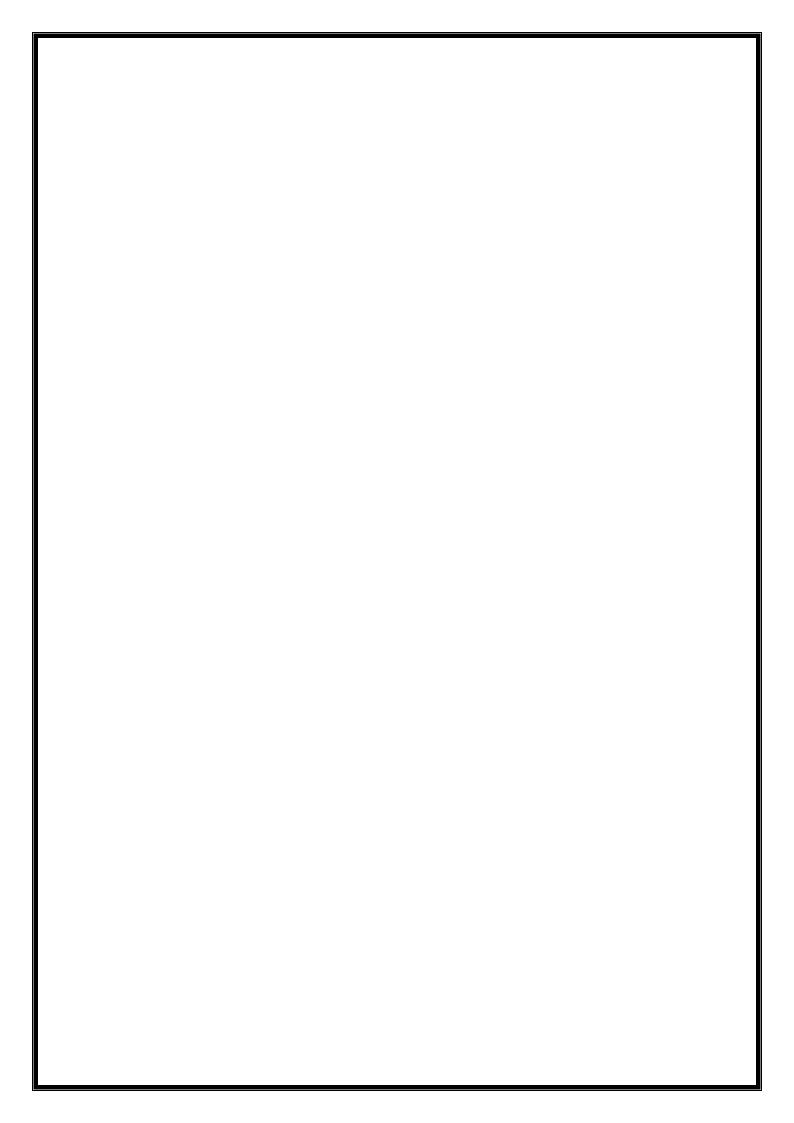
			galaxies		monthly exams, assignments and reporting
thirteenth	2	Unit seventh	effective galaxies types	Lecture	Daily and monthly exams, assignments and reporting
fourteenth	2	Unit eighth	Quasars, the age of the universe, and the Hubble constant	Lecture	Daily and monthly exams, assignments and reporting
fifteenth	2	Unit eighth	Theories of the origin of the universe and life in the universe	Lecture	Daily and monthly exams, assignments and reporting
sixteenth	2		Second exam		

core for daily exams: 5, score for assignments and reports: 10, score for

monthly exams: 35

Final exam score: 50

Required textbooks (methodology,	
if any)	Course: The Book of Space, Part Two -
	Astronomy - Dr. Abdul Hamid Majoul Al-
	Naimi
Main references (sources) -	- Pathways to Anstronomy
	Stephen E. Schneider
	~~····
Recommended supporting books	
and references (scientific journals,	
()reportsالتقارير)	
	www.nasa.gov
Electronic references, Internet sites	



Course Description Template

1. Course Name: Scientific Research Methods / Second Year

2. Course Code: Bachelor's Program

3. Annual: 2023/2024

4. Preparation Date of This Description: 27/4/2023

5. Available Attendance Options: In-person

6. Total Study Hours / Units:

Total Hours: 2 Total Units: 4

7. Course Coordinator(s):

Name: Eng. Ahmed Talab Sabbar Email: ahmed.s.m.o.j@tu.edu.iq

8. Course Objectives:

- Deepen the undergraduate researcher's knowledge of scientific research steps.

- Introduce the researcher to the concept of research and the scientific method.

- Enable the researcher to define research hypotheses and problems.

- Familiarize the researcher with research classifications based on goals and methods.
- Introduce the researcher to research tools, their role in data collection, and their validity and reliability.

9. Teaching and Learning Strategies:

- Lecture method and student discussions.

- Engaging students with questions and exchanges.

10. Course Structure:

Week	Hours	Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
1	2	Comprehension, Analysis, Synthesis	Origin and Evolution of Science and Research	Lecture, Discussion	Daily and Monthly Exams, Assignments

2	2	Comprehension, Analysis, Synthesis	Scientific Research	Lecture, Discussion	Daily and Monthly Exams, Assignments
3	2	Comprehension, Analysis, Synthesis	Types of Scientific Research	Lecture, Discussion	Daily and Monthly Exams, Assignments
4	2	Comprehension, Analysis, Synthesis	Research Problems, Plans, and Hypotheses	Lecture, Discussion	Daily and Monthly Exams, Assignments
5	2	Comprehension, Analysis, Synthesis	Scientific Research Methods and Tools	Lecture, Discussion	Daily and Monthly Exams, Assignments
6	2	Comprehension, Analysis, Synthesis	Historical Method	Lecture, Discussion	Daily and Monthly Exams, Assignments
7	2	Comprehension, Analysis, Synthesis	Survey Method	Lecture, Discussion	Daily and Monthly Exams, Assignments
8	2	Comprehension, Analysis, Synthesis	Descriptive Method	Lecture, Discussion	Daily and Monthly Exams, Assignments
9	2	Comprehension, Analysis, Synthesis	Comparative Method	Lecture, Discussion	Daily and Monthly Exams, Assignments
10	2	Comprehension, Analysis, Synthesis	Theoretical Mathematical Method	Lecture, Discussion	Daily and Monthly Exams, Assignments
11	2	Comprehension, Analysis, Synthesis	Experimental Method	Lecture, Discussion	Daily and Monthly Exams, Assignments

12	2	Comprehension, Analysis, Synthesis	Key Requirements for Experimental Research	Lecture, Discussion	Daily and Monthly Exams, Assignments
13	2	Comprehension, Analysis, Synthesis	Sources of Information	Lecture, Discussion	Daily and Monthly Exams, Assignments
14	2	Comprehension, Analysis, Synthesis	Databases	Lecture, Discussion	Daily and Monthly Exams, Assignments
15	2	Comprehension, Analysis, Synthesis	Information Networks	Lecture, Discussion	Daily and Monthly Exams, Assignments
16	2	Comprehension, Analysis, Synthesis	Scientific Research Writing	Lecture, Discussion	Daily and Monthly Exams, Assignments
17	2	Comprehension, Analysis, Synthesis	Main Sections of Research	Lecture, Discussion	Daily and Monthly Exams, Assignments
18	2	Comprehension, Analysis, Synthesis	Writing Style and General Format	Lecture, Discussion	Daily and Monthly Exams, Assignments
19	2	Comprehension, Analysis, Synthesis	Rules for Writing Footnotes	Lecture, Discussion	Daily and Monthly Exams, Assignments
20	2	Comprehension, Analysis, Synthesis	Main and Subheadings (Subdivisions)	Lecture, Discussion	Daily and Monthly Exams, Assignments
21	2	Comprehension, Analysis, Synthesis	Referencing by Numbers	Lecture, Discussion	Daily and Monthly Exams, Assignments

22	2	Comprehension, Analysis, Synthesis	Samples	Lecture, Discussion	Daily and Monthly Exams, Assignments
23	2	Comprehension, Analysis, Synthesis	Guidelines for Preparing Tables	Lecture, Discussion	Daily and Monthly Exams, Assignments
24	2	Comprehension, Analysis, Synthesis	Summary or Abstract Section	Lecture, Discussion	Daily and Monthly Exams, Assignments
25	2	Comprehension, Analysis, Synthesis	References or Sources Section	Lecture, Discussion	Daily and Monthly Exams, Assignments
26	2	Comprehension, Analysis, Synthesis	Methods of Citing References	Lecture, Discussion	Daily and Monthly Exams, Assignments
27	2	Comprehension, Analysis, Synthesis	Published Research in Scientific Journals	Lecture, Discussion	Daily and Monthly Exams, Assignments
28	2	Comprehension, Analysis, Synthesis	Card Indexing System	Lecture, Discussion	Daily and Monthly Exams, Assignments
29	2	Comprehension, Analysis, Synthesis	Illustrative Figures in Research	Lecture, Discussion	Daily and Monthly Exams, Assignments
30	2	Comprehension, Analysis, Synthesis	Maps and Other Figures	Lecture, Discussion	Daily and Monthly Exams, Assignments

11. Assessment:

- Monthly Exams: 50%

- Final Exam: 50%

12. Learning and Teaching Resources:

- Required Textbooks:

Scientific Research Methods: For Primary Levels

- Main References:

Boyer, Carol, Science (Electronic Scientific Encyclopedia), 1998.

- Additional Suggested Resources:

None

1. Course Name:

English Language / Second Stage

2. Course Code:

Undergraduate

3. Semester / Year: 2023- 2024

4. Description Preparation Date:

5/9/2023

5. Available Attendance Forms:

Daily

6. Number of Credit Hours (Total) / Number of Units (Total)

60 hours

7. Course administrator's name (mention all, if more than one name)

Name: Assist. Teacher Rola Fawwaz Hammad Email: <u>rula.f.hammad@tu</u> <u>.edu.iq</u>

8. Course Objectives	
Course Objectives	• learning the basics of English language
	\Box studying some tenses
	□ studying some English styles for speaking
	studying some physical terms
9. Teaching and Learning Strategies	

Strategy Le		ecture style, discussing with	n students, and asking	g questions to	students
10. Co	ourse St	ructure			
ww	Hours	Required Learning	Unit or subject	Learning	Evaluation
		Outcomes	name	method	method
First	2	Learn what is the basic	s Basics of	Lecture	Quiz
		of English Language	English		
Secon	2	How and when this tense	e Present simple	Lecture	Monthly exam
d		is used	tense		
Third	2	Training for reading	Reading	Lecture	Daily listening
Fourt	2	How and when this tense	e Future simple	Lecture	Monthly& daily
h		is used	tense		exam
Fifth	2	How this style is used	First	Lecture	Monthly& daily
			conditional (If		exam
			clause)		
Sixth	2	How to use this style	Future passive	Lecture	Monthly& daily
					exam
Seven	2	How to use this style	Present passive	Lecture	Monthly& daily
th					exam
	2	Students' Evaluation	First exam	Lecture	Monthly exam
Eight					
h					
Ninth	2	Knowing some physica	1 Terms	Lecture	Quiz
		terms			
Tenth	2	Training for Speaking	Speaking	Lecture	Daily participants
Eleve	2	Training for reading	Reading	Lecture	Daily participants
nth		6B	0		, , , , , , , , , , , , , , , , , , ,

Twelf	2	How to read decimal	Reading	Lecture	Monthly& daily
th		numbers	decimals		exam
Thirte	2	How to read years	Reading years	Lecture	Monthly& daily
enth					exam
Fourt	2	Knowing the time	Telling the	Lecture	Monthly& daily
eenth			time		exam
	2	What is the difference	So & such	Lecture	Monthly& daily
Fifteent		between such styles			exam
h					
	2		Second exam	Lecture	Monthly exam
Sixteent					
h					
Seven	2	Training for writing	Story time	Lecture	Monthly& daily
teenth					exam
Eight	2	Knowing some	Definitions	Lecture	Monthly& daily
eenth		definitions			exam
Ninet	2	How to use this style	Comparative	Lecture	Monthly& daily
eenth					exam
Twent	2	How to use this style	Superlative	Lecture	Monthly& daily
ieth					exam
Twent	2	Knowing such a style in	Polite	Lecture	Monthly& daily
y first		2 nd language	Descripting		exam
Twent	2		Third Exam	Lecture	Monthly exam
у					
secon					
d					
Twent	2	Knowing the Meaning of	Physical terms	Lecture	Monthly& daily
У		some terms			exam
third					

	1			1	
Twent	2	Reinforcement students'	Vocabulary	Lecture	Monthly& daily
у		knowledge of vocabulary			exam
fourth					
Twent	2	Reinforcement students'	Synonyms	Lecture	Monthly& daily
y fifth		knowledge			exam
Twent	2	Reinforcement students'	Antonyms	Lecture	Monthly& daily
у		knowledge			exam
sixth					
				_	
Twent	2	Reinforcement students'	Matching	Lecture	Monthly& daily
У		knowledge			exam
sevent					
h					
Twent	2	Identify some linguistic	Obligation	Lecture	Monthly& daily
у		techniques for speaking			exam
eighth					
C					
Twent	2		Review	Lecture	
У					
ninth					
Thirti	2	Students' Evaluation	Fourth Exam	Lecture	Monthly exam
eth					-

Course description form

		Course descri	ption form				
1- Course name							
Atomic and mo	lecular physics	s / third stage					
2- Course cod	le / ATP023						
Bachelor's							
3- Semester /	year						
2024/2023							
4- Date this de	escription wa	s prepared					
2023/9/3							
5- Available a	ttendance for	rms					
Day							
6- Number of	study hours ((total) / number	r of units (total)				
90 hour	•						
7- Name of the	e course adm	inistrator (if m	ore than one name	is mentione	d)		
			Ali , Email:- <u>muh</u>		,		
8- Course obje	ectives						
Objectives of		ject	Identify atomic ph	ysics.			
5	2	0	• Study the theory	•			
			• Study of atomic s				
			Study atomic models				
			• Study the atomic	spectra of the	ne hydrogen		
			atom.				
			• X-ray study.	C / 1 1 1			
			Quantum theory of	the hydrog	en atom.		
9- Teaching a	nd learning st	trategies					
Strategy	U		Lecture style, discu	ussing with	students, and		
			asking and exchanging questions with				
			students				
10- Course St		1					
Week	Hours	Name of the	-	Learning	Evaluation		
		unit or topic	c learning outcomes	method	method		
First	3	Atomic physic	cs Basic concepts	Lecture	Daily and		
					monthly exams		
					assignments and reporting		
Second	3	Relativity	Basic concepts	Lecture	Daily and		
		theory			monthly exam		
	1	1	1	1	assignments		

					and reportin
Third	3	Relativity	Basic concepts	Lecture	Daily and
		hypotheses			monthly exan
		• -			assignments
					and reportin
Fourth	3	Finding the	Finding the	Lecture	Daily and
	-	results of the	results of the		monthly exan
		theory of	theory of		assignment
		relativity	relativity		and reportin
Fifth	3	Lorentz	Lorentz	Lecture	Daily and
Гиш	5	transformations	transformations	Lecture	monthly exan
		ti ansi oi mations	ti ansi oi mations		assignment
					and reportin
C:4L	3	Study of starsis	Study of stands	Lastana	-
Sixth	3	Study of atomic	Study of atomic	Lecture	Daily and
		structure	structure		monthly exan
					assignments
~					and reportin
Seventh	3	Atomic models	Atomic models	Lecture	Daily and
					monthly exan
					assignments
					and reportin
Eighth	3	Assumptions of	Assumptions of	Lecture	Daily and
		Bohr's model of	Bohr's model of		monthly exan
		the hydrogen	the hydrogen		assignments
		atom	atom		and reportin
					1
Ninth	3	Assumptions of	Assumptions of	Lecture	Daily and
	-	the	the		monthly exan
		Summerfield	Summerfield		assignment
		model of the	model of the		and reportin
		hydrogen atom	hydrogen atom		una reportin
		nyur ogen atom	nyur ogen atom		
Tenth	3	Know the wave	the wave	Lecture	Daily and
1 01101	Ũ	properties of	properties of	Lociare	monthly exan
		particles	particles		assignments
		particles	particles		and reportin
Eleventh	3	Learn about	Learn about	Lecture	Daily and
	5	Herzberg's	Herzberg's		monthly exan
		principle of	principle of		assignments
		inaccuracy	inaccuracy		and reportin
		maccuracy	maccuracy		
Twelfth	3	Knowledge of	electron	Lecture	Daily and
	5	electron	diffraction		monthly exan
		diffraction			assignments
		unnacuon			and reportin
Thirteenth	3	Knowladge of	DoBroglio's	Lecture	· · · ·
1 milleenth	3	Knowledge of	DeBroglie's	Lecture	Daily and
		DeBroglie's	principle		monthly exan
		principle			assignments
T	-			T .	and reportin
Fourteenth	3	Learn about	Learn about	Lecture	Daily and
		Davison's	Davison's		monthly exan
		electron	electron		assignments
		diffraction	diffraction		and reportin

		experiment	experiment		
Fifteenth	3	Recognize the difference between wave and particle behavior of matter	Recognize the difference between wave and particle behavior of matter	Lecture	Daily and monthly exams assignments and reporting
Sixteenth	3	X-ray identification	X-ray identification	Lecture	Daily and monthly exame assignments and reporting
Seventeenth	3	Knowledge of X-ray spectra	X-ray spectra	Lecture	Daily and monthly exams assignments and reporting
Eighteenth	3	Knowledge of X-ray diffraction	X-ray diffraction	Lecture	Daily and monthly exame assignments and reporting
Nineteenth	3	Knowledge of fluorescent X- rays	fluorescent X- rays	Lecture	Daily and monthly exams assignments and reporting
Twentieth	3	Identify the ways radiation interacts with matter	Identify the ways radiation interacts with matter	Lecture	Daily and monthly example assignments and reporting
Twenty-one	3	Learn about the photoelectric effect	Learn about the photoelectric effect	Lecture	Daily and monthly exams assignments and reporting
Twenty-Two	3	Know the Compton effect	the Compton effect	Lecture	Daily and monthly exams assignments and reporting
Twenty-Three	3	Knowledge of the phenomenon of production and annihilation of the pair	the phenomenon of production and annihilation of the pair	Lecture	Daily and monthly exame assignments and reporting
Twenty-Four	3	Knowledge of non-radioactive transitions and the Oker phenomenon	non-radioactive transitions and the Oker phenomenon	Lecture	Daily and monthly exame assignments and reporting
Twenty-Five	3	Knowledge of	X-ray	Lecture	Daily and

		absorption			assignments and reporting
Twenty-Six	3	Knowledge of the quantum theory of the hydrogen atom	the quantum theory of the hydrogen atom	Lecture	Daily and monthly exams, assignments and reporting
Twenty-Seven	3	Knowledge of basic quantum numbers	basic quantum numbers	Lecture	Daily and monthly exams, assignments and reporting
Twenty-eight	3	Knowledge of electron configuration and Pauli exclusion principle	electron configuration and Pauli exclusion principle	Lecture	Daily and monthly exams, assignments and reporting
Twenty-nine	3	Learn about molecular physics and molecular bonds	molecular physics and molecular bonds	Lecture	Daily and monthly exams, assignments and reporting
Thirty ¹	3	Knowledge of molecular spectra	molecular spectra	Lecture	Daily and monthly exams, assignments and reporting

core for daily exams: 5, score for assignments and reports: 10, score for monthly exams: 35 Final exam score: 50

Required textbooks (methodology, if any)	Concepts in modern physics
Main references (sources)	Concepts in modern physics / written by Erth Pizer
Recommended supporting books and references (scientific journals, reports)	Nothing
Electronic references, Internet sites	General physics websites

Course description form

1- Course nan	ne					
Electronic / th	ird stage					
2- Course co						
Bachelor's						
3- Semester	/ year					
2024/2023						
4- Date this of	description	on was prepared				
2023/9/3						
5- Available	attendar	ce forms				
Day						
6- Number o	f study h	ours (total) / numb	er of	units (total)		
90 hour						
7- Name of t	he cours	e administrator (if	more	than one name i	s mentioned	l)
		Dr:- Ibrahim Khala				,
ibrahim.k.salma	<u>n@tu.ed</u>	u.iq				
8- Course ob	jectives					
Objectives of	ě.	ly subject	Learn about semiconductors.			
			• Study the movement of electrons and			
		electron physics.				
		• Study the physics of semiconductors.				
		• Study the feedback in electronic circuits.				
	 Study logic circuits. Study integrated circuit 					
			Study integrated circuits.Nanotechnology			
9- Teaching	and lear	ning strategies	- 110	motechnology		
Strategy	und loui	ing strategies	Lect	ture style, discus	sing with stu	udents. and
		asking and exchanging questions with				
		students				
10- Course S	Structur	e e				
Week	Hours	Name of the unit	t or	Required	Learning	Evaluation
		topic		learning	method	method
				outcomes		
First	3	Introduction to		Basic concepts	Lecture	Daily and
		Semiconductors				monthly exams,
						assignments
						and reporting
Second	3	Learn about the end	ergy	The energy	Lecture	Daily and

		band theory and its	band theory in		monthly
		effect on materials	solids		exams,
			501145		assignment
					and reportin
Third	3	Semiconductor Diode	Basic	Lecture	Daily and
Imra	3	Semiconductor Diode	Concepts	Lecture	•
			Concepts		monthly
					exams,
					assignment
					and reportir
Fourth	3	Diode characteristics	Learn how to	Lecture	Daily and
		curve, temperature	form a pn		monthly
		effect, load line and	junction and		exams,
		working point	the		assignment
			characteristics		and reportin
			curve of a diode		
Fifth	3	Learn about the	Applications of	Lecture	Daily and
		applications of	semiconductor		monthly
		semiconductor diodes	diodes		exams,
					assignment
					and reportin
Sixth	3	Learn about Zener	Zener Diode	Lecture	Daily and
Sixti	5	Diode and Applications	and	Lecture	monthly
		Diode and Applications			
			Applications		exams,
					assignment
a				- ,	and reportin
Seventh	3	Learn about the	The equivalent	Lecture	Daily and
		components of the	circuit of a		monthly
		equivalent circuit, how	Zener diode		exams,
		it works, its	and the effect of		assignment
		applications, and its	temperature		and reportin
		.effect on temperature			
Eighth	3	Learn about the	Bipolar	Lecture	Daily and
		transistor and how to	Transistor		monthly
		connect it			exams,
					assignment
					and reportin
Ninth	3	Transistor Bias and	Transistor Bias	Lecture	Daily and
	-	Transistor Operation	and Load Line		monthly
		Limitations Emitter	and Effect of		exams,
		Bias Circuits	Temperature		assignment
			on Transistor		and reportin
			Operation		
Tenth	3	Knowing the	Speration	Lecture	Daily and
Tenth	5	parameters of	Transistor		monthly
		-			
		transistor operation	operation		exams,
		and the stability of the	parameters		assignment
	-	transistor operation	~		and reportin
Eleventh	3	Learn about common	Common	Lecture	Daily and
		emitter bias	emitter bias		monthly
		mechanism, connection	circuits		exams,
		methods and gain			assignment
		coefficients			and reportin

		Bipolar	Transistor		monthly
		Amplifiers	Amplifiers		exams,
		impiniers	impiniors		assignments
					and reporting
Thirteenth	3	Transistor	Transistor and	Lecture	Daily and
Imrteentn	3			Lecture	•
		Amplifier	Amplifier		monthly
		Working	Equivalent		exams,
		Principle and	Circuit		assignments
		Equivalent			and reportin
		Circuits			
E. A. M	2	The second secon		T	
Fourteenth	3	Learn how	Multistage	Lecture	Daily and
		multistage	amplifiers		monthly
		amplifiers work			exams,
					assignments
					and reportin
Fifteenth	3	Getting to know	Thyroidesters	Lecture	Daily and
		thyroesters			monthly
					exams,
					assignments
					and reportin
Sixteenth	3	Types of thyristors and	Thyroidesters	Lecture	Daily and
		their applications	č		monthly
					exams,
					assignments
					and reportin
Seventeenth	3	Learn about	Field Effect	Lecture	Daily and
Sevencentin	U	field effect	Transistors	Lecture	monthly
		transistors and			exams,
		their types			assignments
		then types			and reportin
					und reportin
Eighteenth	3	Knowing how to	Bias circuits for	Lecture	Daily and
8		bias field effect	field effect		monthly
		transistors and	transistors and		exams,
		their	their uses		assignments
		applications			and reportin
					und reporting
Nineteenth	3	Learn about	Power	Lecture	Daily and
		power	amplifiers		monthly
		amplifiers, their	_		exams,
		types and uses			assignments
					and reportin
					-
Twentieth	3	Operational	Power	Lecture	Daily and
		Amplifiers	Amplifiers		monthly
		_	-		exams,
					assignments
					and reportin
Twenty-one	3	Learn about	Negative	Lecture	Daily and
	-	feedback and its	feedback		monthly

		types			exams,
					assignments
					and reporting
Twenty-	3	Learn about the	Negative	Lecture	Daily and
Two	J	types of	feedback	Lecture	monthly
1.00		feedback loops	ICCUDACK		exams,
		and their effects			assignments
		and then effects			and reporting
					and reporting
Truentry	3	Positive	Positive	Lecture	Daily and
Twenty- Three	3	feedback	feedback and	Lecture	•
Three		Teeuback	oscillators		monthly
			oscillators		exams,
					assignments
T (.	and reporting
Twenty-	3	Understanding	Positive	Lecture	Daily and
Four		Oscillators Oscillation	Feedback and		monthly
		Terms and Types of	Oscillators		exams,
		Oscillators			assignments
					and reporting
Twenty-Five	3	Understanding	Logic Circuits	Lecture	Daily and
		Logic Circuits			monthly
					exams,
					assignments
					and reporting
Twenty-Six	3	Types of logic	Logic gates	Lecture	Daily and
		gates and their	00		monthly
		applications			exams,
		apprentions			assignments
					and reporting
Twenty-	3	Learn about	Integrated	Lecture	Daily and
Seven	5	integrated	circuits	Lecture	monthly
beven		circuits, their	circuits		exams,
		advantages and			assignments
		their			-
					and reporting
		manufacture			
The state of the s				. .	
Twenty-	3	Optical etching	Integrated	Lecture	Daily and
eight		and IC	circuits and		monthly
		component	layer formation		exams,
		manufacturing			assignments
					and reporting
Twenty-nine	3	Basic Concepts	Nanotechnology	Lecture	Daily and
		of			monthly
		Nanomaterials			exams,
					assignments
					and reporting
Thirty ¹	3	Learn about	Carbon	Lecture	Daily and
•		Nano Carbon	Nanotubes and		monthly
		and	Nano		exams,
		Nanotechnology	transistors		assignments
		Applications			

11- Course Evaluation					
core for daily exams: 5, score for assignments and reports: 10, score for monthly exams: 35 Final exam score: 50					
12- learning and Teaching Resources					
Required textbooks (methodology, if any)	Electronics Basics				
Main references (sources)	- Basics of Electronics / Written by Prof. Dr. Samir Atta Makki and M.D. Imad Hadi Khalil				
Recommended supporting books and references (scientific journals, reports)	Electron Physics / Written by Dr. Sobhi Saeed Al-Rawi				
Electronic references, Internet sites	General physics websites				

Course Description Form

1- Course name	
Analytical Mechanics / n ^{3d} stage	
2- Course code / -MAP043	
3- Semester / year	
2023/2024	
4- Date this description was pre	nared
3/9/2023	541 CA
5- Available attendance forms	
Day	
6- Number of study hours (total)	/ number of units (total)
90 hour	
7- Name of the course administr mentioned)	ator (if more than one name is
Name: Prof. dr. :Niran F. Abd	uliahar Email·-
	uyuvar , 12111a11
<u>niran.fadhil64@tu.edu.iq</u>	
8- Course objectives	
Objectives of the study subject	 Introducing students to the
	basics of analytical
	mechanics.
	 basic concepts in
	mechanics, equations of motion
	motion.differential and integral
	 amerential and integral calculus of particles.
	 Kepler's laws
	 collisions and their types.
	 Lagrange's equations
	 Hamilton's equations.
	 conservative forces.
	 first and second order
9- Teaching and learning strateg	
Strategy	Lecture style, discussing with
	students, and asking and exchanging
	questions with students

The	Hours	Name of the	Required	Teachin	Evaluat
week		unit or topic	learning	g	ion
			outcomes	method	method
2	6	Definition of basic	Definition of	According	According
		vector concepts	basic concepts	to the	to the
			-	point8Abo	point8Abo
			(vectors)	ve or as	ve or as
				needed	needed
4	6	Vector	Vector calculus	According to the	According to the
		calculator and	and kinematics	point8Abo	point8Abo
		kinematics		ve or as	ve or as
				needed	needed
6	6	Velocity and	Velocity and	According	According
0	0	acceleration in	acceleration in	to the	to the
				point8Abo	point8Abo
		polar and plane	plane polar	ve or as	ve or as
		coordinates	coordinates	needed	needed
8	6	Velocity and	Velocity and	According	According
		acceleration in	acceleration in	to the	to the
		cylindrical and	cylindrical and	point8Abo	point8Abo
		-	spherical	ve or as needed	ve or as needed
		spherical	-	needed	needed
			coordinates		
9		First exam	First exam		
10	3	Particle	particle	According	According
		dynamic	dynamics	to the	to the
		5		point8Abo	point8Abo
				ve or as needed	ve or as needed
11	3	Movement in a	Motion in a	According	According
11	3			to the	to the
		straight line	straight line	point8Abo	point8Abo
				ve or as	ve or as
				needed	needed
12	3	Newton's laws	Newton's laws	According	According
		of motion	of motion	to the	to the
				point8Abo	point8Abo
				ve or as needed	ve or as needed
12		Voctor	Voctor	According	According
13		Vector	Vector	to the	to the
		component and	components	point8Abo	point8Abo
		unit vector	and vector unit	ve or as	ve or as
				needed	needed
13	3	Addition and	Properties of	According	According
		subtraction of	vector addition	to the	to the
		vectors	and subtraction	point8Abo	point8Abo
		VELLUIS		ve or as	ve or as
4.4				needed	needed
14	3	Mass, force and	Mass, Force,	According	According
		linear	and Linear	to the point8Abo	to the point8Abo

		momentum	Momentum	ve or as needed	ve or as needed
15	3	Scalar and vector product of two vectors	Scalar and vector product of two vectors	According to the point8Abo ve or as needed	According to the point8Abo ve or as needed
16	3		Second exam		
17		Partial differentiation	Partial derivatives for calculating velocity and acceleration	According to the point8Abo ve or as needed	According to the point8Abo ve or as needed
17	3		Force as a function of position And speed	According to the point8Abo ve or as needed	According to the point8Abo ve or as needed
18	3	The labor base and conservative forces	Employment base and conservative forces	According to the point8Abo ve or as needed	According to the point8Abo ve or as needed
19	3	Potential	Potential energy function and conditions for the existence of the potential function	According to the point8Abo ve or as needed	According to the point8Abo ve or as needed
20	3	Delta effect	Delta effect	According to the point8Abo ve or as needed	According to the point8Abo ve or as needed
21	3		Solve the separation equation	According to the point8Abo ve or as needed	According to the point8Abo ve or as needed
22	3	Center force law of gravity	Central forces, law of gravity, potential energy in a central field	According to the point8Abo ve or as needed	According to the point8Abo ve or as needed
23	3	Center of mass, linear momentum, kinetic energy of a system Of	Center of mass and linear momentum Kinetic energy of a system of	According to the point8Abo ve or as needed	According to the point8Abo ve or as needed

		particles	particles		
24	3		Third exam		
25	3	Direct and oblique collision	Direct and oblique collisions	According to the point8Abo ve or as needed	According to the point8Ab ve or as needed
26	3	Lacrange and Hamilton equation	Lacrange and Hamilton equations	According to the point8Abo ve or as needed	According to the point8Ab ve or as needed
27	3	Oscillation theory,potential energy	Fluctuation theory, potential energy and equilibrium, stability	According to the point8Abo ve or as needed	According to the point8Abo ve or as needed
	3		Fourth exam		Evaluat on method

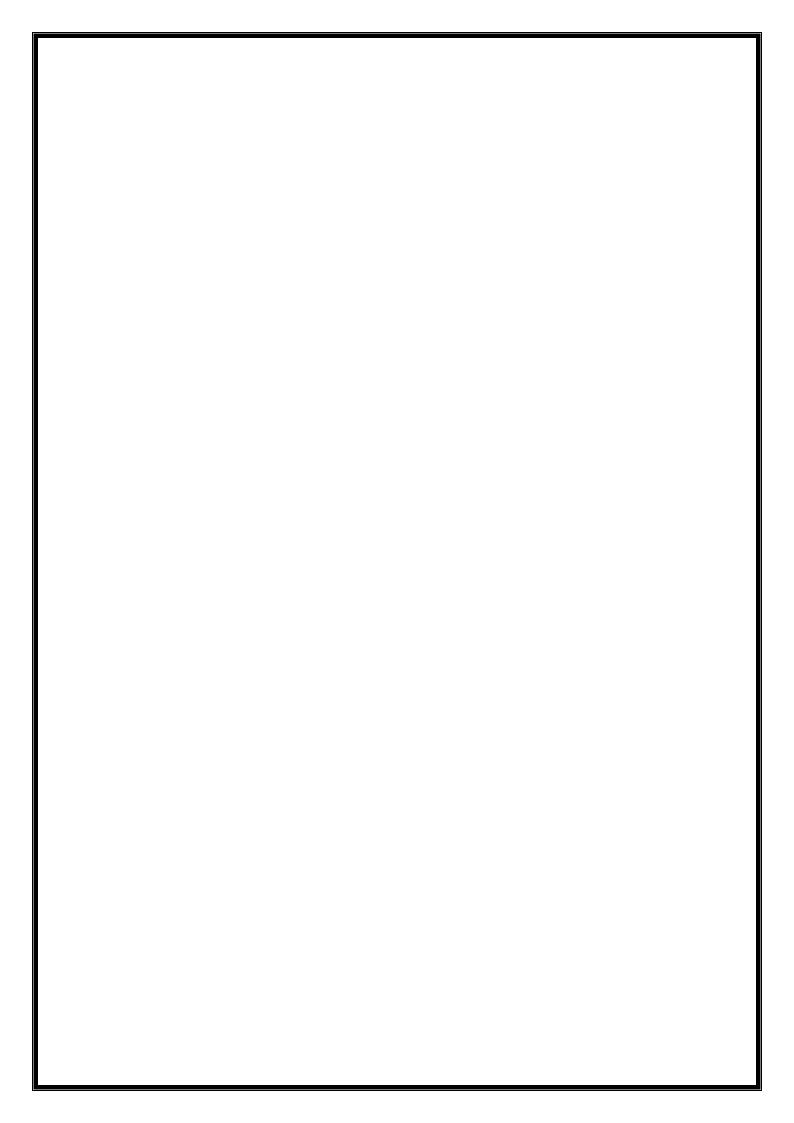
11-Course Evaluation

1-Updating the curriculum requirements according to what is approved in international universities.

2- Building a computer lab for the purpose of preparing mathematical models to solve complex physical problems.

12-learning and Teaching Resources

Calculus and Analytic geometry by Goerge	1- Required textbooks
Thomas 7th edition	
Book by Grant R. Fowles	2- Main references (sources)
Institute of Physics, University of Badji	
Mokhtar	
	A- Recommended books and
	references (Scientific
	journals, reports,)
	B - Electronic references,
	websites



Course description form

1- Course name

Thermodynamics/thied stage

2-Course code

THP033 Bachelors

3- Semester /year

2025-2024

4-The date this description was prepared

2024/1/15

5- Available attendance forms

Daily

6- Total number of study hours/ Total number of units

90 hours

7- Name of the course administrator

e-mail safakhalil1989@tu.edu.iq

Name :Dr safa khalil ibrahem

8- Course objectives

 A1- Identifying thermal energy A2- Identifying the laws of heat transfer between substances A3- Identifying the laws of transfer of materials between their four states A4- Knowing and nderstanding the control of pressure and temperature in the states of matter A5- Knowing and understanding the general law of gases A6- Knowing the type of gases and the differences between them And between the ideal gas A7- Identifying the difference in the results of mathematical analysis A8- Understanding the first, second and third laws of thermodynamics 	Objectives of the study subject

9- Teaching and learning strategies						
The method of lecturing,			Strategy			
discussing with students, and						
asking and exchanging questions						
with students	with students					
10- Course st	ructure					
Evaluation method	Teaching method	Name of	the unit/or topic	hours	week	
According to point 8 above and as needed	According to point 8 above and as needed	Basic concepts in thermodynamics, states of matter, solid state, liquid state, gaseous state, plasma, gas and steam.		6	2	

needed	above and as needed	solid state, liquid state, gaseous state, plasma, gas and steam, saturated vapor		
According to point 8 above and as needed	According to point 8 above and as needed	Basic curves of evaporation and boiling, Clapyron's equation, solving examples and questions, mathematical theory in thermodynamics, general gas law	6	4
According to point 8 above and as needed	According to point 8 above and as needed	state function, compressibility, extensibility, compressibility in an ideal gas, path function, open path, closed path.	6	6
		First Exam		8
According to point 8 above and as needed	According to point 8 above and as needed	Work, work done in different processes, work done in an ideal gas, work in Vandel-Wales rates, work done by changing volume, work done by changing pressure,Focal points and principal points ,Generel thick – Lens Formula	6	6
According to point 8 above and as needed	According to point 8 above and as needed	Equations of general state of gases, equations of state for ideal gases by theoretical and practical method, Boyle's law, Charles' law, Dalton's law, Joule's law	3	11
According to point 8 above and as needed	According to point 8 above and as needed	The general constant of gases, the Vandelois equation, pressure correction, volume correction, finding the values of the critical constants of the Vandelois equation, corresponding cases	6	13

		Second Exam		15
According to point 8 above and as needed	According to point 8 above and as needed	state modifiers for other entities, state modifiers for an open wire, state modifiers for a paramagnetic material, state modifiers for an electric cell	6	16
According to point 8 above and as needed	According to point 8 above and as needed	The first law of thermodynamics, applications of the first law of thermodynamics, results of the first law, Joule's experiment, enthalpy	6	20
According to point 8 above and as needed	According to point 8 above and as needed	Expansion, free expansion, expansion by suffocation. Joule- Kelvin experiment, derivation of the degree of transformation of gases, the relationship between internal energy and enthalpy.	6	24
According to point 8 above and as needed	According to point 8 above and as needed	Heat capacity, Rieghard's method for measuring gamma, Carnot cycle, second law of thermodynamics, applications in thermodynamics	6	28
		Third Exam		29
Evaluation method	Teaching method	Name of the unit/or topic	hours	week
According to point 8 above and as needed	According to point 8 above and as needed	Basic concepts in thermodynamics, states of matter, solid state, liquid state, gaseous state, plasma, gas and steam, saturated vapor	6	2
According to point 8 above and as needed	According to point 8 above and as needed	Basic curves of evaporation and boiling, Clapyron's equation, solving examples and questions, mathematical theory in thermodynamics, general gas law	6	4
According to point 8 above and as needed	According to point 8 above and as needed	state function, compressibility, extensibility, compressibility in an ideal gas, path function, open path, closed path.	6	6
		First Exam		8
According to point 8 above and as needed	According to point 8 above and as needed	Work, work done in different processes, work done in an ideal gas, work in Vandel-Wales rates, work done by changing volume, work done by changing pressure,Focal points and principal points ,Generel thick – Lens Formula	6	9

According to point 8 above and as needed	According to point 8 above and as needed	Equations of general state of gases, equations of state for ideal gases by theoretical and practical method, Boyle's law, Charles' law, Dalton's law, Joule's law	3	11
According to point 8 above and as needed	According to point 8 above and as needed	The general constant of gases, the Vandelois equation, pressure correction, volume correction, finding the values of the critical constants of the Vandelois equation, corresponding cases	6	13
According to point 8 above and as needed	According to point 8 above and as needed	Second Exam		15
According to point 8 above and as needed	According to point 8 above and as needed	state modifiers for other entities, state modifiers for an open wire, state modifiers for a paramagnetic material, state modifiers for an electric cell	6	16
According to point 8 above and as needed	According to point 8 above and as needed	The first law of thermodynamics, applications of the first law of thermodynamics, results of the first law, Joule's experiment, enthalpy	6	20
According to point 8 above and as needed	According to point 8 above and as needed	Expansion, free expansion, expansion by suffocation. Joule- Kelvin experiment, derivation of the degree of transformation of gases, the relationship between internal energy and enthalpy.	6	24
According to point 8 above and as needed	According to point 8 above and as needed	Heat capacity, Rieghard's method for measuring gamma, Carnot cycle, second law of thermodynamics, applications in thermodynamics	6	28
		Third Exam		29

11-Course evaluation

Daily exam score: 5, daily exam score: 10, monthly exam score: 35,

final exam score: 50

12- Learing and teaching resource	S
FUNDAMENTALS OF thermodynamics	Required prescribed books (methodology, if any).
Thermodynamics -	Main references (sources)
Thermodynamics and Schaum series	Recommended supporting books and references (scientific journals, reports)
General physics websites	Electronic references, Internet sites

Cours	e Description Form		
1. Course name			
Semiconductors/Third Stage			
2. Course code.			
Bachelor			
3. Chapter/Year			
2024/2023			
4. Date this description was prepa	ared		
2023/9/3			
5. Available attendance forms			
weekly			
6. Number of study hours (total) /	Number of units (to	otal)	
60 hours			
7. Name of course administrator (if more than one na	me is given)	
Lecturer Dr. Rasha Abbas Abdullah rasha.a.awni@tu.edu			
Lecturer Dr. Shahad Ahmed Diab <u>shahed.ahmed@tu.edu.</u>			
8. Course objectives			
Subject objectives 9. Teaching and learning strategies Strategy	Learn about cryst Learn about cryst terms of crystalliz Learn about the H Learn about the o semiconductors. Understand the do semiconductors. Learn about the p semiconductors. Understand the p- Learn about the p- Learn about the e semiconductors.	al defects and types of solids in ation. Iall effect. ptical and electrical properties of oping mechanism in hotoelectric properties of •n junction	
		uestions with students	

		e Description		Τ	F
The	Watches	Required	Name of the unit or	Learning	Evaluation
week		learning	topic	method	method
41	2	outcomes			D.1
the first	2	Knowing the types of bonds, the	Insistence	The lecture	Daily and monthly
		characteristics of		iccure	exams,
		each type, and how			assignments
		it is affected			and
4	2	The second second second			reporting
the second	2	Learn about the crystal structure of	Crystal structures.	The lecture	Daily and monthly
second		materials and how		iceture -	exams,
		to classify materials			assignments
		according to			and
		crystallization.			reporting
the third	2	Identify the types of	Crystal systems and	The	Daily and
		crystal lattices and	the Paravisian lattice.	lecture	monthly
		crystal systems.			exams,
					assignments
					and reporting
Fourth	2	Identify crystal	Crystalline trends	The	Daily and
		trends, Miller	and crystal planes.	lecture	monthly
		coefficients, and	and crystal planes.		exams,
		.inverted lattices			assignments and
					reporting
Fifth	2	Classification of		The	Daily and
		crystalline defects	Crystalline defects.	lecture	monthly
		and their details.			exams, assignments
					and
					reporting
Sixth	2	Introduction to	Solid state theory.	The	Daily and
		solid state theory	,	lecture	monthly
		and electron			exams, assignments
		behavior in			and
		crystals.			reporting
Seventh	2	Learn the concept	Energy packs.	The	Daily and
		of energy packages		lecture	monthly
		and study the types .of packages			exams, assignments
		.ui packages			assignments
					reporting
eighth	2	Understand the	Energy and momentum.	The	Daily and
		relationship		lecture	monthly
		between energy and momentum.			exams, assignments
		momentum,			and

nintl	h	2	Application of Fermi-Dirac statistics, knowledge of ionization of impurity atoms, phonons, Hall effect.	Density of states in energy bands.	The lecture	reporting Daily and monthly exams, assignments and reporting
tentl	h	2	Learn about the optical properties of semiconductors .	Properties of semiconductors.	The lecture	Daily and monthly exams, assignments and reporting
eleve	en	2	Study of different types of electronic transitions.	Electronic transfers.	The lecture	Daily and monthly exams, assignments and reporting
Twel	ve	2	Understand charge generation and combination processes, majority and minority charge carriers, and spontaneous emission.	Reproductive processes_reunion.	The lecture	Daily and monthly exams, assignments and reporting
thirte	en	2	Understand the mobility of charge carriers, conductivity, resistivity, diffusion and drift of charge carriers.	Mobility of charge carriers.	The lecture	Daily and monthly exams, assignments and reporting
Fourte		2	Understand the p-n junction, depletion region, voltage barrier and study the junction in steady state and biased state.	p-n junction	The lecture	Daily and monthly exams, assignments and reporting
	Da	Course Eva ily exams l exam sco	score: 10, Homewor	rk and reports score: 10, 1	Monthly ex	am score: 30
F		ired textbo	nd teaching resourc	es Semiconductor devices.		

Main References (Sources)	Solid State Physics Part One Dr. Muayad
	Gabriel. Introduction to Semiconductor
	Physics Dr. Yousry Mustafa and Dr. Al-
	Husseini Taher.
Recommended supporting books	nothing
and references (scientific journals,	
reports)	
Electronic references, websites	General Physics Sites

Course Description

Course Description Template

- 1. Course Name: Teaching Methods / Third Year
- 2. Course Code: Bachelor's
- 3. Year: 2023/2024
- 4. Date of Preparation: 27/04/2023
- 5. Available Attendance Formats: In-person
- 6. Total Study Hours (Overall) / Total Units (Overall): Hours: 2, Units: 4
- 7. Course Coordinator(s):

Name: Assistant Ahmed Talib Sabar

Email: ahmed.s.m.o.j@tu.edu.iq

Course Objectives

- Understanding different types of curricula.
- Identifying the components of the curriculum.
- Comprehending various teaching methods.
- Understanding daily, term, and annual lesson plans.

Teaching and Learning Strategies

- Strategy: Lecturing to students, engaging in discussions, posing and answering questions.

Course Structure

Week	Hours	Learning	Unit/Topic	Teaching	Assessment
VVCCN	Tiours	•	•	•	
		Outcomes	Name	Method	Method
1	3	Understand,	Concept of	Lecturing and	Daily and
		analyze,	Curriculum	guided	monthly
		synthesize		exploration	tests,
					assignments
2	3	Understand,	Old	Lecturing and	Daily and
		analyze,	Curriculum	guided	monthly
		synthesize		exploration	tests,
					assignments
3	3	Understand,	Modern	Lecturing and	Daily and
		analyze,	Curriculum	guided	monthly
		synthesize		exploration	tests,
					assignments
4	3	Understand,	Foundations	Lecturing and	Daily and
		analyze,	of Curriculum	guided	monthly
		synthesize	Building	exploration	tests,
					assignments
5	3	Understand,	Philosophical	Lecturing and	Daily and
		analyze,	Foundations	guided	monthly

		synthesize		exploration	tests,
		Synthesize		cxploration	assignments
6	3	Understand,	Psychological	Lecturing and	Daily and
		analyze,	Foundations	guided	monthly
		synthesize		exploration	tests,
					assignments
7	3	Understand,	Methods of	Lecturing and	Daily and
		analyze,	Curriculum	guided	monthly
		synthesize	Organization	exploration	tests,
					assignments
8	3	Understand,	Social	Lecturing and	Daily and
		analyze,	Foundations	guided	monthly
		synthesize		exploration	tests,
					assignments
9	3	Understand,	Cognitive	Lecturing and	Daily and
		analyze,	Foundations	guided	monthly
		synthesize		exploration	tests,
					assignments
10	3	Understand,	Curriculum	Lecturing and	Daily and
		analyze,	Elements or	guided	monthly
		synthesize	Components	exploration	tests,
					assignments
11	3	Understand,	Standards and	Lecturing and	Daily and
		analyze,	Characteristics	guided	monthly
		synthesize	of Educational	exploration	tests,
			Goals		assignments
12	3	Understand,	Content	Lecturing and	Daily and
		analyze,		guided	monthly
		synthesize		exploration	tests,
					assignments
13	3	Understand,	Teaching	Lecturing and	Daily and
		analyze,	Methods and	guided	monthly
		synthesize	Tools	exploration	tests,
					assignments
14	3	Understand,	Evaluation	Lecturing and	Daily and
		analyze,	Process	guided	monthly
		synthesize		exploration	tests,
					assignments
15	3	Understand,	Textbooks and	Lecturing and	Daily and
		analyze,	Curriculum	guided	monthly
		synthesize		exploration	tests,
4.6					assignments
16	3	Understand,	Types of	Lecturing and	Daily and
		analyze,	School	guided	monthly
		synthesize	Curricula	exploration	tests,
47	2				assignments
17	3	Understand,	Subject-	Lecturing and	Daily and
		analyze,	Centered	guided	monthly
		synthesize	Curriculum	exploration	tests,
			and Broad		assignments
			Fields		
10			Curriculum		
18	3	Understand,	Activity-Based	Lecturing and	Daily and
		analyze,	Curriculum	guided	monthly

		synthesize	and Core	exploration	tests,
		synthesize	Curriculum	exploration	-
10	2	L lus el e unete un el			assignments
19	3	Understand,	Units	Lecturing and	Daily and
		analyze,	Curriculum	guided	monthly
		synthesize		exploration	tests,
					assignments
20	3	Understand,	Teaching as	Lecturing and	Daily and
		analyze,	Art and	guided	monthly
		synthesize	Science	exploration	tests,
24	2		Taraktar		assignments
21	3	Understand,	Teaching	Lecturing and	Daily and
		analyze,	Methods	guided	monthly
		synthesize		exploration	tests,
					assignments
22	3	Understand,	Types of	Lecturing and	Daily and
		analyze,	Teaching	guided	monthly
		synthesize	Methods	exploration	tests,
					assignments
23	3	Understand,	Specific	Lecturing and	Daily and
		analyze,	Teaching	guided	monthly
		synthesize	Methods	exploration	tests,
					assignments
24	3	Understand,	Group	Lecturing and	Daily and
		analyze,	Discussion	guided	monthly
		synthesize	Method	exploration	tests,
					assignments
25	3	Understand,	Questioning	Lecturing and	Daily and
		analyze,	Method	guided	monthly
		synthesize		exploration	tests,
					assignments
26	3	Understand,	Problem-	Lecturing and	Daily and
		analyze,	Solving	guided	monthly
		synthesize	Method	exploration	tests,
					assignments
27	3	Understand,	Project-Based	Lecturing and	Daily and
		analyze,	Method	guided	monthly
		synthesize		exploration	tests,
					assignments
28	3	Understand,	Cooperative	Lecturing and	Daily and
		analyze,	Learning	guided	monthly
		synthesize		exploration	tests,
					assignments
29	3	Understand,	Programmed	Lecturing and	Daily and
		analyze,	Learning	guided	monthly
		synthesize		exploration	tests,
					assignments
30	3	Understand,	Computer-	Lecturing and	Daily and
		analyze,	Based	guided	monthly
		synthesize	Learning	exploration	tests,
					assignments

Course Assessment

- Monthly Exam Scores: 50

- Final Exam Score: 50

Learning and Teaching Resources

- Prescribed Textbooks: Curricula and Teaching Methods for Primary Grades.
- Main References (Sources): None specified.
- Recommended Supporting Books and References (e.g., journals, reports): None specified.

Course description form

		Course desc	ripti	on Iorm		
1- Course name	:					
Nuclear Physics	s/ Fourth S	stage				
2- Course cod	le / ATP0	23				
Bachelor's						
3- Semester /	year					
2024/2023						
4- Date this de	escription	was prepared				
2023/9/3						
5- Available a	ttendance	forms				
Day						
6- Number of	study hou	ırs (total) / nun	nber	of units (total)		
90 hour						
7- Name of the	e course a	dministrator (i	if mo	re than one name	e is mention	ed)
Name:- Prof. I	Dr:- Asma	aa Ahmed Aziz	z ,]	Email:- asmaa.ja	mal@tu.edu	i.iq
8- Course obje	ectives					
Objectives of		subject		sic Concepts of N	•	sics
				asic Properties of		
			•	namic Properties	s of Nuclei	
				clear Structure		
			·~	ell Model	. 01.40	1.
				ell Model with S	-	oupling
				clear Interactions		Diana' an
			• El6	ementary Particle	es in Nuclea	r Physics.
9- Teaching an	nd learnin	g strategies				
Strategy			Lect	ture style, discus	sing with stu	idents, and
			aski	ng and exchanging	ng questions	s with students
10- Course St	ructure					
Week	Hours	Name of th	-	Required	Learning	Evaluation
		unit or top	oic	learning	method	method
First	3	Basic properti	es of	outcomes Basic concepts	Lecture	Daily and
	-	the nucleus				monthly
						exams,
						assignments
Sacar J	3	The medicine of	P 41	Dogio com	Leaferrer	and reporting
Second	3	The nucleus of mirror	ine	Basic concepts	Lecture	Daily and monthly
				1	1	

					assignment
					and reportin
Third	3	Some units used in	Basic concepts	Lecture	Daily and
		nuclear physics			monthly
					exams,
					assignment
					and reportin
Fourth	3	Atomic mass unit	Atomic mass	Lecture	Daily and
		у	unit		monthly
		·			exams,
					assignment
					and reportin
Fifth	3	Constant	Constant	Lecture	Daily and
		properties of the	properties of		monthly
		nucleus Constant	the nucleus		exams,
		properties of the			assignment
		nucleus			and reportin
Sixth	3	Nuclear stability	Nuclear	Lecture	Daily and
		study	stability study		monthly
		· ·			exams,
					assignment
					and reportin
Seventh	3	Kinetic properties	Kinetic	Lecture	Daily and
		of nuclei	properties of		monthly
			nuclei		exams,
					assignment
					and reportin
Eighth	3	radioactivity	Assumptions of	Lecture	Daily and
0		e e	radioactivity		monthly
			·		exams,
					assignment
					and reportin
Ninth	3	Assumptions of	Assumptions of	Lecture	Daily and
		the Properties of	the Properties		monthly
		different rays	of different rays		exams,
					assignment
					and reportin
Tenth	3	Knowing the	Knowing the	Lecture	Daily and
		nuclear properties	nuclear		monthly
		of radiation	properties of		exams,
			radiation		assignment
					and reportin
Eleventh	3	nuclear binding	nuclear binding	Lecture	Daily and
		energ	energy		monthly
					exams,
					assignment
					and reportin
Twelfth	3	Radioactive decay	Radioactive	Lecture	Daily and
		law	decay law		monthly
			-		exams,
					assignment
					and reportin
Thirteenth	3	Interaction of	Interaction of	Lecture	Daily and

		types of rays with matter	types of rays with matter		monthly exams, assignments
					and reporting
Fourteenth	3	Alpha and beta	Alpha and beta	Lecture	Daily and
	-	interactions with	interactions		monthly
		matter	with matter		exams,
					assignments
					and reporting
Fifteenth	3	Interactions of	Interactions of	Lecture	Daily and
	c	gamma rays and	gamma rays		monthly
		x-rays with matter	and x-rays with		exams,
		tter	matter		assignments
					and reporting
Sixteenth	3	Types of nuclear	Types of	Lecture	Daily and
	c	detectors	nuclear		monthly
			detectors		exams,
					assignments
					and reporting
Seventeenth	3	Learn about	Learn about	Lecture	Daily and
	c	nuclear reactions	nuclear		monthly
			reactions		exams,
					assignments
					and reporting
Eighteenth	3	Nuclear fission	Nuclear fission	Lecture	Daily and
	e	and fusion	and fusion	Lecture	monthly
					exams,
					assignments
					and reporting
Nineteenth	3	Nuclear reactors	Nuclear	Lecture	Daily and
	-		reactors		monthly
					exams,
					assignments
					and reporting
Twentieth	3	Natural	Natural	Lecture	Daily and
		radioactive chains	radioactive		monthly
			chains		exams,
					assignments
					and reporting
Twenty-one	3	Ionizing and non-	Ionizing and	Lecture	Daily and
v		ionizing radiation	non-ionizing		monthly
			radiation		exams,
					assignments
					and reporting
Twenty-Two	3	Nuclear models	the Compton	Lecture	Daily and
-			effect		monthly
			Nuclear models		exams,
					assignments
					and reporting
Twenty-Three	3	Liquid drop model	Liquid drop	Lecture	Daily and
·			model		monthly
					exams,
					assignments

					and reporting
Twenty-Four	3	nuclear shell	nuclear shell	Lecture	Daily and
		model	model		monthly
					exams,
					assignments
					and reporting
Twenty-Five	3	Learn about	Learn about	Lecture	Daily and
-		uranium	uranium		monthly
					exams,
					assignments
					and reporting
Twenty-Six	3	Enriched and	Enriched and	Lecture	Daily and
-		depleted uranium	depleted		monthly
			uranium		exams,
					assignments
					and reporting
Twenty-Seven	3	Nuclear radiation	Nuclear	Lecture	Daily and
-		hazards	radiation		monthly
			hazards		exams,
					assignments
					and reporting
Twenty-eight	3	Basic rules for	Basic rules for	Lecture	Daily and
		dealing with	dealing with		monthly
		radiation	radiation		exams,
					assignments
					and reporting
Twenty-nine	3	Nuclear	Nuclear	Lecture	Daily and
		elementary	elementary		monthly
		particles	particles		exams,
					assignments
					and reporting
Thirty ¹	3	Classification of	Classification of	Lecture	Daily and
-		elementary	elementary		monthly
		particles	particles		exams,
		_			assignments
					and reporting

11- Course Evaluation					
core for daily exams: 5, score for assignments and reports: 10, score for monthly exams: 35 Final exam score: 50					
12- learning and Teaching Resources					
Required textbooks (methodology, if any)	Concepts in Nuclear physics				
Main references (sources)	Concepts in Nuclear physics /				
Recommended supporting books and	Nothing				

references (scientific journals, reports)	
Electronic references, Internet sites	General physics websites

1. Cours	e Name:					
English L	anguage / 4	th Stage				
2. Cours	e Code:					
Undergra	aduate					
3. Seme	ster / Year:					
2023-2	2024					
4. Descr	iption Prep	aration Date:				
5/9/202	.3					
	ble Attenda	ance Forms:				
Daily	or of Cradit	Hours (Total) / Number of 1	Unita	(Total)		
60 hours		t Hours (Total) / Number of	onits	(10(a))		
7. Course	e administra	ator's name (mention all, if m	ore th	an one name)		
Name: Assist Feacher: Rola Fawwaz Iammad						
Email:						
<u>rula.f.hamm</u> tu.edu.iq	nad@					
8. Cours	se Objectiv	/es				
Course Objec	tives			• learning the language	e basics of Er	nglish
				□ studying som	e tenses	
				□studying some	e English styl	les for
				speaking studying son 	ne physical te	erms
9. Teach	ning and L	earning Strategies				
Strategy	Le	ecture style, discussing with	studei	nts, and asking q	uestions to st	udents
10. Course	e Structur	6				
Week	Hours	Required Learning	Uni	t or subject	Learning	Evaluation
		Outcomes	nan	ne	method	method
First	2	Learn what is the basics	Ba	sics of English	Lecture	Daily test
		of English Language				
	1	<u> </u>			<u> </u>	

Second	2	How and when this tense	Present perfect	Lecture	Monthly
		is used	simple tense		exam
Third	2	Training for reading	Reading	Lecture	Daily
					listening
Fourth	2	How and when this tense	Present perfect	Lecture	Monthly
		is used	continuous tense		& dail
					exam
Fifth	2	How this style is used	3 rd conditional	Lecture	Monthly
			(If clause)		& dail
					exam
Sixth	2	How to use this style	Present perfect	Lecture	Monthly
			passive		& dail
					exam
Seventh	2	How to use this style	Making Requests	Lecture	Monthly
					& dail
					exam
Eighth	2	Students' Evaluation	First exam	Lecture	Monthly
					exam
Ninth	2	Knowing some physical	Terms	Lecture	Quiz
		terms			
Tenth	2	Training for Speaking	Speaking	Lecture	Daily
					participant
Eleventh	2	Training for reading	Reading	Lecture	Daily
					participant
Twelfth	2	How to read decimal	Reading decimals	Lecture	Monthly
		numbers			& dail
					exam
Thirteenth	2	How to read years	Reading years	Lecture	Monthly
					& dail
					exam
Fourteenth	2	Knowing the time	Telling the time	Lecture	Monthly
					& dail
					exam

Fifteenth	2	What is the difference	Adjectives&	Lecture	Monthly
		between adv. & adj.	adverbs		& daily
					exam
Sixteenth	2		Second exam	Lecture	Monthly
					exam
Seventeenth	2	Training for writing	Story time	Lecture	Monthly
					& daily
					exam
Eighteenth	2	Knowing some	Definitions	Lecture	Monthly
		definitions			& daily
					exam
Nineteenth	2	How to use this style	Comparative	Lecture	Monthly
					& daily
					exam
Twentieth	2	How to use this style	Superlative	Lecture	Monthly
					& dail
					exam
Twenty first	2	Knowing such a style in	Suggestions	Lecture	Monthly
		2 nd language			& dail
					exam
Twenty	2	Students' Evaluation	Third Exam	Lecture	Monthly
second					exam
Twenty third	2	Knowing the Meaning of	Physical terms	Lecture	Monthly
		some terms			& dail
					exam
Twenty	2	Reinforcement students'	Vocabulary	Lecture	Monthly
fourth		knowledge of vocabulary			& dail
					exam
Twenty fifth	2	Reinforcement students'	Synonyms	Lecture	Monthly
		knowledge			& dail
					exam

Twenty sixth	2	Reinforcement students'	Antonyms	Lecture	Monthly
		knowledge			& daily
					exam
Twenty	2	Reinforcement students'	Matching	Lecture	Monthly
seventh		knowledge			& daily
					exam
Twenty	2	Identifhy some English	Permission	Lecture	Monthly
eighth		techniques for speaking			& daily
					exam
Twenty	2		Review	Lecture	
ninth					
Thirtieth	2	Students' Evaluation	Fourth Exam	Lecture	Monthly
					exam

Course description form					
1- Course name					
Quantum mechanics / fourth stage					
2- Course code / QUP014					
Bachelor's					
4- Semester / year					
2023-2024					
4- Date this description was prepared					
3/9/2023					
5- Available attendance forms					
Day					
6- Number of study hours (total) / number	r of units (total)				
90 hour					
7- Name of the course administrator (if m					
Name:- Assist. Prof. Dr:- Qahtan Nofan A	Abdullah , Email:- <u>qahtan.nu@tu.edu.iq</u>				
8- Course objectives					
Objectives of the study subject	• Learn about quantum mechanics.				
	• Study the failures of classical physics in				
	explaining some physical phenomena.				
	• Study the wave function.				
	• Study of operators influences				
	• Study of the time-dependent and time-				
	independent Schrödinger equation				
	• Study the problem of a free particle and a				
	particle confined in a potential well in one,				
	two, and three dimensions				
	Harmonic oscillator				
	• Study the issue of the hydrogen atom				
	• Angular momentum				
9- Teaching and learning strategies					
Strategy	Lecture style, discussing with students, and				

asking and exchanging questions with students

Week	Hours	Required	Name of the	Learning	Evaluatio
		learning	unit or topic	method	method
		outcomes	-		
First	3	Basic concepts	Classical	Lecture	Daily and
			physics		monthly
					exams,
					assignments
					and reporting
Second	3	Basic concepts	Classical	Lecture	Daily and
		_	physics		monthly
					exams,
					assignmen
					and reporting
Third	3	Basic concepts	Classical	Lecture	Daily and
			physics		monthly
					exams,
					assignmen
					and reporting
Fourth	3	Learn about	Introduction to	Lecture	Daily and
		quantum	quantum		monthly
		mechanics	mechanics		exams,
					assignmen
					and reporting
Fifth	3	Learn about		Lecture	Daily and
		quantum	Properties of		monthly
		mechanics			exams,
			the wave		assignmen
			e		and reporting
			function		
<u><u> </u></u>	2	The second second	S	T	Dellerer
Sixth	3	Learn about	Time-	Lecture	Daily and
		quantum mechanics	dependent Sebrädinger		monthly
		mechanics	Schrödinger		exams,
			equation		assignmen and reportin
Seventh	3	Learn about	Time-	Lecture	Daily and
Seventin	5	quantum	Independent	Lecture	monthly
		mechanics	Schrödinger		exams,
		menames	equation		assignmen
			- cquation		and reportin
Eighth	3	Identify the	Substitutive	Lecture	Daily and
Lightin	5	characteristics	and non-	Lecture	monthly
		of operators	substitutive		exams,
			operators		assignmen
			Perutors		and reportin
Ninth	3		Expected	Lecture	Daily and
- 144444			values	Littart	monthly

		Learn about calculating physical observations			exams, assignments and reportin
Tenth	3	Learn about calculating physical observations	Expected values	Lecture	Daily and monthly exams, assignments and reportin
Eleventh	3	Herzberg's principle of inaccuracy	Learn about Herzberg's principle of inaccuracy	Lecture	Daily and monthly exams, assignments and reportin
Twelfth	3	The problem of a free particle and a particle trapped in a potential well	free particle	Lecture	Daily and monthly exams, assignments and reporting
Thirteenth	3	The problem of a free particle and a particle trapped in a potential well	a particle trapped in a potential well in 1-D	Lecture	Daily and monthly exams, assignments and reporting
Fourteenth	3	The problem of a free particle and a particle trapped in a potential well	a particle trapped in a potential well in 2-D	Lecture	Daily and monthly exams, assignments and reporting
Fifteenth	3	The problem of a free particle and a particle trapped in a potential well	a particle trapped in a potential well in 3-D	Lecture	Daily and monthly exams, assignments and reporting
Sixteenth	3	Examples of a particle	Solved Examples	Lecture	Daily and monthly exams, assignments and reporting

		trapped in a potential well			
Seventeenth	3	Simple harmonic oscillator	Solution to the quantum harmonic oscillator problem	Lecture	Daily and monthly exams, assignments and reporting
Eighteenth	3	Simple harmonic oscillator	Solution to the quantum harmonic oscillator problem	Lecture	Daily and monthly exams, assignments and reporting
Nineteenth	3	Simple harmonic oscillator	Energy levels and wave functions of a quantum harmonic oscillator	Lecture	Daily and monthly exams, assignments and reporting
Twentieth	3	Simple harmonic oscillator	Energy levels and wave functions of a quantum harmonic oscillator	Lecture	Daily and monthly exams, assignments and reporting
Twenty-one	3	Simple harmonic oscillator	normalization of the wave functions of the harmonic oscillator	Lecture	Daily and monthly exams, assignments and reporting
Twenty-Two	3	Simple harmonic oscillator	Solve examples of quantum harmonic oscillator	Lecture	Daily and monthly exams, assignments and reporting
Twenty-Three	3	Hydrogen atom	Spherically Symmetrical Potential	Lecture	Daily and monthly exams, assignments and reporting
Twenty-Four	3	Hydrogen atom	Solution of the Differential Equations	Lecture	Daily and monthly exams, assignments and reporting
Twenty-Five	3	Hydrogen atom	Three-variable	Lecture	Daily and monthly

		1			1
					exams,
			wave function		assignments
					and reporting
Twenty-Six	3	Hydrogen atom	Structure of	Lecture	Daily and
			the hydrogen		monthly
			atom		exams,
					assignments
					and reporting
Twenty-Seven	3	Hydrogen atom		Lecture	Daily and
			The diagonal		monthly
					exams,
			function of the		assignments
					and reporting
			hydrogen atom		
			and the overall		
			a i		
			wave function		
Twenty-eight	3	Hydrogen atom	electron spin	Lecture	Daily and
I wenty-eight	0	nyur ogen atom	ciccu on spin	Lecture	monthly
					exams,
					assignments
					and reporting
Twenty-nine	3	Hydrogen atom	Knowledge of	Lecture	Daily and
_ // •// •••••	÷	, a- ogen avom	basic quantum		monthly
			numbers		exams,
					assignments
					and reporting
Thirty ¹	3	Hydrogen atom	Knowledge of	Lecture	Daily and
	-		basic quantum		monthly
			numbers		exams,
					assignments
					and reporting

11- Course Evaluation					
core for daily exams: 5, score for assignments and reports: 10, score for monthly exams: 35 Final exam score: 50					
12- learning and Teaching Resources					
Required textbooks (methodology, if any)	Introduction to quantum mechanics				
Main references (sources)	Concepts in modern physics / written by Erth Pizer				
Recommended supporting books and	Nothing				
references (scientific journals, reports)					
Electronic references, Internet sites	General physics websites				

Course description form

Course description form							
1- Course name							
Solid State phys	Solid State physics / Fourth stage						
2- Course cod	le						
Bachelor's							
3- Semester /	year						
2024/2023							
4- Date this de	escription v	vas prepared					
2023/9/3							
5- Available at	ttendance f	orms					
Day							
6- Number of	study hour	s (total) / number	of units (total)				
90 hour							
7- Name of the	e course ad	ministrator (if m	ore than one name is	mentioned)			
Name:- Assist	. Prof. Dr.A	Ayed N. Saleh	, Email:- <u>ayed.ns@tu</u>	ı.edu.iq			
8- Course obje	ectives						
Objectives of t	Objectives of the study subject • Identify the nature of matter and the						
U U		p	properties of molecules.				
9- Teaching an	nd learning	strategies					
Strategy Lecture style, discussing with students, and					lents, and		
	asking and exchanging questions with students						
10- Course St	ructure						
Week	Hours Name of the Required Learning Evaluation						

Week	Hours	Name of the unit or topic	Required learning outcomes	Learning method	Evaluation method
First	3	Atomic structure	Basic concepts	Lecture	Daily and monthly exams, assignments and reporting
Second	3	periodic table	Basic concepts	Lecture	Daily and monthly exams, assignments and reporting
Third	3	Crystallography	geometric crystallography	Lecture	Daily and monthly exams,

					assignments
					and reportin
Fourth	3	Crystallography	Physical	Lecture	Daily and
	· ·		crystallography		monthly
			or journography		exams,
					assignments
					and reportin
Fifth	3	Crystallography	Transitional	Lecture	Daily and
	e	orgstanographig	vectors	Lettare	monthly
					exams,
					assignments
					and reportin
Sixth	3	Crystallography	Cell unit	Lecture	Daily and
Sintin	U	orystanography	oon unit	Lecture	monthly
					exams,
					assignments
					and reporting
Seventh	3	Bonds	Material	Lecture	Daily and
beventin	0	Donus	classification	Lecture	monthly
			classification		exams,
					assignments
					and reportin
Eighth	3	Bonds	packing method	Lecture	Daily and
Eightii	5	Donus	packing memou	Lecture	monthly
					exams,
					assignments
					and reporting
Ninth	3	Bonds	Lattice energy	Lecture	Daily and
	5	Donus	Lattice energy	Lecture	monthly
					exams,
					assignments
					and reporting
Tenth	3	Bonds	Harmonious	Lecture	Daily and
rentin	5	Donus	number	Lecture	monthly
			number		exams,
					assignments
					and reporting
Eleventh	3	X-ray diffraction	Generation of	Lecture	Daily and
	5				monthly
			rays		exams,
					assignments
					and reporting
Twelfth	3	X-ray diffraction	Filters	Lecture	Daily and
	3	A-Lay UIITACHOIL	r nici s	Letture	monthly
					exams,
					assignments
Thinks (1	2	V	Dow-l-t- I	T c =4-	and reportin
Thirteenth	3	X-ray diffraction	Barak's Law	Lecture	Daily and
					monthly
					exams,
					assignments
		87 3400 .4	.	.	and reporting
Fourteenth	3	X-ray diffraction	Experimental	Lecture	Daily and

I			methods		monthly
			methous		exams,
					assignments
					and reporting
Fifteenth	3	X-ray diffraction	laue derivation	Lecture	Daily and
Гпцеенин	3	A-ray uniraction		Lecture	monthly
					•
					exams, assignments
					and reporting
Sixteenth	3	V now diffusation	Designation lattice	Lecture	Daily and
Sixteentii	3	X-ray diffraction	Reciprocal lattice	Lecture	monthly
					•
					exams,
					assignments
Seventeenth	3	V now diffusation	Engineering	Lecture	and reporting
Seventeentii	3	X-ray diffraction	Engineering construction	Lecture	Daily and
			construction		monthly
					exams,
					assignments
	3	C4	Defect defects	T	and reporting
Eighteenth	3	Crystalline	Point defects	Lecture	Daily and
		defects			monthly
					exams,
					assignments
	2		T	T	and reporting
Nineteenth	3	Crystalline	Lattice defects	Lecture	Daily and
		defects			monthly
					exams,
					assignments
Twentieth	3	Creatalling	Diffusion	Lasterra	and reporting
Iwentieth	3	Crystalline defects	Diffusion	Lecture	Daily and monthly
		uerects			•
					exams, assignments
					0
Twonty one	3	Createlline	Fick's Law	Lecture	and reporting Daily and
Twenty-one	3	Crystalline defects	FICK S Law	Lecture	monthly
		uerects			5
					exams,
					assignments
T	2		G	T 4	and reporting
Twenty-Two	3	lattice Vibrations	Sounic waves	Lecture	Daily and
					monthly
					exams,
					assignments
Twont- These	3	lattice Vibrations	atomic vibrations	Loster	and reporting
Twenty-Three	3	lattice vibrations	atomic vibrations	Lecture	Daily and
					monthly
					exams,
					assignments
Twonty Form	3	lottico Vilano 4	Vibration modes	Last	and reporting
Twenty-Four	3	lattice Vibrations	vibration modes	Lecture	Daily and
					monthly
					exams,
					assignments

					and reporting
Twenty-Five	3	Thermal	Classical theory	Lecture	Daily and
•		properties	· · ·		monthly
					exams,
					assignments
					and reporting
Twenty-Six	3	Thermal	Einstein's theory	Lecture	Daily and
		properties			monthly
					exams,
					assignments
					and reporting
Twenty-Seven	3	Electrical	Classical theory	Lecture	Daily and
		properties			monthly
					exams,
					assignments
					and reporting
Twenty-eight	3	Band Throry	Pierodic potential	Lecture	Daily and
					monthly
					exams,
					assignments
					and reporting
Twenty-nine	3	Semiconductor	Dopping of	Lecture	Daily and
			semiconductor		monthly
					exams,
					assignments
					and reporting
Thirty ¹	3	Superconductivity	Superconductivity	Lecture	Daily and
			theory		monthly
					exams,
					assignments
					and reporting

11- Course Evaluation					
core for daily exams: 5, score for assignments and reports: 10, score for monthly exams: 35 Final exam score: 50					
12- learning and Teaching Resources					
Required textbooks (methodology, if any)	Solid State physics				
Main references (sources)	Solid State physics / written by Yahaia N. Jamal				
Recommended supporting books and references (scientific journals, reports)	Nothing				
Electronic references, Internet sites	General physics websites				