جامعة: المنصورة
كـــلية: العلـــــوم
قـســـــم:الفيزيـــاء

توصيف مقرر دراسى

١ - بيانات المقرر		
الرمز الكودي :Phys 101	اسم المقرر :Thermal Physics and Properties of Matter	المستوى : الاول
التخصص: إحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعات معتمدة نظرى:٢ تمارين: ١ عملى:٢	

١ - هدف المقرر:	**For students undertaking this course, the aims are to :** 1- Introducing the students the basics and fundamentals of heat and thermodynamics. 2- Use the principle of Zeroth law of thermodynamics, thermal expansion of solids and liquids, of gasses. 3- Study the heat and thermal energy, heat capacity and specific heat, latent heat, thermodynamic process and the liquification of gasses 4. Introducing the principle of the basics and fundamentals of Properties of matter 5- Study the basic concept of the physical quantities and their units and dimensions. 6- Acquire the student's skills to drive the applications of simple harmonic motion. oscillatory motion 7- Outline the basic information of rotational dynamics, Earth satellites, fluids, surface tension, elasticity.
٢ - المستهدف من تدريس المقرر:	
أ- المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1-Know more information about thermal physics and its applications. a2-Define the physial terms like Zeroth law of thermodynamics, thermal expansion of solids and liquids, heat and thermal energy, specific heat and heat capacity. a3-Understand the principles of heat capacity and specific heat to increase the student's knowledge about different behavior of materials. a4-Define the principles of units and dimensional analysis. a5-List the basic information of oscillatory motion and rotational dynamics. Earth satellites. a6-Know the student to make experiments in physics lab related to properties of matter course. a7-Recognize the principles of fluids mechanics, surface tension and elasticity to increase the student's knowledge about materials.
أ- المهارات الذهنية	**b- Intellectual Skills** **On completing this course, students will be able to:** b1-Apply the principles of thermodynamic process and its applications. b2-Predict thermal behavior of materials by discussing related physical phenomena. b3-Apply more information about properties of matter and their applications. b4-Distinguish between the physial terms like units and dimensions, oscillatory motion, rotational dynamics, Earth satellites, and elasticity. b5-Analyze the principles of fluids motion and surface tension and their applications. b6-Predict behavior of materials by discussing related physical phenomena b7-Apply the mathematical formulas in solving problems.
ج- المهارات المهنية الخاصة بالمقرر:	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1-Choose and classify data obtained from thermal physics experiments c2-Design physics experiments to apply thermal physics phenomena in physics lab

c3-Design a diagram graphically for thermodynamic processes
c4-Reform mathematical formula in solving challenging problems related to thermal physics
c5-Choose and classify data obtained from physics experiments related to properties of matter course.
c6-Design physics experiments to apply oscillatory motion, fluids, surface tension and elasticity in physics lab.
c7-Design a diagram graphically for oscillatory motion, rotational dynamics and fluids motion.
c8-Reform mathematical formula in solving problems related to units and dimensions, oscillatory motion, rotational dynamics, fluids and elasticity.

د- المهارات العامة :

d- General and Transferable Skills

On completing this course, students will be able to:

d1-Present data in graphical using IT methods.
d2-Managements of self time, data and knowledge
d3-Work in a group to perform an experiment.
d4-Search for information about the course materials.
d5-Communicate effectively with students by discussing results obtained from experimental physics lab.

٣- محتوى المقرر:

Thermal physics: Zeroth law of thermodynamics
Thermal expansion of solids and liquids
Heat and thermal energy
Heat capacity and specific heat, latent heat
Thermodynamic process
Liquification of gasses
Properties of matter: Units and Dimensions
Oscillatory Motion
Rotational Dynamics
Earth Satellites
Fluids
Surface Tension
Elasticity
Solve problem and revision

٤- اساليب التعليم والتعلم:

1- Lectures using data show and board.
2- Discussion sessions.
3- Class activity.
4- Laboratory work.

٥- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:

The same as normal students, only skeletal disabilities are allowed in the Faculty of Science

٦- تقويم الطلاب :

أ- الأساليب المستخدمة :

7- Student Assessment Methods

Final exam	to assess	a1-a7, b1- b7, c1-c8,d1-d5
Oral exam	to assess	a1-a7, b1- b7
Practical exam	to assess	a5,a6, c2,c3, c4,c6, d1,d3-d5
Mid-Term Exam	to assess	a1-a7, b1- b7, c1-c8,d1-d5

ب- التوقيت :

Assessment Schedule

Final exam	Week #	16

Oral exam	Week #	16	
Practical exam	Week #	15	
Mid-Term Exam	Week #	7	

ج- توزيع الدرجات :

Weighting of Assessments

Mid-Term Examination	10%
Final-Term Examination	60 %
Oral Examination	10%
Practical Examination	20%
Total	100%

٨- قائمة الكتب الدراسية والمراجع :

أ- مذكرات:	Notes of (**Thermal physics & Properties of matter**) prepared by the physics department.
ب- كتب ملزمة	
ج- كتب مقترحة :	Raymond A. Serway ,Physics for Scientists and Engineers, John W. Jewett 6th Edition, 2004.
د- دوريات علمية أو نشرات..	http://en.wikipedia.org

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Thermal Physics : Zeroth law of thermodynamics	1-3	a1-a2	b1-b2	c1-c2	d1-d5
Thermal expansion of solids and liquids	4-5	a3			
Heat and thermal energy	6-8	a3			
Heat capacity and specific heat, latent heat	9-11	a3			
Thermodynamic process	١٤12-	a3		c3	D1-d5
Liquification of gasses	15	a3		٤c	
Properties of matter: Units and Dimensions	1-2	a4	b3-b4	c5	
Oscillatory Motion	3-5	a5		c6	
Rotational Dynamics	6-8	a5		c6	
Earth Satellites -Fluids	9-11	a5			
Surface Tension Elasticity	12-14	a5	b5-b6	c7	
Solve problem and revision	15	a6-a7	b7	c8	D1-d5

أستاذ المادة: أ.د./ نجاح عبد الرحيم الششتاوى

رئيس مجلس القسم العلمي : أ.د./ المتولى محمود عبد الرازق