توصيف مقرر دراسي

جامعة : المنصورة

كـليـة : العلـــــوم

قســـم : الرياضيات

١- بيانات المقرر		
كود المادة : Math 223	**اسم المقرر :** **Mechanics 4**	**المستوى: الثانى**
التخصص : رياضيات	**عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠**	

٢- هدف المقرر :	**For students undertaking this course, the aims are to:** - Give a thorough understanding of the fundamentals of theoretical mechanics as well as other courses related to it (e.g., advanced mechanics, theory of elasticity, hydrodynamics, … etc).
٣- المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completion of this course successful students will be able to:** a1 - Know and understand Kepler's laws a2 - Understand the concept of stability in mechanics a3 - Be familiar with the notions of central orbits, Projectiles in the earth's gravitational field and the artificial earth satellites
ب- المهارات الذهنية :	**b- Intellectual Skills** **On completion of this course successful students will be able to:** b1 - study the stability of a particle about its equilibrium positions in mechanical problems b2- Solve some problems on Kepler's laws. b3- Study the motion of a particle in plane as well as in space
ج- المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills** **On completion of this course successful students will be able to:** c1 - Solve problems of the motion of particles and rigid bodies

c2 - Use various coordinates systems in problems in classical mechanics c3 - Use stability theorems to study the plantary motion	
d- General and Transferable Skills **On completing this course, students will be able to:** d1- develop skills in modelling phenomena related to classical mechanics. d2- Work in team d3- Do internet search.	**د- المهارات العامة :**
1. Plane motion of a particle 2. Constrained motion 3. Stability of equilibrium and stationary motion 4. Damped simple harmonic motion-Forced vibrations 5. Centeral orbits- Orbital motion of plantes and Satellites. 6. Motion of a particle in three dimensions-Motion on a smooth surface-Motion on a rotating earth 7. Plane motion of a rigid body	**٤- محتوى المقرر :**
1- twohours lecturer weekly with exercise and solution sheets 2- two hours tutorial weekly with exercise sheets and solution sheets 3- Using Internet facilities	**٥- أساليب التعليم و التعلم :**
The same as normal students, only skeletal disabilities are allowed in the faculty of science.	**٦- أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة**
	٧- تقويم الطلاب :
1- Oral exam to assess a1-a3,b1-b2 d1-d3 2- Final exam to assess a1-a3,b1-b3, c1-c3 3- Mid-Term Examination to assess a1,a2,b1, c1-c2	**أ- الأساليب المستخدمة**
1- Oral week 15 2- Final exam week 15 3- Mid-Term Examination week 7	**ب- التوقيت**
- Mid-Term Examination 10 % - Final-Term Examination 80% - Oral Examination 10%	**ج- توزيع الدرجات**

- Practical Examination 0% Total 100%	
٨- قائمة الكتب الدراسية و المراجع :	
Yehia H. M. Particle and rigid body dynamics (in Arabic)	**أ- المذكرات**
Targ. S.,Theoretical Mechanics A Short Course, English Translation, Mir publisher , 1976 .	**ب- الكتب ملزمة**
Loney S. L. Dynamics of particles , Cambridge, 1960. Basaly, W. A. Dynamics of particles and rigid bodies , 1969 (in Arabic)	**ج- كتب مقترحة**
http://en.wikipedia.org/wiki/Dynamics	**د- دوريـــات علميـــة أو نشرات ... الخ**

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
1. Plane motion of a particle	1-2	a1	b3	c1	d1
2. Constrained motion	3	a1, a2		c1, c2	d1
3. Stability of equilibrium and stationary motion	4	a1, a2	b1	c3	d1, d3
4. Damped simple harmonic motion-Forced vibrations	5	a1, a2	b1	c3	d1, d3
5. Centeral orbits- Orbital motion of plantes and Satellites.	6-8	a1, a2	b1, b2	c1-c3	d1-d3
6. Motion of a particle in three dimensions-Motion on a smooth surface-Motion on a rotating earth	9-11	a1, a2	b1, b2	c1-c3	d1-d3
7. Plane motion of a rigid body	12-14	a1-a3	b1-b3	c1-c3	d1-d3

أستاذ المادة : د. عادل عبد العزيز

رئيس مجلس القسم العلمي :ا.د. مجدى إلياس فارس