

توصيف مقرر دراسي

جامعة : المنصورة
كلية : العلوم
قسم : الرياضيات

١- بيانات المقرر		
المستوى: الثانى	اسم المقرر : Mechanics 4	كود المادة : Math 223
عدد الوحدات الدراسية: ٣ ساعة معتمدة نظري ٢: تمارين: ٢ عملي: ٠		التخصص: إحصاء وعلوم الحاسب

<p>For students undertaking this course, the aims are to:</p> <p>- 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).</p>	٢- هدف المقرر :
٣- المستهدف من تدريس المقرر	
<p>a- Knowledge and Understanding</p> <p>On completion of this course successful students will be able to:</p> <p>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</p>	أ- المعلومات و المفاهيم :
<p>b- Intellectual Skills</p> <p>On completion of this course successful students will be able to:</p> <p>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</p>	ب- المهارات الذهنية :
<p>c-Professional and Practical Skills</p> <p>On completion of this course successful students will be able to:</p> <p>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 planetary motion</p>	ج- المهارات المهنية الخاصة بالمقرر :
<p>d- General and Transferable Skills</p> <p>On completing this course, students will be able to:</p> <p>d1- develop skills in modelling phenomena related to classical mechanics. d2- Work in team d3- Do internet search.</p>	د- المهارات العامة :
<p>1. Plane motion of a particle 2. Constrained motion 3. Stability of equilibrium and stationary motion 4. Damped simple harmonic motion-Forced vibrations 5. Central orbits- Orbital motion of planets 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</p>	٤- محتوى المقرر :
<p>1- twohours lecturer weekly with exercise and solution sheets 2- two hours tutorial weekly with exercise sheets and solution sheets 3- Using Internet facilities</p>	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 ذوي 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% - Practical Examination 0% Total 100%	ج- توزيع الدرجات
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- دوريات علمية أو نشرات ... الخ

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسي

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. Central 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