

مواصفات المقرر رياضيات (5) معادلات تفاضلية

- البرنامج الذي يقدم المقرر من خلاله (برنامج إعداد معلم الفيزياء)
- يمثل المقرر عنصرا (رئيسيا) بالنسبة للبرنامج
- القسم العلمي المسئول عن البرنامج (متعدد)
- القسم العلمي المسئول عن تدريس المقرر (قسم الرياضيات)
- السنة الدراسية / المستوى (الفرقة الثالثة عام / طبيعة / الفصل الدراسي الاول)
- تاريخ اعتماد توصيف البرنامج ()

Basic Data

بيانات أساسية

- (1) العنوان : رياضيات (5) معادلات تفاضلية
- (2) الكود : 318 MS
- (3) الساعات المعتمدة Four credit hours
- المحاضرة : 2 h lect. /w
- الدروس العملية : 2h lab / w.
- المجموع : 4 credit hours

Professional Data

بيانات مهنية

1) General goals of the course

(1) الأهداف العامة للمقرر

- students will Know and understand various techniques for differentiating , integrating different functions .
- Be able to apply the concepts on different topics .
- Understand the concepts of differential equation and able to convey the meaning of these concepts to others.
- Know and understand the difference between kinds of differential equation.
- Know the techniques for building and solving many famous models.

2) Operational learning objectives of the course **(2) الأهداف الإجرائية للمقرر**

By the end of this course, student teachers are expected to achieve the following objectives:

A) Knowledge and Comprehension:

أ- المعرفة والفهم:

The students have to recognize the following :

- a.1 know the different coordinate systems in space.
- a.2 know the canonical forms of the plane and the surfaces .
- a.3 know and understand the fundamental concepts and properties differentiation and integration .

- a.4 knowledge and understanding of ordinary differential equation of first order and (n) order.

B) Cognitive Skills:

ب- المهارات العقلية:

- b.1 distinguishing between different types of special kinds of groups and sub groups .
- b.2 classifications of general forms of second order equations in space.
- b.3 show mathematical thinking .
- b.4 illustrate applications of the methods .
- b.5 distinguish between various methods to solve ODES.
- b.6 show logical thinking in problem solving .

C) Practical Skills:

ج- المهارات العملية:

- c.1 apply the fundamental concepts and properties of differentiation and integration in many problems
- c.2 convey the meaning of these concepts to others.
- c.3 apply the fundamental properties of the differential equation in many problems .

D) Enabling Skills:

د- المهارات العامة والمنقولة:

- d1 solve and study problems in small terms .
- d2 be self independent in problem solving.

Contents

المحتويات

Week	Topic	Assigned hours		
		Lectures	Rec	Total
First	- Basic concepts ,definitions of order , degree , solution of the differential equation – formation of the equation - Equations of first order and first degree (separation of variable method , homogeneous and reducible to homogeneous equation , exact equation , integrating factor , Bernoulli equation .) - Equations of first order but not of the first degree (equation solvable – for (x,y,z) ,Lagrange – Clairaut equation)	6	6	12
Second				
Third				
Fourth	- Linear equations with constant coefficients (definition – auxiliary equation , complementary function , determination of particular equations.) - System of differential equations .	4	4	8
Fifth				
Sixth	- Applications and modeling (population model – chemical reaction – orthogonal trajectories – economics – infected disease.) - Basic concepts ,definitions of order , degree , solution of the differential equation – formation of the equation	4	6	10
Seventh				
Eighth	Equations of first order and first degree (separation of variable method , homogeneous and reducible to homogeneous equation , exact equation , integrating factor , Bernoulli equation .)	6	6	12
Ninth				
Tenth				
Eleventh	Types of electron microscope and applications	6	6	12
Twelfth				
Thirteenth				

Activities, tasks and assignments:

أساليب التعليم والتعلم

Lectures.

Laboratory experiments.

Problems essay and assignments

Assessment and Evaluation tools:

أساليب التقييم

Semester activities including classroom interactions and Quizzes.
Final exam.

Summative Evaluation table

جدول التقييم

Assessment	Final exam	Fifteenth Week	الأسبوع الخامس عشر	نهاية الفصل الدراسي	التقييم
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النسبة المئوية لكل تقييم

Assessment	Score Weight ^{وزن الدرجة}	التقييم
2. Final written exam	%80	1. امتحان نهاية الفصل الدراسي
3. Practical exam		2. الامتحان العملي
4. assignments	%20	3. أعمال فصلية
Total	%100	المجموع

References:

قائمة المراجع

- 3.1.1. Courses notes prepared by staff members of math.dept.
- 3.1.2. A first course in abstract algebra , John , B. Fraleigh, Addison – Westey 1999.
- 3.1.3. Courses notes prepared by staff members of math.dept.
- 3.1.4. P.M.Cohn . Solid geometry , New York , Reritledge.
- 3.1.5. L.Lines ,solid geometry ,New York , Dover.
- 3.1.6. A.J.Pettofrezzo and M.M.Lacafena : Analytic geometry with vectors , Scott Foresman and Company
- 3.1.7. Courses notes prepared by staff members of math.dept.
- 3.1.8. Postal, T.T. Mathematical analysis , Addison , Wesley , Reading , 1974.
- 3.1.9. Ross, K. ,elementary analysis : the theory of calculus , Springer Verlag , New York 1980.

<http://mathworld.wolfram.com>.

الإمكانات المطلوبة للتعليم والتعلم

(1) توفير مراجع متخصصة

- منسق المقرر:
- رئيس القسم:
- التاريخ: