مواصفات مقرر ديناميكا كهربية

- **البرنامج الذي يقدم المقرر من خلاله** (إعداد معلم الفيزياء)
- **يمثل المقرر عنصرا (**رئيسيا **) بالنسبة للبرنامج**
- **القسم العلمي المسئول عن البرنامج (**متعدد**)**
- **القسم العلمي المسئول عن تدريس المقرر (**قسم الفيزياء**)**
- **السنة الدراسية / المستوى** (الفرقة الرابعة عام. شعبة الفيزياء / الفصل الدراسى الأول)
- **تاريخ اعتماد توصيف البرنامج ( )**

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Basic Data — بيانات أساسية

(1) Course Title:	**Electrodynamics** ديناميكية كهربية : العنوان	**(1)**
(2) Course Code No.:	**416 ph** : الكود	**(2)**
(3) Credit Hours:	**Three credit hours** الساعات المعتمدة:	**(3)**
Lectures:	**2 credit hours** : المحاضرة	•
Tut. practice:	**1credit hour** : الدروس العملية	•
Total hours:	**3 credit hours** : المجموع	•

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Professional Data — بيانات مهنية

1) General goals of the course — (1) الأهداف العامة للمقرر

The course is designed to help student-teachers achieve the following goals:

- The students have to know how emission of electromagnetic radiation together with other physical phenomena could be described in terms of Maxwell's equations

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 be acquainted with :

a.1 Maxwell's equations and their solutions.
a.2 Gauge invariance, and Lorentz condition.
a.3 Microscope Maxwell's equations and plane wave nonconductivity medium.
a.4 Polarization and emission of electromagnetic radiation.
a.5 Oscillatory electric dipole and radiation field.

B) Cognitive Skills: **(ب) المهارات العقلية:**

b.1 Develop an understanding and appreciation for the nature of scientific inquiry

b.2 Apply mathematics, including statistics and calculus and introductory differential equations, to investigations in physics and the analysis of data.

b.3 Locate resources, design and conduct inquiry-based open-ended investigations in physics, interpret findings, communicate results, and make judgments based on evidence.

C) Practical Skills: **(جـ) المهارات العملية:**

c.1 the appropriate use and storage of scientific equipment.

c.2 safe storage, use, and disposal of materials.

D) Enabling Skills: **(د) المهارات العامة والمنقولة:**

d.1 Relate the concepts of physics to contemporary, historical, technological, and societal issues; in particular.

d.2 Relate concepts of physics to current controversies and other issues.

d.3 Construct new knowledge for themselves through research, reading and discussion, and reflect in an informed way on the role of physics in human affairs

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Contents المحتويات

Week	Topic	Assigned hours		
		Lectures	Tut.	Total
First	▪ Maxwell's equations and their solutions.	2	1	3
Second	▪ Maxwell's equations and their solutions	2	1	3
Third	▪ Maxwell's equations and their solutions	2	1	3
Fourth	▪ Gauge invariance.	2	1	3
Fifth	▪ Lorentz condition.	2	1	3
Sixth	▪ equation of potential.	2	1	3
Seventh	▪ Microscopic Maxwell's equations.	2	1	3
Eighth	▪ General wave equation.	2	1	3
Ninth	▪ plane wave in nonconductivity medium.	2	1	3
Tenth	▪ Polarization and boundary conditions for emission of electromagnetic radiation.	2	1	3
Eleventh	▪ Polarization and boundary conditions for emission of electromagnetic radiation.	2	1	3
Twelfth	▪ Oscillatory electric dipole and radiation field	2	1	3
Thirteenth	▪ Oscillatory electric dipole and radiation field.	2	1	3

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Activities, tasks and assignments: أساليب التعليم والتعلم:

- **Lectures**
- **Laboratory experiments.**
- **Demonstrations**
- **report writing**
- **brainstorming**
- **discussions**
- **Problems and essay assignments.**

Assessment and Evaluation tools: أساليب التقييم

- **Semester activities including classroom interactions and Quizzes.**
- **Oral exam.**
- **Final exam.**
- **Lab performance evaluation**

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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		التقييم
1. Midterm exam		1. امتحان نصف الفصل الدراسي
2. Final written exam	%80	2. امتحان نهاية الفصل الدراسي
3. Final oral exam		3. الامتحان الشفوي
4. assignments	%20	4. أعمال السنة
Total	%100	المجموع

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- **References: قائمة المراجع**

Introduction to electrodynamics by David J. Griffiths Prentice Hall Int

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Educational Resources الإمكانات المطلوبة للتعليم والتعلم

- **Computer simulation programs and slides.**
- **Transparences.**
- **Manual of solved problems (answer and solutions)**
- **Text books.**

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- **Course coordinator:** منسق المقرر:
- **Head of the Department:** رئيس القسم:
- **Date:** التـــــاريخ: