**الموضوع : محتويات مقرر ماده موجات وهوائيات للفرقه الرابعه اتصالات وحاسبات كهـ 1411**

 **السيد الأستاذ الدكتور / مدير وحدة الجودة والإعتماد**

**أتشرف ان ارسل لسيادتكم ملف مقرر ماده موجات وهوائيات للفرقه الرابعه.**

CONTENTS OF COURSE FILE

1. COURSE OBJECTIVES

We begin this course assuming that the student has a background about electromagnetic field theory. We start by explaining what is antenna and its theory, fundamental parameters, types and applications. Once this is mattered, we investigate Maxwell’s equations for wave equations, vector potential and solution of wave equations. Then, we emphasize mathematical approaches for radiations of linear wire antennas. Friis equation, effect of ground on radiation and image theory are explained in details. Arrays design and analysis are studied for several kinds such as uniform and non-uniform structures. We finish up the course with understanding the antenna theory, principles and analysis .

1. Understand basic concepts of antenna behavior.
2. Analyze radiated fields for several kinds of antennas.
3. Study the array structures.
4. DETAILED COURSE CONTENTS

### 1. FUNDAMENTAL PARAMETERS OF ANTENNAS-1:

Radiation pattern, Directive gain, Directivity, Gain, Efficiency, Beamwidth, Polarization,  Input impedance.

** FUNDAMENTAL PARAMATERS OF ANTENNAS -2:**

Effective aperture, Frii’s transmission equation.

 **LINEAR WIRE ANTENNAS:**

Hertzian Dipole, Small and finite size dipoles.

 **LINEAR ARRAYS:**

2 element array, N-element array, Maxima, Minima, Sidelobes, Pattern multiplication, Non-uniform aperture distribution.

 TEACHING PLAN

**Weeks 1:**Review of Maxwell’s equations and Introduction to Antennas.

**Weeks 2-3:**Fundamentals of Antennas.

**Weeks 5:**Wave Equations.

**Week 6-7:** Hertzian Dipole, Small and finite size dipoles.

**Week 8: Midterm 1**

**Weeks 9**: Ground effect and Image theory.

**Week 10-13**: Antenna Arrays, Uniform and Non-uniform.

**Weeks 14**: Midterm 2

**Week 15**: Revision

1. PROBLEMS AND QUIZZES

 Every week syllabus.

1. EXAMS. + MODEL ANSWER
2. STATISTICS OF FINAL EXAMS
3. SEMESTER COURSE REPORT

**Assessment**: Attendance + Home works – 20%, Midterms 20% - Exams – 60%

**Course Learning Outcomes:**

1. On successful completion of this course, all students will have developed **knowledge** and **understanding** of:

(a)     Basic parameters of antennas,

(b)     Friis transmission formula and radar range equation,

(c)     Hertzian dipoles and finite size dipoles,

(d) Dipoles above ground,

(e)    Linear array antennas,

1. On successful completion of this course, all students will have developed their appreciation of and respect for **values and attitudes** regarding, carrying out directed private study using textbooks and other provided resources.