



Ministry Of Higher Education and Scientific Research

AL-Mustansaria University/College of Science /Department of Physics

(نموذج الخطة الدراسية للمساق)

Course Plan



Course No.: **5082416**

Course Name: **Plasma Physics 1**

Course Website: **ان وجد**

Time Division:

4 hours per week of lectures

Semester & Year:

First semester 2017/2018

Course Description [وصف المساق]

(3 credit hours, Prerequisite [المتطلب السابق] No. and Name)

This course deals with the fourth state of matter (charges particles) which is called plasma that deals with high temperature and magnetic & electric fields ,we use Lorentz force in tow models single particles models and fluid model to understood the behaviour of these particles in electromagnetic fields with notes of advance model kinetic theory & simulation models

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- Basic fundamental of the plasma physics.
- Two models that explain the behaviour of charge particles.
- Some application on this matter to explain a lot of phenomenon on universe.

Course Outline

Week	Description
1	Introduction to plasma physics 1
2	Introduction to plasma physics 2 ;define of plasma, example of plasma
3	Concept of temperature
4	Debye shielding, Plasma criteria
5	Introduction to single particle model, Motion of uniform magnetic field
6	Motion of uniform magnetic & electric fields, Gravitational fields
7-8	Motion of non-uniform magnetic field; grad B drift, Curved (Curvature drift) , Non uniform electric fields
9	Magnetic mirrors Magnetic moment., confinement in magnetic mirror field
10	Simple mirror , Tender mirror Van Allen radiation
11	Time varying electric field
12	Time varying magnetic field
13	Third adiabatic invariant
14-15	Introduction to fluid model, elements technique, Navier – stocks equation (MHD),the convective derivative, the stress tensor ; the collision
Final Exam	

Textbooks[الكتاب المنهجي]

1. Introduction to plasma physic & controlled fusion by Francs F. Chen 2006 second edition.
2. Fundamental to plasma physics by Paul M. Bellan 2006

Suggested references[المراجع المساعدة للمنهج]

1. plasma physics and Fusion energy by Ieffery Freidberg 2007
2. Fusion plasma physics by Weston M. Stacey 2005

Marking[توزيع الدرجات]

Form: /BMN/03

الجودة والاداء الجامعي

First Exam 10 marks Second Exam 10 marks
Activity 10 marks Final Exam 70 marks

Regulations [الضوابط والأنظمة]

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects [الواجبات والمشاريع]

Assignment/Project	Description	Due Date	Marking
Home work	Complete the derive of some equation		2
Quiz			1

Instructor(s) information [معلومات الأستاذ]

Section: Lecture Room: **[A101]** Time: **12.30-2:30 Thursday**
8:30-10:30 Tuesday

Instructor's Name: E-Mail: Office No.: **48**

Office Hours:
Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature