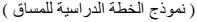


Ministry Of Higher Education and Scientific Research

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







<u>Course Name:</u> **Plasma Physics 1** <u>Time Division:</u> 4 hours per week of lectures

Course Website: ان وجد Semester & Year: First semester 2017/2018

Course Description [وصف المساق]

(المنطلب السابق] No. and Name) المنطلب 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

[المخرجات المتوقعة من المساق [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				
	Introduction to fluid model, elements technique, Naviar – stocks equation (MHD), the convective derivative, the stress tensor; the collision				
Final Exam					

[الكتاب المنهجي Textbooks

- 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 leffery Freidberg 2007
- 2. Fusion plasma physics by Weston M. Stacey 2005

[توزیع الدرجات] Marking

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

[الضوابط والأنظمة] Regulations

- 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 pats 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.

[الواجبات والمشاريع | Assignments and/or Projects

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

[معلومات الأستاذ] Instructor(s) information

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

الجودة والأداء الجامعي