



**The Hashemite University**  
**Faculty of Science**  
**Course Syllabus**

**Department of Physics**

**Course Title:** General medical physics

**Course Number:** 110102109

**Pre-requisite:** --

**Credit Hours:** 3

**Designation:** Compulsory

**Instructor:** Dr. Safeia Hamasha

**Instructor's E-mail:** [safeia@hu.edu.jo](mailto:safeia@hu.edu.jo)

**Office Hours:** 10:30-11:30 (Sunday, Tuesday, Thursday)

12:30-1:30 (Sunday, Tuesday, Thursday)

**Course Description (Catalog):** Mechanics of motion and levers, light, sound waves and its medical applications, dynamics of fluids and its medical applications, electrostatic force, direct current, current in biological cells, principles of radiation, radiation production.

| <b>Text Book</b> |                                                                                                                                                                                                                                                                                                                                        |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Title            | <b>PHYSICS</b>                                                                                                                                                                                                                                                                                                                         |
| Author(s)        | KANE and STERNHEIM                                                                                                                                                                                                                                                                                                                     |
| Publisher        | John Wiley & sons, 1988                                                                                                                                                                                                                                                                                                                |
| Edition          | <b>third edition</b>                                                                                                                                                                                                                                                                                                                   |
| References(s)    | 1. Fundamental of Physics, by David Halliday, Robert Resnick, and Jearl Walker, 5th Edition, John Wiley and Sons, 1995<br>2. Physics for Scientists and Engineers, by Lawrence S. Lerner, Jones and Bartlett Publishing, 1996<br>3. University Physics: Models and Applications by W.P. Curmett and A.P Western, NCP Publishers 1994 . |

**Course outlines**

| Number of Lectures        | Chapter /Subject                                                                                                                                                                |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10                        | <b>Chapter one: Mechanics of motion</b><br>Motion in one dimension, motion in two dimensions, Newton's laws of motion<br>Chapter four: statics<br>Chapter five: circular motion |
| 3                         | <b>Chapter Two: Statics and Livers</b>                                                                                                                                          |
| <b>FIRST EXAMINATION</b>  |                                                                                                                                                                                 |
| 10                        | <b>Chapter Three: Waves</b><br>Sound waves and its medical applications, light                                                                                                  |
| 8                         | <b>Chapter Four: Fluids dynamics</b><br>and its medical applications, dynamics of fluids                                                                                        |
| <b>SECOND EXAMINATION</b> |                                                                                                                                                                                 |
| 10                        | <b>Chapter Five: Electricity and magnetism</b><br>electric forces, fields and potentials , direct currents                                                                      |
| 3                         | <b>Chapter Six: The atomic nucleus</b><br>nuclear physics, ionizing radiation, principles of radiation, radiation production.                                                   |
| <b>FINAL EXAMINATION</b>  |                                                                                                                                                                                 |

❖ **Specific Outcomes of Instruction (Course Learning Outcomes):**

After completing this course units, the students will be able to:

|              | <b>Course Learning Outcomes (CLO)</b>                                                                 | <b>(SO*)</b>    |
|--------------|-------------------------------------------------------------------------------------------------------|-----------------|
| <b>CLO1.</b> | Calculate the electric fields for various types of static charge distributions                        | (a),(e)<br>(k)  |
| <b>CLO2.</b> | To be able to use and apply different techniques to calculate the electrostatic fields and potentials | (a), (e)<br>(k) |
| <b>CLO3.</b> | Understand the properties of electric fields in matter                                                | (a), (e)<br>(k) |
|              | <b>Course Learning Outcomes (CLO)</b>                                                                 | <b>(SO*)</b>    |
| <b>CLO4.</b> | To be able to calculate magnetic fields for various steady current configurations                     | (a),(e)<br>(k)  |
| <b>CLO5.</b> | Learn the properties of magnetic fields in matter                                                     | (a),(e)<br>(k)  |

\*(SO) = Student Outcomes Addressed by the Course.

❖ **Student Outcomes (SO) Addressed by the Course:**

| #                                    | <b>Outcomes Description</b>                                                                                              | <b>Contribution</b> |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------|---------------------|
|                                      | <b>Applied and Natural Sciences Student Outcomes</b>                                                                     |                     |
| (a)                                  | an ability to apply knowledge of mathematics, science, and applied sciences                                              | H                   |
| (b)                                  | an ability to design and conduct experiments, as well as to analyze and interpret data                                   |                     |
| (c)                                  | an ability to formulate or design a system, process or program to meet desired needs                                     |                     |
| (d)                                  | an ability to function on multidisciplinary teams                                                                        |                     |
| (e)                                  | an ability to identify and solve applied sciences problems                                                               | H                   |
| (f)                                  | an understanding of professional and ethical responsibility                                                              |                     |
| (g)                                  | an ability to communicate effectively                                                                                    |                     |
| (h)                                  | the broad education necessary to understand the impact of solutions in a global and societal context                     |                     |
| (i)                                  | a recognition of the need for, and an ability to engage in life-long learning                                            |                     |
| (j)                                  | a knowledge of contemporary issues                                                                                       |                     |
| (k)                                  | an ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice. | M                   |
| <b>H = High, M = Medium, L = Low</b> |                                                                                                                          |                     |

**Grading Plan:**

|                    |            |                        |
|--------------------|------------|------------------------|
| <b>First exam</b>  | <b>30%</b> | <b>To be announced</b> |
| <b>Second exam</b> | <b>30%</b> | <b>To be announced</b> |
| <b>Final exam</b>  | <b>40%</b> | <b>To be announced</b> |

**General Notes: (Attendance Policy)** students are expected to attend every class and arrive on time in compliance with HU regulations. In case you find yourself in a situation that prevents you from attending class or exam, you have to inform your instructor. If you miss more than 6 classes for the (Sunday, Tuesday, and Thursday model) or 4 classes for the (Monday and Wednesday Model), you cannot pass the course. Makeup excuses will be accepted only for very limited justified cases, such as illness and emergencies. Changing your section without informing your instructors is not accepted at all