# Course syllabus

| **Course title** | General Physics | | **Course code** | 0211102 |
|---|---|---|---|---|

| **Lecture Time** | | **Time** | **Days** | **Location** | **Lecturer** |
|---|---|---|---|---|---|
| | Section (32) | 19:10 – 20:00 | Sun, Tue, Thu. | Microsoft Teams | Ms. Mariam Al-Qderate |
| | Section (31) | 16:15 – 17:45 | Mon. , Wed. | Microsoft Teams | Ms. Mariam Al-Qderate |

## Academic Staff Specifics

| | |
|---|---|
| **Name** | Mariam .F Al Qderate |
| **Rank** | MSc. In Applied physics |
| **Office number and location** | Faculty of Science (816) |
| **Office hours** | Sun, Tue. , Thu.        03:00– 04:00   12:10 – 01:00 |
| | Mon. , Wed.        03:00 – 04:00 |
| **E-mail address** | mqderate@philadelphia.edu.jo |
| **Phone** | + 962 6 4779000 ext. 2335 |

## Course textbook

| | |
|---|---|
| **Title** | **Physics for Scientists and Engineers** |
| **Author** | Raymond A. Serway and John W. Jewett |
| **Publisher** | Cengage Learning |
| **Edition** | 9th Edition. |
| **Year** | January 17, 2013 |
| **ISBN** | 1133954057 |

## Other Education Resources

| 1 | **Title** | **Fundamentals of Physics** |
|---|---|---|
| | **Author** | D. Halliday, R. Resnick and Jearl Walker |
| | **Publisher** | John Wiley and Sons (WIE) |
| | **Edition** | 10th edition. |
| | **Year** | August 5, 2013 |
| | **ISBN** | 1118230728 |

| 2 | **Title** | **Sears and Zemansky's University Physics With Modern Physics**, |
|---|---|---|
| | **Author** | Roger A. Freedman, A. Lewis Ford , Francis Weston Sears , Hugh D. Young |
| | **Publisher** | Pearson Pub. |
| | **Edition** | 13th edition. |
| | **Year** | 2011 |
| | **ISBN** | 10: 0321762185 |

**Course/ academic calendar**

| Week | Basic and support material to be covered |
|---|---|
| 1+2 | **Chapter 23:** Charge and Matter<br>Introduction to electrostatics, Insulators and conductors, definition of average and instantaneous electric current, Coulomb's law, electrical forces with some applications, electric Field: Definition, properties of electric field, electric field lines, electric field of a continuous charge distribution, electric fields and conductors, calculations of the electric field with some applications, motion of a charged particle in a uniform electric field. |
| 3+4 | **Chapter 24:** Gauss's Law<br>Electric flux, Gauss's law, applications of Gauss's law to electrostatics. |
| 5+6 | **Chapter 25:** Electric Potential<br>Basic definition, potential difference between two points and electric potential, potential difference in a uniform and non-uniform electric fields, electric potential energy due to point charges, electric potential due to a continuous charge distribution, equipotential surfaces, obtaining electric filed from electric potential, electrostatic potential energy, electron Volt (eV), and applications to electrostatics. |
| | Midterm exam: (To be announced by the dept.) |
| 7+8 | **Chapter 26:** Capacitance and Dielectrics<br>Definition of capacitance, Determination of capacitance, capacitors networks, energy stored in a capacitor, dielectrics, applications. |
| 9 | **Chapter 27:** Current and Resistance<br>The electric battery, Electric current, drift velocity, resistance and Ohm's law, resistivity of different conductors, superconductors, electrical energy and power, applications. |
| 10+11 | **Chapter 28:** Direct current Circuits<br>Electromotive force (EMF), resistors networks, Kirchhoff's laws, series and parallel EMFs, RC circuits, applications. |
| 12 | **Chapter 29 :**Magnetic Field<br>Introduction, definition and properties, particle in a magnetic field, Motion of a charged particle in a magnetic field, magnetic force on a current carrying conductor, applications of the motion of a charged particle in a magnetic field, Torque on a current loop in a uniform magnetic field, The Hall effect, applications. |
| 13+14 | **Chapter 30 :** Sources of the Magnetic Field<br>The Biot-Savart law, the magnetic force between two parallel conductors, Ampere's law, the magnetic field of a solenoid and a toroid, Gauss's law in magnetism (magnetic flux), applications. |
| 15 | **Chapter 31:**Faraday's Law of Induction<br>Motional EMF, Lenz's Law, Induced EMF and electric fields, Generators and motors, applications. |
| 16 | **Chapter 34:** Electromagnetic Waves (OPTIONAL)<br>Ampere's law and displacement current, Maxwell's equations, Electromagnetic waves (EM), Energy in electromagnetic waves, Pointing vector. |
| | Final exam: (To be announced by the dept.) |

## Allocation of Marks

| Assessment Instruments | Mark |
|---|---|
| Midterm examination | **30** |
| Final examination | **50** |
| Quizzes | **20** |
| Total | **100** |