جامعة: المنصـــورة
كـــلية: العلـــــوم
قـــســـم:الفيزيـــاء

**توصيف مقرر دراسى**

| ١-بيانات المقرر | | |
|---|---|---|
| الرمز الكودى :Phys 102 | أسم المقرر:Electricity and Magnetism - Optics | المستوى: الأول |
| التخصص: إحصاء وعلوم الحاسب | عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٢ | |

| ٢- هدف المقرر: | |
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| **For students undertaking this course, the aims are :**<br>1- Aims at introducing the students to the basics and fundamentals of Electricity and Magnetism including, Electric current and ohm's law, Network theorem, Work, power and energy, Capacitance and inductance, Magnetism and electromagnetism, Electromagnetic induction.<br>2- Aims at introducing the students to the basics and fundamentals of geometric Optics including, Nature of light, propagation of light, deviation of light by prisms and dispersion, image formation, perception of light, color vision and Lasers | |
| ٣- المستهدف من تدريس المقرر: | |
| **a- Knowledge and Understanding :**<br>**On completing this course, students will be able to:**<br>a1- Introduce the principles of Electricity and Magnetism.<br>a2-Outline the basic information of electric current and ohm's law, network theorem and work.<br>a3-Enable the student to use different concepts of capacitance and inductance in physics lab.<br>a4-Use the principles of magnetism, electromagnetism and electromagnetic induction to increase the student's knowledge about the behavior of magnetic materials.<br>a5-Introduce different application of network theorem.<br>a6-Introduce the principles of geometrical optics.<br>a7-Outline the basic information of nature of light, propagation of light, deviation of light by prisms and dispersion, image formation, perception of light, color vision and Lasers.<br>a8-Enable the student to use make experiments in physics lab related to geometric Optics course.<br>a9-Use the principles of geometric optics to increase the student's awareness about different behavior of optical materials | أ- المعلومات والمفاهيم: |
| **b- Intellectual Skills:**<br>**On completing this course, students will be able to:**<br>b1- Know more informations about electricity and magnetism and its applications.<br>b2- Define the physial terms like Electric current and ohm's law, Network theorem, Work, power and energy, capacitance and inductance, magnetism and electromagnetism, electromagnetic induction.<br>b3- Explain the principles of geometrical optics and its applications.<br>b4- Predict optical behavior of materials by discussing related physical phenomena<br>b5- Know more information about geometrical optics and their applications.<br>b6- Define the physial terms like nature of light, propagation of light, deviation of light by prisms and dispersion.<br>b7- Explain the principles of image formation, perception of light, color vision and Lasers. | أ- المهارات الذهنية |

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| **c-Professional and Practical Skills:**<br>**On completing this course, students will be able to:**<br>c1- Choose and classify data obtained from physics experiments related to electricity and magnetism course.<br>c2- Design physics experiments to apply electricity and magnetism phenomena in physics lab<br>c3- Use mathematical formula in solving challenging problems related to<br>c4- Choose and classify data obtained from physics experiments according to the<br>c5- Design physics experiments to apply geometric optics principles.<br>c6- Design a diagram graphically for image formed due to geometric optics phenomena.<br>c7- Use mathematical formula in solving problems related to geometric optics course. | **ج- المهارات المهنية الخاصة بالمقرر:** |
| **d-General and Transferable Skills:**<br>**On completing this course, students will be able to:**<br>d1- Present data in graphical using IT methods.<br>d2- Managements of self time, data and knowledge<br>d3- Search for information related to electricity and magnetism course topics.<br>d4- Search for information related to geometric optics course topics.<br>d5- Present results in oral and writing means.<br>d6- Communicate effectively with students by discussing results obtained from experimental physics lab. | **د- المهارات العامة :** |
| **Electricity and Magnetism** :<br>Electric current and ohm's law<br>Network theorem<br>Work<br>Power and energy<br>Capacitance and inductance<br>Magnetism and electromagnetism<br>Electromagnetic induction<br>**Optics** :<br>Nature of light<br>Propagation of light<br>Deviation of light by prisms and dispersion<br>Image formation<br>Perception of light and color vision<br>Lasers | **٤- محتوى المقرر:** |
| 1- Lectures using data show and board.<br>2- Discussion sessions.<br>3- Class activity.<br>4- Laboratory work. | **٥- اساليب التعليم والتعلم:** |
| The same as normal students, only skeletal disabilities are allowed in the Faculty of Science. | **٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:** |
| | **٧- تقويم الطلاب :** |

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|---|---|---|---|
| Final exam | to assess | a1-a9, b1-b7, c1-c7 and d1-d6 | **أ- الأساليب المستخدمة :** |
| Oral exam | to assess | a1-a10, b1-b8 and c1-c7 | |
| Practical exam | to assess | a3, a7, a8, b1-b2,, b4, c1-c2 and d1,d5 | |
| Mid-Term Exam | to assess | a1-a9, b1-b7, c1-c7and d1-d6 | |

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| ب- التوقيت : | Final exam | Week # | 16 |
| | Oral exam | Week # | 16 |
| | Practical exam | Week # | 15 |
| | Mid-Term Exam | Week # | 7 |

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| ج- توزيع الدرجات : | Final-Term Examination | 10% |
| | Oral Examination | 60 % |
| | Practical Examination | 20% |
| | Mid-Term Exam | 10% |
| | Total | 100% |

**٨- قائمة الكتب الدراسية والمراجع :**

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|---|---|
| أ- مذكرات: | Notes Electricity & Magnetism<br>Notes of Optics prepared by the physics department. |
| ب- كتب ملزمة | |
| ج- كتب مقترحة : | Raymond A. Serway ,Physics for Scientists and Engineers, John W. Jewett 6th Edition, 2004. |
| د- دوريات علمية أو نشرات.. | http://en.wikipedia.org |

**(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى**

| المحتويات للمقرر | أسبوع الدراسة | المعارف الرئيسية | مهارات ذهنية | مهارات مهنية | مهارات عامة |
|---|---|---|---|---|---|
| Electric current and ohm's law | 1-2 | a1-a2 | b1 | c1 | d1-d5 |
| Network theorem | 3-4 | a2 | b1 | c1 | d1-d5 |
| Work | 5-6 | a2 | b1 | c1 | |
| Capacitance and Inductance | 7-8 | a3 | b1 | c1 | |
| Magnetism and electromagnetism | 9-10 | a3 | b1 | | d1-d5 |
| Electromagnetic conduction | 11-13 | a4 | b2 | | |
| Nature of light | 14 | a4 | b2 | | d1-d5 |
| Propagation of light | 1-2 | a6, a7 | b3, b4 | c4, c5 | |
| Deviation of light by prisms | 3-4 | a7 | b5, b6 | | |
| Image formation | 4-7 | a8 | b5, b6 | c6 | |
| Precipitation of light and color vision | 8-11 | a8, a9 | b6 | c6, c7 | |
| Lasers | 12-14 | a9 | b7 | | |

**أستاذ المادة: د./ شلبية ابراهيم محمود بدر**

**رئيس مجلس القسم العلمي : أ.د./ المتولى محمود عبد الرازق**