البرنامج الذي يقدم المقرر من خلاله (إعداد معلم الفيزياء)

• يمثل المقرر عنصرًا (رئيسيًا) بالنسبة للبرنامج
• القسم العلمي المسئول عن البرنامج (متحدث)
• القسم العلمي المسئول عن تدريس المقرر (قسم الفيزياء)
• السنة الدراسية / المستوى (الفترة الرابعة عام، هيئة الفيزياء / الفصل الدراسي الأول)
• تاريخ اعتماد توصيف البرنامج ()

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Basic Data

(1) Course Title: Electronic Circuits (2) Course Code No.: 414 ph

(3) Credit Hours:
Lectures: 4 credit hours
Laboratory practice: 2 credit hour

Total hours: 6 credit hours

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Professional Data

1) General goals of the course
The course is designed to help student-teachers achieve the following goals:
- The students have to know characteristics of basic semiconductor devices and their role in the construction of electronic circuits with emphasis on integrated circuits.

2) Operational learning objectives of the course
By the end of this course, student teachers are expected to achieve the following objectives:
A) Knowledge and Comprehension:
The students have to recognize the following:

a.1 The types of semiconductor devices.

a.2 The characteristics of semiconductor devices.

a.3 The use of semiconductor devices in some electronic circuits.

a.4 Principles of integrated circuits.

B) Cognitive Skills:

b.1 Develop an understanding and appreciation for the nature of scientific inquiry in physics.

b.2 Apply mathematics, including statistics and calculus and introductory differential equations, to investigations in Electronic Circuits and the analysis of data.
b.3 Locate resources, design and conduct inquiry-based open-ended investigations in physics (Electronic Circuits), interpret findings, communicate results, and make judgments based on evidence.

C) Practical Skills:
- c.1 the appropriate use and storage of scientific equipment.
- c.2 safe storage, use, and disposal of materials.

D) Enabling Skills:
- d.1 Relate the concepts of physics (Electronic Circuits) to contemporary, historical, technological, and societal issues; in particular.
- d.2 Relate concepts of physics (Electronic Circuits) to current controversies and other issues.
- d.3 Construct new knowledge for themselves through research, reading and discussion, and reflect in an informed way on the role of physics (Electronic Circuits) in human affairs.

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<th><strong>Contents</strong></th>
<th>المحتويات</th>
<th><strong>Assigned hours</strong></th>
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<tr>
<td><strong>Week</strong></td>
<td><strong>Topic</strong></td>
<td><strong>Lectures</strong></td>
</tr>
<tr>
<td>First</td>
<td>Semi conductor devices.</td>
<td>2</td>
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<tr>
<td>Second</td>
<td>a) Electronic diodes: p.n junction – light emitting diode, photo diode.</td>
<td>2</td>
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<tr>
<td>Third</td>
<td>a) Electronic diodes: zener diode, laser diode and tunneling diode.</td>
<td>2</td>
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<tr>
<td>Fourth</td>
<td>b) Transistors and characteristics P-N-P, field effect transistor.</td>
<td>2</td>
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<tr>
<td>Fifth</td>
<td>b) Transistors and characteristics N-P-N, field effect transistor.</td>
<td>2</td>
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<tr>
<td>Sixth</td>
<td>Circuits.</td>
<td>2</td>
</tr>
<tr>
<td>Seventh</td>
<td>a) Diode circuit; Rectifiers.</td>
<td>2</td>
</tr>
<tr>
<td>Eighth</td>
<td>a) Diode circuit; stabilizers, photodetectors.</td>
<td>2</td>
</tr>
<tr>
<td>Ninth</td>
<td>b) Transistor as: amplifiers, multivibrators.</td>
<td>2</td>
</tr>
<tr>
<td>Tenth</td>
<td>b) Transistor as: oscillators and summing amplifier.</td>
<td>2</td>
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<tr>
<td>Eleventh</td>
<td>Integrated circuits (IC) timer and amplifier.</td>
<td>2</td>
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<tr>
<td>Twelfth</td>
<td>Integrated circuits (IC) timer and amplifier.</td>
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</tr>
<tr>
<td>Thirteenth</td>
<td>Integrated circuits (IC) timer and amplifier.</td>
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Activities, tasks and assignments:

- Lectures
- Laboratory experiments.
- Demonstrations
- report writing
- brainstorming
- discussions
- Problems and essay assignments.

Assessment and Evaluation tools:

- Semester activities including classroom interactions and Quizzes.
- Lab performance evaluation
- Oral exam.
- Final exam.

Summative Evaluation table

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<tr>
<th>Assessment</th>
<th>Final exam</th>
<th>Fifteenth Week</th>
<th>Final Week</th>
<th>Assessment</th>
<th>Final exam</th>
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<tr>
<th>Assessment</th>
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<th>Fifteenth Week</th>
<th>Final Week</th>
<th>Assessment</th>
<th>Final exam</th>
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</thead>
<tbody>
<tr>
<td>1. Midterm exam</td>
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<tr>
<td>2. Final written exam</td>
<td>70%</td>
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<tr>
<td>3. Final oral exam</td>
<td>20%</td>
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<tr>
<td>4. assignments</td>
<td>10%</td>
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<td></td>
<td></td>
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<tr>
<td>Total</td>
<td>100%</td>
<td></td>
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</tr>
</tbody>
</table>

References:

- "Electronics" by J.M carvet and M.A.H McCanland, John Willy & Sons.
- Integrated Electronics "by Hillman and Halkiac, John Willy.
Educational Resources

- Computer simulation programs and slides.
- Transparencies.
- Manual of solved problems (answer and solutions)
- Text books.

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Course coordinator:

Head of the Department:

Date:

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