Course specification

University/Academy: Damanhour

Faculty/Institute: Science

Department: Physics

1. course Data:

<table>
<thead>
<tr>
<th>Course code:</th>
<th>Course title:</th>
<th>Academic year/level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHY (304)</td>
<td>Atomic spectroscopy</td>
<td>2009-2010</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specialization: Mathematics and physics</th>
<th>No. of instructional units:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lecture 2hrs/week</td>
</tr>
</tbody>
</table>

2. course Aim

- This course aims at a better understanding of physical meaning of atomic spectroscopy that leads to a better understanding of the atomic structure.

3. Intended learning outcome

a) Knowledge and understanding

A1: Understanding the physical meaning of spectra and spectral analysis.

A2: Recognize the Energy levels diagrams.

b) Intellectual skills

B1: Compare between both theoretical and practical parts of course.

B2. Developing the ability of imagination and creation of students.

B3: Create theoretical dealing of the topic under
| c) Professional skills | C1: using of spectroscopy as a tool for characterization, identification, and analysis of materials.  
C2: Solving some physical problems helping in understanding the course parts. |
|---|---|
| d) General skills | D1: IT skills: - use the internet/electronic resources to obtain subject specific information, - use a number of computer packages to present information.  
D2: Working with others: work with other as a part of a team to collect data and/or to produce reports and presentations.  
D3: Self-learning: - study independently, set realistic targets and plan work and time to meet targets within deadlines.  
D4: Problem solving: - Regular problem exercises and example will give students the chance to develop their theoretical understanding and problem.  
D5: Communication: Students will have write reports and give oral presentation. |
| 4. course content | - Observation of spectra and spectral analysis.  
- The Bohr theory of Balmer terms.  
- Energy levels diagrams (Spectra of hydrogen-like ions, consideration of the fine structure of H lines).  
- Wave mechanics of H atom.  
- Transition probabilities and selection rules according to wave mechanics.  
- Alkali spectra. |
| 5. **Teaching and learning methods** | 5.1. lecture using PowerPoint presentations.  
5.2. practical sections.  
5.3. independent reading throughout basic textbooks and research papers. |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6. <strong>teaching and learning methods for students with special needs</strong></td>
<td>Data show – computer – blackboard – Student oral presentations</td>
</tr>
</tbody>
</table>
| 7. **Student Assessment** | 7-1. Semester Work.  
7-2. Mid-Term Examination .  
7-3. **Practical Examination**  
7-4. **Final Term Examination** |
| **a) Procedures used:** | 7.1. Research and presentation to assess skills of presenting data and discussion.  
7.2. Mid-Term Examination To accesses ability to continue in course  
7.3. practical exam. To access professional and practical skills.  
7.4. written exam. To accesses ability to remember & understand scientific background. |
### b) Schedule:
- Assessment 1: Semesterwork  
  Week: 4-8
- Assessment 2: Mid-term  
  Week: 10
- Assessment 3: Practical final  
  Week: 12
- Assessment 4: Written final  
  Week: 14

### c) Weighing of Assessment:
- Mid-Term Examination: 10
- Final-Term Examination: 100
- Practical Examination: 30
- Semester Work: 10

Total: 150

### 8. List of Textbooks and References:

#### a) Course Notes
Lecturer private note

#### b) Required Books (Textbooks)

#### c) Recommended Books

#### d) Periodicals, web sites,…,etc

---

**Course Instructor:** Dr. Shaker Ibrahim

**Head of Department:** Prof. Dr. El. M. Elmaghrby

**Date:** -----/-----/----