# Course specification

**University/Academy:** Damanhour  
**Faculty/Institute:** Science  
**Department:** Physics  

<table>
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<th>1. course Data:</th>
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<tr>
<td><strong>Course code:</strong></td>
<td><strong>Course title:</strong></td>
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<tr>
<td>PHY (307)</td>
<td>Electronic optics</td>
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<td><strong>Specialization:</strong></td>
<td><strong>No. of instructional units:</strong></td>
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<td>Special physics</td>
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| 2. course Aim |  |  |
|----------------|----------------|
| • The course introduces the students to the principles of electron emission, motion in electromagnetic field. |  |
| • Know the construction of electric and magnetic lenses and electron microscope. |  |

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<th>3. Intended learning outcome</th>
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<td><strong>a) Knowledge and understanding</strong></td>
<td><strong>A1:</strong> Developing and understanding the applications of electron motion in E.M. field namely construction of electronic lenses and electron microscope.</td>
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<td><strong>A2:</strong> Recognize the difference between electronic lenses and optical lenses.</td>
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| b) Intellectual skills | B1: Analyze scientific problems logically.  
|                       | B2: Compare between electronic lenses and optical lenses.  
|                       | B3: Apply the laws governing the electron optics.  
| c) Professional skills | C1: Use the physical knowledge to analyze a suitable technique to solve problems.  
|                        | C2: Solve 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 presentations.  
| 4. course content | - Introduction to electron optics.  
|                     | - Motion of electrons in uniform: electrostatic and magnetic fields.  
|                     | - Electromagnetic waves in free space.  
|                     | - Physical similarity of light and electron lenses.  
|                     | - Types of electron microscope and applications.  

| 5. Teacing and learning methods | 5.1. Teaching will be by lectures, exercises.  
5.2. All learning outcomes are delivered through lectures.  
5.3. All lectures and worked examples are given from the lecturer private notes.  
Instructional Methods include:  
- Direct Instruction: lecture, reading, in class research, problem sets, presentations, and guest speakers  
- Instructional Materials: textbook; primary and secondary materials, experts from the field, and electronic media  
- Team Teaching which will include business, university, and community based partners  
- Community based applied concept projects  
- Self-directed, cooperative, and collaborative learning projects  
- Student oral presentations |
| 6. Teaching and learning methods for students with special needs | 1- Over head projector  
2- appropriate teaching accommodation and Computers  
3- Laboratory with computer terminal. |
| 7. Student Assessment | 7-1. Semester Work.  
7-2. Mid-Term Examination.  
7-3. Practical Examination  
7-4. Final Term Examination |
## Quality Assurance Project
### Damanhour University
#### Faculty of Science

### a) Procedures used:

1. Research and presentation to assess skills of presenting data and discussion.
2. Mid-Term Examination To accesses ability to **continue in course**
3. Practical exam. To access professional and practical skills.
4. Written exam. To accesses ability to remember and 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:

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### a) Course Notes

- Lecturer private notes
### b) Required Books
**Textbooks**

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### c) Recommended Books

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### d) Periodicals, web sites, etc

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**Course Instructor:** Dr. El Maghrby Mohamed El Maghrby

**Head of Department**

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

**Prof. Dr. El. M. Elmaghrby**