



People's Democratic Republic of Algeria
Ministry of Higher Education and Scientific Research
Sétif 1 University- Ferhat Abbas

Institute: Optics and Precision Mechanics

License on : Optical Instrumentation

presentation and objectives of the specialty:

This specialization includes both practical and theoretical studies on how to use and analyze optical instruments, design systems that rely on light, as well as the use of advanced techniques in light measurement and the application of modern technology in this field.

Access conditions:

Bachelor on: 2025

Professional projection:

-Teaching optical concepts, training students to use optical instruments, and organizing educational workshops.

-Working on designing complete optical systems that include lenses, mirrors, and integrated light sensors.

-The optical devices specialization opens up a wide range of career opportunities for graduates in various industries, allowing them to contribute to the development of optical technologies and their applications in multiple fields.

Organization of study and official duration of the program:

-Program Overview: General Description of the Program.

-The program lasts for 6 semesters, during which the student gains a substantial amount of knowledge about the field of optical devices. The program relies heavily on both practical and theoretical work.

- **Program overview:** A general description of the program.

-Basic Optical Concepts: Such as light, refraction, reflection, interference, and diffraction.

-Types of Optical Devices: Such as telescopes, microscopes, and cameras.

-Optical Device Design: Studying how devices like lenses and mirrors are designed and manufactured.

-Optical Analysis: Learning how to analyze and improve the optical performance of devices.

- **Basic training modules:** The fundamental modules included in the program.

1. Introduction to Optics:

- Fundamentals of light and light waves.
- Optical phenomena such as refraction, reflection, and interference.
- Laws of geometric optics.

2. Theory of Lenses and Mirrors:

- Study of different types of lenses and mirrors.
- How lenses and mirrors are used to form images.
- Equations related to lenses and mirrors.

3. Types of Optical Devices:

- Telescopes: Theory and applications.
- Microscopes: Basics and applications in medical and research sciences.
- Cameras: How optical devices work in imaging.

4. Engineering Design of Optical Devices:

- Design of lenses and mirrors.
- Calculations in optical device design.
- Techniques for improving optical performance.

5. Practical Applications of Optical Devices:

- Applications in medicine, such as optical medical devices (endoscopes, imaging systems).
- Applications in astronomy (telescopes).
- Applications in photography and other industries.

6. Technological Developments in Optical Devices:

- Exploring the latest innovations in optical technologies.
- The impact of modern technology on the development of optical devices.

7. Tests and Practical Experiments:

- Conducting practical experiments to understand optical phenomena.
- Experiments on the design and testing of optical devices.

• Training opportunities:

-Optical Engineer: Work in companies that manufacture optical devices or research institutions.

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| <p><i>-Optical Measurements: Learning how to measure light properties and optical devices using various tools.</i></p> <p><i>-Applications of Optical Devices: In fields such as medicine, astronomy, engineering, and photography.</i></p> <p><i>-Technological Developments in Optical Devices: Exploring the latest innovations in this field.</i></p> <ul style="list-style-type: none"> • Curriculum highlights: Key elements of the curriculum. | <p>- Optical Device Maintenance: Maintenance and repair of various optical devices in hospitals, laboratories, or industrial facilities.</p> <p>-Technology and Tech Companies, and Care Centers: Opportunities in technology companies, health centers, and other related industries.</p> <p>- Institutions and Social/Economic Partners:ENAVA, SAMSUNG, Algérie Télécom, IRIS, Condor, CHU (University Hospital Center).</p> <ul style="list-style-type: none"> • Teaching language: English, |
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Specialty responsible: **Dr. Madoui karima**

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