



University of Bahrain MICRO-CREDENTIAL



PHOTOVOLTAIC ENERGY

GENERAL INFORMATION

Duration: 4 Weeks

Total Hours: 120 hours of blended learning (40 contact and 80 personal work)

Venue: University of Bahrain

Fees: 400 BHD

Level: Undergraduate

Language: English

Pre-requisite:

- Basic Mathematics: Proficiency in algebra and basic calculus.
- Fundamental Physics: Understanding of electricity, magnetism, and semiconductor physics.
- Basic Engineering Principles: Knowledge of electrical and electronic engineering concepts.
- Computer Skills: Familiarity with software for simulations and data analysis.

INSTRUCTOR BIOGRAPHY



Dr. Karim Ben Messai

Assistant Professor,
Department of Physics,
UOB. Dr. Karim holds a
Ph.D. in Engineering
Sciences from
Université de Franche-
Comté, France. He has
expertise in microwave
frequency sources,
optics, and photonics,
with research and
teaching experience in
Australia, Algeria, and
Bahrain.



Micro-credential is a short, focused course designed to equip learners with specific skills and knowledge within a specialized area. It serves as a pathway to earning an equivalent certification for a core course, offering a flexible and targeted learning experience.

COURSE OVERVIEW

This course explores how PV devices convert sunlight into electricity using semiconductors. Topics include solar energy basics, photoelectric conversion, efficiency analysis, PV cell technologies, module design, and installation principles. Learners will gain a strong foundation in photovoltaic systems and their applications.

DELIVERY MODE

- Lectures and Tutorials (face-to-face): 6 hours/week
- Practical Application & Case Studies (face-to-face and peer-to-peer): 4 hours/week
- Self-study:
Assignments/Quizzes: 20 hour/week

ASSESSMENTS

- Online assignment evaluating solar energy in a specific geographical area (20%).
- Two online quizzes on photovoltaic physics (30%).
- Online quiz on PV technology (10%).
- Domestic PV installation project (40%).

TARGET AUDIENCE

- Current students and prospective students in physics and related fields.
- Adult learners and professionals in the renewable energy sector.
- Industry partners and community members interested in photovoltaic technology.

KEY TOPICS COVERED

- Solar Energy Basics:
Fundamentals of solar energy and its potential.
- Photoelectric Conversion
Mechanism: How sunlight converts into electrical energy.
- IV Characteristics, Efficiency, and Power Generation:
Analysis of current-voltage characteristics, efficiency, and power output.
- PV Cell Technologies:
Overview of PV cell types and applications.
- PV Module and Array
Architecture: Design and configuration of PV modules and arrays.
- PV Installation Design:
Principles and methods for designing PV systems.



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For further Information, please contact:

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<https://microcredentials.uob.edu.bh/>