

# Center for Renewable Energy and Energy Conservation (CREEC)

Supervisor: Dr. Tareq Abu Hamed

Interns at the Center for Renewable Energy and Energy Conservation are offered the opportunity to work on several current research and community projects. The number of projects an intern will work on will depend on his/her background and qualifications.

**Interns should have a graduate degree or be at least a fourth year student.**

- **Hydrogen production**

**Objective:** The objective is to design a reactor to produce hydrogen by metal hydrolysis at a large scale to be used as alternative to oil for transportation.

**Degree requirements:** a degree in chemistry, chemical or mechanical engineering.

- **Evaluation and testing photovoltaic panels in the Arava Region**

**Objective:** The objective of this project is to evaluate the efficiency of PV panels under the harsh climatic conditions of the Arava Region.

**Degree requirements:** a degree in physics electrical, electronic or mechanical engineering.

- **Solar air heating**

Solar air heaters use an energy collecting surface to absorb the sun's thermal energy to heat air and recirculate it to a building. The **objective** of this project is to maximize the efficiency of the collectors and to test them under the Israeli climate.

**Degree requirements:** a degree in environmental studies, physics, electrical, electronic or mechanical engineering.

- **Biogas production**

**Objective:** The objective of this project is to develop a low tech solution to organic waste disposal and methane gas production in unrecognized Bedouin villages in the Negev. This technology (already widespread in China) will give Bedouin communities the capacity to protect themselves from environmental hazards caused by untreated organic waste and will provide a healthier solution to energy needs as opposed to the current use of diesel powered generators.

**Degree requirements:** a degree in social or natural sciences.

- **Water Desalination Powered by Hybrid Photovoltaic/Thermal Solar Systems**

**Objective:** The objective of this project is to undertake a systematic investigation of the transient operation of small-scale PV driven desalination plants with preheated water and control strategies for transient energy supply with a focus on active temperature control.

**Degree requirements:** a degree in physics electrical, electronic or mechanical engineering.

- **CSP Water Desalination plant.**

**Objective:** The objective of this project is to study CSP technology application for brackish water desalination.

**Degree requirements:** a degree in physics electrical, electronic or mechanical engineering.

- **Energy policy and management**

**Objective:** The objective of this project is to review and evaluate the current energy policies of countries in the Middle East and to examine them from political, economical and social point of views.

**Degree requirements:** a degree in economy or social sciences.

- **Off-grid village**

**Objective:** to learn how to maintain the off-grid village components such as; the biogas systems, PV systems, hydroponics and many other systems related to water energy nexus

**Degree requirements:** All degrees.

All the above topics require work in the CREEC laboratory.

Interns will have the opportunity to use the following equipment and programs:

1. Gas chromatography
2. Lab view
3. I-V Checker
4. Calibration systems
5. Gas flow and pressure sensors

Conditions of Internship:

- The Institute will provide living arrangements including food, housing, health insurance and laundry services at the AIES campus. The intern may be placed in a room with another intern or student.

- This is a self funded position covering room, board, and program participation. The cost is \$1500 per month.
- The Institute will reimburse the intern for all expenses incurred due to job requirements including the use of a personal cell phone and travel expenses.
- The intern must own a laptop and have a cell phone.
- The intern will be invited to attend special guest lectures and participate in field trips and campus life activities.
- An intern may be asked to help other interns, or to give assistance to other departments or staff .
- The intern will be expected to participate in general staff meetings and certain staff activities
- The intern may be asked to be a teaching assistant for one of the AIES courses.