



Project Title: Modernising Undergraduate Renewable Energy Education: EU Experience for Jordan

Acronym: MUREE

Project Number: 530332-TEMPUS-1-2012-1-JO-TEMPUS-JPCR

Funding Scheme: TEMPUS (Joint Projects, Curricular Reform)

Grant Agreement Number: 2012-3324/001-001

Duration 3 Years Starting on 15/10/2012

Coordinator: Princess Sumaya University for Technology (PSUT), Jordan

Project Manager: Professor Abdallah Al-Zoubi

Address: Khalil Saket Street 118, Amman 11941, Jordan

Tel: +9626 5359949/+9627 77355299

Fax: +9626 5347295

Email: zoubi@psut.edu.jo

Project Website: <http://muree.psut.edu.jo/Home.aspx>

Deliverable Title	<i>Development of Virtual Learning Environment</i>		
Author(s)	<i>Bashar Hammad and Abdallah Al-Zoubi</i>		
Organisation Name(s)	Hashemite University and PSUT		
Deliverable No.	3.1		
Deliverable Type	Learning Resources		
WP Number	3		
WP Leader	Hashemite University		
Due Date of Delivery	15/01/2014	Project Month	15
Submission Date	15/07/2014	Project Month	21
Dissemination Level	International Level		
Total Number of Pages	3		

A Virtual Learning Environment (VLE) was developed as means of an eLearning delivery mechanism of the proposed new and other courses. HU, working closely together with UNED, UoJ and PSUT, set the on-line learning strategies to select proper VLE tools for designing and adopting the two eLearning courses on photovoltaic and renewable energy courses into VLE. A team of engineering and IT professors and specialists consisting of the following:

- Belal Sababha and Husam Abed, PSUT
- Ahmad Al-Khasawneh and Bashar Hammad, Hashemite University
- Mamoun Dmour, Jordan University

visited UNED in the period 17-23 February 2013 to discuss issues related to VLE and remote labs. During the meeting, it was decided to implement Moodle as the Learning Management System (LMS) in the VLE with its plugins and other software tools to manage tasks queue and lab booking and scheduling system. The team agreed on how to integrate the remote labs with the VLE and discussions on responsibility carried out between HU, PSUT and UNED were carried out. A full report of the visit is attached.

The VLE was then hosted at a special PSUT server purchase for this purpose at the link <http://muree-vle.psut.edu.jo/vle/>, as shown in the snapshot of Figure (1).



Fig. (1). Snapshot of the homepage of VLE.

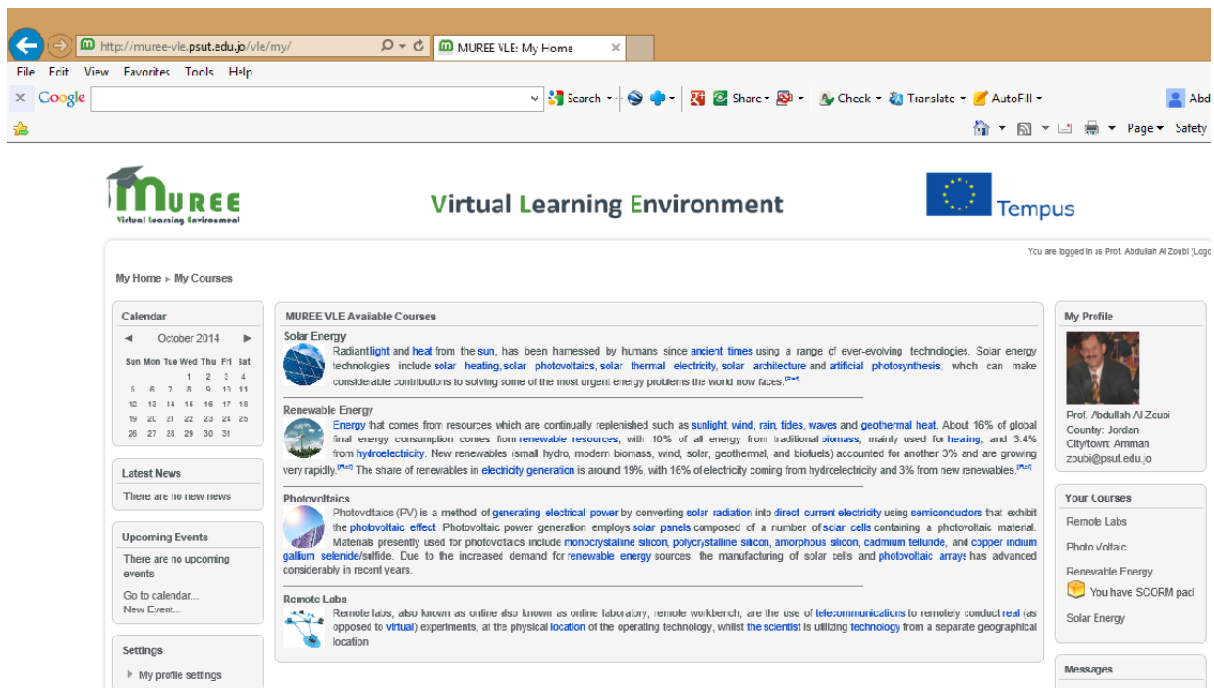
The VPN IP Address is 193.188.67.34 and the Server IP Address: 172.31.0.53. The VLE specifications are listed in Table 1. In addition, three types of accounts were created; Manager, Instructor, and Student.

Table 1: MUREE VLE specifications.

Description	Specification
Moodle version	2.4.3+
PHP version	5.4.7
MySQL version	5.5.27

A follow up meeting was held at PSUT with partners from HU, UNED, UoJ, UCY and PSUT to discuss the progress of the VLE-related activities. A report on the minutes of meeting is attached. Dr. Bashar Hammad made a visit to UNED in the period 18-20 June 2014 to discuss and complete the discussion on VLE design.

Suitable educational and teaching material were selected and care was taken to integrate the remote labs, developed in WP4, to this VLE, such that both courses and remote labs are delivered by full interactivity and offering flexibility of content delivery and the opportunity for shared social learning between partner institutions. All materials for RE Systems and PV eLearning courses needed to complete the content in a traditional way were prepared and designed by HU as shown in Figure. (2).



The screenshot shows a web browser window displaying the MUREE Virtual Learning Environment (VLE) homepage. The browser address bar shows the URL <http://muree-vle.psut.edu.jo/vle/my/>. The page header includes the MUREE logo, the text "Virtual Learning Environment", and the Tempus logo. A user login notification indicates the user is logged in as Prof. Abdullah Al-Zoubi.

The main content area is titled "My Home - My Courses" and features several sections:

- Calendar:** A calendar for October 2014.
- Latest News:** A section indicating there are no new news items.
- Upcoming Events:** A section indicating there are no upcoming events.
- Settings:** A section with a link to "My profile settings".
- MUREE VLE Available Courses:** A list of courses including:
 - Solar Energy:** Describes radiant light and heat from the sun, mentioning technologies like solar heating, photovoltaics, solar thermal electricity, solar architecture, and artificial photosynthesis.
 - Renewable Energy:** Describes energy from continuously replenished resources like sunlight, wind, rain, tides, waves, and geothermal heat, noting that about 16% of global final energy consumption comes from renewable resources.
 - Photovoltaics:** Explains the process of generating electrical power by converting solar radiation into direct current electricity using semiconductors that exhibit the photovoltaic effect.
 - Remote Labs:** Describes the use of telecommunication tools to remotely conduct real (as opposed to virtual) experiments.
- My Profile:** A section containing a profile picture and contact information for Prof. Abdullah Al-Zoubi, including his country (Jordan), city (Amman), and email address (zoubi@psut.edu.jo).
- Your Courses:** A list of courses including Remote Labs, Renewable Energy, and Solar Energy.
- Messages:** A section for user messages.

Figure. (2): Page of eLearning courses and remote labs.

Attachments

1. Full report of the visit of the Jordanian team to UNED.
2. Minutes of the June 2014 Meeting at PSUT