The Photovoltaic Engineering Elective Module Package

This package includes a module teaching program, teacher's resource document, a self-learning powerpoint presentation, an engineering report assignment sheet, a sample engineering report, experiment guides, worksheets and worksheet solutions. All of these can be transferred to a single CD-ROM for distribution (it must be free-of-charge) and for installation onto other computers.

It is recommended that the teacher preview the teacher's resource manual prior to teaching the module. The document includes background information on the topic that is necessary for teaching the material and answering student's questions. The document is organized such that headings address 'dot-points' from the teaching program fairly directly. The resource will contain more than what is necessary to meet the requirements of the teaching program from the student's perspective. Students will not need to go into a high level of detail, but where we have been in doubt, the detail has been provided for reference. It is recommended that students utilize the resource document as well as the Powerpoint, and it is hyperlinked to the self-learning Powerpoint unit for this purpose.

The Microsoft PowerPoint presentation unit is intended for students to work through by themselves. It covers the various theoretical concepts mentioned in the teaching program & teacher's resource document. It follows the material contained in the teacher's resource booklet fairly closely, and serves to illustrate various concepts to students. The slides from the self-guided learning unit can also be presented from the front of the class as a lecture run by the teacher. Similarly, the slides could be printed on transparencies for an overhead projector. The simplest way to run the course is to let students work through the Powerpoint slides on their own, and ask the teacher questions when they come across material they find challenging.

The worksheets are intended as homework tasks for students to take home and attempt to answer. These serve as a revision for students, following from the in-class lessons. Solution sheets are provided to the questions posed in the worksheets for marking by the teachers, and to provide feedback to students. Note that interactive, self-marking self-study quizzes are also included in the Powerpoint unit as well. The experiments can be performed during class time and run-through by the teacher, with instructions provided in the experiment documents.

The engineering report assignment sheet outlines what students will have to prepare for their engineering report for this topic. Students may be given this assignment over the holiday break. A sample engineering report prepared by Mr. Hugh Sangster, for the use of PV in water pumping has been provided as a reference as well.

There is also a 10 minute student survey that is intended to be provided to students upon completion of the course (this may be prior to the engineering reports being submitted). The sheets have been divided into halves to save paper. If the teacher could collect the responses from each student, and send us a summary of the feedback by email, that would be much appreciated.

Note that the "worksheets" folder contains PDF solutions documents for each of the four PDF worksheets that students may access via the PowerPoint self-study unit. The "eng_report" folder also contains an "instruction" file for teachers, on how to go about providing the assignment.

MS PowerPoint viewers that allow people with Macintosh systems have been included in this course pack. The file name, "ppt98vw.hqx" should be opened and run to install the viewer to your hard drive by following the prompts. The course pack also contains a PowerPoint viewer for PCs

for those who do not have MS PowerPoint. The filename for this viewer is "pptview.exe". License details for distribution of these two Viewers are included in the course pack file, "pptlicense.pdf" with some instructions included therein.

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All the materials in this course package will be located at The University of New South Wales School of Photovoltaic & Renewable Energy Engineering website,
http://www.pv.unsw.edu.au/
The URL for the course materials with compressed video (low resolution), http://www.pv.unsw.edu.au/estudies/coursepacklo.zip
The URL for the course materials with higher resolution video (and larger filesize), http://www.pv.unsw.edu.au/estudies/coursepackhi.zip
The URL for the course materials with no video (smallest filesize), http://www.pv.unsw.edu.au/estudies/coursepackno.zip

The materials were prepared between 2006-2008 by Hugh Sangster (BEng RE UNSW), Bany Jaya (BEng RE UNSW), Martha Lenio (BE Mech, PhD Candidate), Fennalia Tan, Shelley Bambrook (BEng PV UNSW), and Dr. Richard Corkish (BEng RMIT, PhD UNSW) from the School of Photovoltaic and Renewable Energy Engineering at the University of New South Wales. Valuable feedback and suggestions were provided by Lloyd Zietsch, Peter Myers and Mark Gregory of Kirrawee High School, particularly about running the course with trial versions of the course materials. Rob Largent (AS USA) provided a great deal of assistance in uploading the material to the final UNSW website and by providing graphics for the project. Funding for the project was kindly provided by the Department of Environment and Conservation NSW 'Climate Action Grant' *(Ref no: C06/CAG/043)*.

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Additional material has been sourced from other organizations and individuals who have been referenced in-text and in the reference lists of included texts. Some notable examples include Q-Cells AG, Kleir International, CSIRO (Commonwealth Scientific and Industrial Research Organisation), EPIA (European Photovoltaic Industry Association), and Ted Ciszek (the 'Siliconsultant').