Course number, title and credits; total time allocation

<table>
<thead>
<tr>
<th>Course Number</th>
<th>ALT 255/ELT 166</th>
<th>Credits</th>
<th>3</th>
<th>Title</th>
<th>Solar Energy</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture/Discussion</td>
<td>3 hrs/semester</td>
<td>Lab</td>
<td>1 hrs/semester</td>
<td>Clinical</td>
<td>0 hrs/semester</td>
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Catalog description and Pre- and Co-requisites (Same as taxonomy and catalog)

This course explores the design, installation, and maintenance of photovoltaic (PV) systems. Topics include site survey and assessment, estimating solar array electricity output, inverters, battery systems, and off-grid/grid-connected systems. Labs include hands-on activities with solar panels and electrical equipment. Prior electrical skills and knowledge are required to be successful in this course.

Knowledge, skills and abilities Students Acquire from this Course (Educational Objectives)

- Applied Solar Theory – Analysis of Photovoltaic (PV) System rates – Knowledge of PV panel types – System Planning Skills – Comprehensive Troubleshooting

Associate Degree Outcomes Addressed in this Course (These must appear in course syllabus)

ADO 7

In order to meet ADO 7 the class requires students to think critically and solve problems. This course requires that students think critically about the benefits and impacts of solar panel, or photovoltaic (PV), systems. Students are also required to troubleshoot and solve problems related to PV systems.

Units/topics of Instruction

- Introduction to Photovoltaics
- Site Surveys and Planning
- Battery technology
- Inverters
- System Sizing
- Electrical Integration (Grid connected and off-grid)
- Permitting and Inspection
- Economic Analysis (Financial Impact) of Solar

Instructional Techniques and Procedures

The instructor will rely primarily on the LabVolt Solar/Wind Training System and Hampden Engineering PV Trainer as well as the accompanying curriculum. The instructor will use these resources as a basis for lectures and discussions. Experiments, or "Job Sheets", in the LabVolt manuals will be used for labs. Additionally, a course textbook and industry articles will be used to supplement the student’s learning of the subject.

Instructional Use of Computer or Other Technology

Instructor will use the LabVolt Solar/Wind Training System and Hampden Engineering PV Trainer to teach students

Instructional Materials and Costs to Students


Skills and abilities students should bring to the course

<table>
<thead>
<tr>
<th>Able to read</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ a limited amount of material</td>
<td>☒ an average amount of material</td>
</tr>
<tr>
<td>☒ relatively easy material</td>
<td>☒ moderately difficult material</td>
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</table>

<table>
<thead>
<tr>
<th>Able to compute</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>☒ basic, pre-algebraic problems</td>
<td>☒ simple algebraic problems</td>
</tr>
<tr>
<td>☒ short compositions</td>
<td>☒ medium length compositions</td>
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</table>

<table>
<thead>
<tr>
<th>Able to use technology</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>☒ keyboard skills/familiar with computer</td>
<td>☒ computer application</td>
</tr>
<tr>
<td>☒ web navigation</td>
<td></td>
</tr>
</tbody>
</table>

Other necessary abilities

The course is usually scheduled

Day: ☐ Fall ☐ Winter ☐ Spring

Evening: ☒ Fall ☒ Winter ☐ Spring

Prepared by Mark Rabinsky

Date: March 2, 2010

Approved by Dept.

Date

Approved by Dean

Date

Approved by Curriculum Committee

Date