JCC OFFICIAL COURSE OUTLINE

Course number, title and credits; total time allocation

Course Number	ALT 255/ELT 166	Credits	3	Title	Solar Energy		
Lecture/Discussion	3 hrs/semester		Lab	1 hrs/semester		Clinical	0 hrs/semester

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 students 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

LabVolt Solar/Wind Training System Job Sheets for students and instructors and Hampden Engineering PV Trainer
Textbook (~$85) Photovoltaic Systems, 2nd edition by James Dunlop

Skills and abilities students should bring to the course

Able to read	☐	a limited amount of material	Able to compute	☐	basic, pre-algebraic problems
	☒	an average amount of material		☒	simple algebraic problems
	☐	an above average amount of material		☐	higher order mathematical problems
Able to read	☐	relatively easy material	Able to write	☒	short compositions
	☐	moderately difficult material		☐	medium length compositions
	☒	technical or sophisticated material		☐	lengthy compositions
Able to use technology	☐	keyboard skills/familiar with computer	Other necessary abilities	☐	
	☒	computer application		☐	
	☐	web navigation		☐	

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**