

Imperial Valley College/San Diego State University/Workforce Development
Renewable Energy Advisory Committee

Thursday, April 11, 2013
07:30-09:00
SDSU's Center for Energy Sustainability
Brawley, California

-Agenda-

- **Glen Allegranza, Presiding; Rick Johnson, Recorder**
- **Introductions**
- **Informational Items**
 - Approve/Deny Minutes from 2/7/13
 - NSF Grant (Mr. Silva, IVC)
- **Current/Proposed Projects - SDSU**
 - SDSU Grants (Dr. Sabath, SDSU)
 - Center for Sustainability, Brawley Campus (Dr. Sabath, SDSU)
 - Power Plant Simulator (Dr. Sabath, SDSU)
 - Recap of instructional modules
 - Usage
 - Recap of pending projects (Dr. Sabath, SDSU)
- **Current/Proposed Projects - IVC**
 - NSF Grant (Mr. Silva, IVC)
 - Career Technical Education Center (Mr. Silva, IVC)
 - Other
- **Action Items (IVC)**
 - Curriculum for Alternative Energy Certificate Program – ***Requires Action***
 - Adjusted Certificate (From 10 courses to seven) – ***Requires Action***
 - NABCEP Certification– ***Requires Action***
- **What Does Industry Need?**
 - Venues for in-service/continuous education
 - Classrooms
 - Other
- **Next Meeting:** TBD
07:30-09:00
Center for Energy Sustainability
- **Adjournment**

Imperial Valley College

Economic and Workforce Development Division

Solar Photovoltaic & Thermal Technician Certificate

Imperial Valley College (IVC) is in the process of upgrading its existing Specialization Certificate in Solar Energy. This upgraded certificate is designed to provide students and entry level technicians seeking higher grade level, specific understanding and skills, technical knowledge, and related trade information on solar technology and installation of related equipment.

The proposed Solar Photovoltaic & Thermal Technician Certificate program has two components and will provide students with adequate knowledge of photovoltaic electrical systems (PV) and solar heating (SH) of water and space systems, which meets the guidelines of the National Science Foundation (NSF) IVC Alternative Energy Program, and North American Board of Certified Energy Practitioners (NABCEP) standards and learning objectives.

COURSE TITLE: Safety Standards (Cal/OSHA) 30-Hour Card COURSE NO.: BLDC 101 UNITS: 3

Safety Standards is a course designed to afford the student the opportunity to earn the General and Construction Industry OSHA 30-Hour Card. The course will provide the student with essential instruction and learning allowing the student to develop and master knowledge and skills associated with safety and health recognition and prevention at a worksite. Topics include: OSHA and Cal OSHA standards, hazard analysis and identification, acceptable safety practices, proper selection and use of personal protective equipment, job hazard analysis and mitigation measures, hazard communication standards, and inspections, citations, and penalties. OSHA card processing fee will apply.

1. COURSE TITLE: Electrical Principles COURSE NO.: EWIR 110 UNITS: 4

This course meets NSF, IID and NABCEP guidelines; this course provides the electrical student with instruction in basic principles of electrical safety. Instruction will include an introduction to power plants and grid functions, electrical theory and test equipment, the use of NEC boxes, fittings and conductors, and the interpretation of related electrical blueprints and commercial/industrial/residential symbols, diagrams, and schematics used for wiring. Electrical principles of residential wiring will be the focus of instruction.

2. COURSE TITLE: Electrical Wiring and Protection COURSE NO.: EWIR 115 UNITS:4

This course provides the student with instruction, which meets NSF Renewable Energy Program and NABCEP guidelines, and as part of the Solar PV & Thermal Technician Certification, qualifies the student to take the NABCEP Solar Entry Level PV and SH Exams, instruction is in basic principles of electrical Alternative Energy Systems. Instruction will include an introduction to energy usage, Ocean and Hydro-power, Solar Energy, Wind Energy, bio-energy, combustion turbines, Hydrogen economy and Fuel Cells, Combined Heat and Power systems, Geothermal, Nuclear, Smart Grid, Energy and data acquisition

systems based on LabVIEW software. Energy efficiency and sustainability principles of these systems will be the focus of instruction.

3. COURSE TITLE: Alternative Energies COURSE NO.: RNEW 118 UNITS:4

This course covers wiring installation and connection for conductor termination and splices; use of cable pulling instruments and NEMA and NEC standards for cable tray; installation of electrical service and electrical protection components and equipment; use of material take-off methods and troubleshooting techniques; identification of ratings for current breakers and fuses; regulations for sizing and installation of relay switches, conductors and overrides; and application.

4. COURSE TITLE: Solar Energy Systems PV1 COURSE NO.: RNEW 150 UNITS:3

This course provides students with instruction in the principles of photovoltaic (PV) technology that meets NSF and NABCEP guidelines, and qualifies the student to take the NABCEP Solar PV Entry Level Exam. Instruction includes an overview of electric principles, the solar resource, and electric load analysis; (PV) modules, controllers, batteries, and inverters; (PV) systems utility-interactive systems, integrating (PV) into buildings and system applications. Basics of installation, maintenance, troubleshooting, and safety.

5. COURSE TITLE: Solar Electrical Systems PV2 COURSE NO.: RNEW 151 UNITS:3

This course focuses on Photovoltaic (PV) systems design and meets NSF Renewable Energy Program and NABCEP guidelines, and qualifies the student to take the NABCEP Solar PV Entry Level Test, including grid and stand-alone calculations, grounding considerations and wiring sizing based on the National Electrical Code (NEC). Evaluate systems performance under various operating conditions. residential, commercial and industrial systems design elements, including inter-row shading, controllers, battery and inverters selection, sizing and data monitoring solutions, including system design and installation exercises.

6. COURSE TITLE: Solar Heating (SH) COURSE NO.: RNEW 15 UNITS:3

This course is an introductory study in solar thermal concepts that meets NABCEP guidelines, and qualifies the student to take the NABCEP Solar Heating (SH) Entry Level Test. Identifying SH safety practices, standards, codes and certification. Instruction will be based on solar thermal collector for water, space heating, installation and operation, water treatment, saving devices and equipment. Conducting a site analysis, water and space heating systems design, identifying systems components, materials, balance, installation, maintenance and troubleshooting. Learning opportunities will be enhanced through a combination of lecture and laboratory activities.

7. COURSE TITLE: NABCEP Entry Level Exam Preparation COURSE NO.: RNEW 165 UNITS:1

This course prepares students for NABCEP PV and SH Entry Level Exams, including in and out of class activities. Skills development in the areas of exam preparation; exam mental and physical preparation, highlight related solar topics, principles and concepts, exam taking strategy, several exams simulations,

exams grading and results driven corrective actions. A review of factors relating to or contributing to exam passing success factors.

8. COURSE TITLE: Employment Readiness

COURSE NO.: WE 201

UNITS:1

A course that may be taken as a stand-alone or as a companion course related to WE 210 or WE 220. Skills development in the areas of job search, employer contact, résumé writing, applications and cover letter, interviewing techniques, appropriate dress, job-holding practices and on-site learning objectives. A review of factors relating to or contributing to job success, including motivation, attitude, human relations, leadership, personal, as well as, group relationships, and behavior.

9. COURSE TITLE: Internship

COURSE NO.: WE 220

UNITS:1

A course that is supervised employment extending classroom-based occupational learning at an on-the-job learning site relating to the students' educational or occupational (major or career) goals. One unit of credit is earned for each 60 hours (3.5 to 13.5 hours a week) of volunteer/unpaid work or 75 hours (4.5 to 17 hours a week) of paid work, with maximum of 4 units per semester. During a regular semester, students must complete a minimum of 7 units, including Work Experience. During the summer session, students must complete one other course in addition to Work Experience.

S. Turner

RATING E-LEARNING MODULES

.....Rating.....Appropriate Target Audience.....

Possible Learning Module	Rating		Appropriate Target Audience	
	Not Important	Important	Essential	Academic Degree (AA/BA/BS/masters)
1. Intro to Power Plant Control Room Operations (Introduction to the power plant control room simulator)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Energy Regulatory Environment (FERC, NERC, CIPS, WECC, OSHA)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Safety Practices in Energy Operations	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4. Federal and State Energy Policy (Focus on Federal and California policy)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Systems Analysis and Project Management Skills (Brainstorming, Gantt charting, critical path method, fishbone charting, budgeting, financial planning, objective setting, quality control, performance assessment, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6. Project Management Processes (Permitting, schematics, blueprints, budgeting, contract negotiations, communicating w/ govt. agencies)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

J. Du

.....Rating.....

.....Appropriate Target Audience.....

Possible Learning Module	Rating		Appropriate Target Audience			
	Not Important	Important	Essential	Entry Level Training	In-Service Training	Academic Degree (AA/BA/BS/masters)
7. Business Writing Skills (including email, email etiquette, formal correspondence, memos, documentation, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8. Applied Math for Technicians (fractions, decimals, algebra, geometry, trigonometry, statistics, calculus)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Leadership and Management Skills for Energy Organizations	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Environmental Compliance (EIR process, EIR elements, Federal and CA requirements)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Public Relations with Environmental and Community Groups (tribal groups, farming community, environmentalists and other special interest groups)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12. Intro to Renewable Energy (Overview of alternative energy technologies, transmission and distribution systems, grids, etc.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Energy Consumption and Efficiency Analysis (Knowledge & skills related to assessing energy consumption in organization operations, and proposing energy efficiency measures.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

J. Turner

.....Rating.....Appropriate Target Audience.....

Not Important

Entry Level Training

Essential

Important

In-Service Training

Academic Degree (AA/BA/BS/masters)

1. Presentation Skills

2. Collaborative Problem Solving Skills

Communication Skills

Intro to Power Plant Processes (Different from #1)