SKYLINE COLLEGE
ANNUAL PROGRAM PLANNING SELF-STUDY

*Note: To complete this form, **SAVE** it on your computer, then send to your Division Dean/VPI as an **ATTACHMENT on an e-mail message.***

Program Title: Energy Systems Technology Management (ESTM)

Date Submitted: 4/19/2013

Key Findings: The ESTM program is currently finalizing its state Chancellor's office approvals. The program modified, migrated, and created new curriculum for solar and energy efficiency curriculum in the Environmental Science and Technology program. The addition of new degrees and certificates, starting in Fall 2013, means that the program does not have historical data to draw on for productivity, enrollment, and completion.

1. Planning Group Participants (include PT& FT faculty, staff, students, stakeholders)

List of names and positions: Aaron Wilcher, CTE faculty program coordinator, Bruce Greenstein, adjunct faculty, Celia Canfield, adjunct faculty, Doug Faust, adjunct faculty, Ed Thomas, adjunct faculty, Peter Lum adjunct faculty, Anjana Richards, Director of Workforce Development, Rita Gulli, Program Director, and the ESTM industry advisory group.

2. Contact Person (include e-mail and telephone): Bruce Greenstein greensteinb@smccd.edu

3. Program Information

A. Program Personnel

Identify the number of personnel (administrators, faculty, classified, volunteers, and student workers) in the program:

0 Administrators, 0 FT Faculty, 6 Adjunct Faculty, 0 Classified, 0 Volunteers, 0 Student Workers

FT Faculty:	0	**PT/OL Faculty (FTE):**	0.725
FT Classified:	0	**PT Classified (FTE):**	0
Volunteers:	0	**Student Workers:**	0

B. Program Mission and Goals

State the goals/focus of the program and how the program contributes to the mission and priorities of the College and District. Address how the program meets the current year's strategic priorities. (200 word limit)

The program provides CTE training for jobs in energy efficiency and solar industries, including area employers such as SolarCity, Sungevity, Sun Light & Power, PG&E, SDI Insulation, and many other small and medium sized firms in the construction and energy sectors. With review, feedback, and verification from industry partners, department faculty created a program that serves the needs of industry The program creates a staple anchor curriculum from which to draw for the college and district's CTE and Sustainability mission and facilities planning; during more than 5 years of federal workforce training grant funding, the program piloted community-based field training for energy assessment and retrofitting, as well as field training and internships with construction and energy firms in San Mateo County. The program is a classroom and lab-based program, but it also directly serves the campus community and county with services, as well as supports the hiring and training needs of local employers.

4. Program/Service Area: Student Learning Outcomes and Program Data

A. Summarize recent course and/or program SLO assessment, identify trends and discuss areas in need of improvement. Please attach summary Tracdat reports with assessment and analysis for SLOs evaluated during the year (prior to submission deadline of April 1st)

Tool: https://sanmateo.tracdat.com/tracdat/

The program team is in the process of finalizing SLO assessment for ENVS 410, Introduction to Solar Installation and Integration; ENVS 425, Building Performance, Assessment, and Sales; ENVS 100, Introduction to Environmental Science; and ENVS 411, Solar Design, Estimation, and Sales. (ENVS 411 was banked, and then unbanked for offering in Summer 2013.) These courses were modified and migrated to courses in the ESTM program, for the degrees and certificates that will begin in Fall 2013. the ESTM program and will begin a 6-year cycle for program review starting in the Fall 2013 semester.

B. Analyze evidence of Program performance. Review and analyze productivity, student characteristics and outcomes.
Tool: http://www.skylinecollege.edu/prie/programdata.php

Again, since the program will launch in Fall 2013, there are no historical data from which to calculate productivity.

C. Explain how other information may impact the Program (examples are business and employment needs, new technology, new transfer requirements etc.)

The program design team engaged the program's industry advisory council for curriculum design of the ESTM degrees and certificate programs. The team conducted labor market information research for the State Chancellor's office applications. This process revealed that the solar and energy efficiency industries are rapidly evolving, dynamic emerging sectors of the economy with varied hiring and skill needs. The outlook in the near and long terms is good. Labor market projections are strong, and with the economy returning and construction markets coming back, local employers in the sectors are hiring students from the programs. With employer partner feedback, program faculty designed technical training programs that incorporated substantial business skills training for sales, finance, marketing, and management to meet the demands of a rapidly growing industry where dynamic, evolving workplaces are the norm. Employers prioritized management, communications, problem solving and teamwork over singular technical expertise. The program design team also emphasized elective courses, including special topics and experimental courses to keep up with changing technology and labor market needs that are certain in the future. Finally, the group provided both core curricular business skills training and energy career readiness training as primers. At the end of the program, faculty created opportunities for student projects with industry partners with capstone courses.

5. Curricular Offerings

Tools: CurricUNET http://www.curricunet.com/smcccd; https://sanmateo.tracdat.com/tracdat/

A. Program Curriculum and Courses. If your program does not offer curriculum please state "N/A".

Respond to the following:

- What new courses (excluding individual Selected Topics [665] topics and Experimental [680/880] courses) have you added to your program curriculum in the past academic year? List by Department, Course Number and Course Title.
- If you have not done so already, please email the TracDat Coordinator to request that these courses to be added to TracDat.
- Have you uploaded SLO's for your new courses in TracDat?
- Have you mapped course-level SLOs to PSLOs and ISLOs?
- Have you uploaded an assessment method (need not be specific) for each course?

Program team have created new courses, and adapted and migrated courses from the Environmental Science and Technology program. We are currently working with Karen Wong, SLOAC coordinator, on uploading the courses, creating the SLO/PSLO, and ISLO maps, and uploading an assessment method for the courses. The department's new courses include the following:

ESTM 400 Clean Energy Concepts Policies Industries
ESTM 402 Introduction to Residential Construction
ESTM 410 Introduction to Solar Installation and Integration
ESTM 411 Introduction to Solar Photovoltaics (PV) Systems and Markets
ESTM 412 Solar Photovoltaics (PV) Design Fundamentals
ESTM 413 Solar Photovoltaics (PV) Finance and Sales
ESTM 421 Principles of Building Science, How Houses Work
ESTM 425 Building Performance Assessment
ESTM 426 Building Performance Retrofitting
ESTM 427 Introduction to Whole Home HVAC
ESTM 428 Field Training and Exam Preparation for Energy Efficiency
ESTM 441 Solar Thermal Technology and Design
ESTM 445 Commercial Solar PV Finance and Sales (White Space Conflict)
ESTM 490 Capstone Project in Energy Systems Technology Management

B. Identify Patterns of Curriculum Offerings

Respond to the following:

- What is the planning group's 2-year curriculum cycle of course offerings by certificates and degrees?
- What is the ideal curriculum cycle?
- Discuss any issues.

Fall 2013 (same for 2014, except where noted below)

ESTM 402 Introduction to Residential Construction
ESTM 410 Introduction to Solar Installation and Integration
ESTM 411 Introduction to Solar Photovoltaics (PV) Systems and Markets
ESTM 421 Principles of Building Science, How Houses Work
ESTM 427 Introduction to Whole Home HVAC
ESTM 441 Solar Thermal Technology and Design (for 2014)

Spring 2014 (same for 2015, except where noted below)

ESTM 400 Clean Energy Concepts Policies Industries
ESTM 412 Solar Photovoltaics (PV) Design Fundamentals
ESTM 413 Solar Photovoltaics (PV) Finance and Sales
ESTM 425 Building Performance Assessment
ESTM 426 Building Performance Retrofitting
ESTM 428 Field Training and Exam Preparation for Energy Efficiency
ESTM 445 Commercial Solar PV Finance and Sales (in 2015)
ESTM 490 Capstone Project in Energy Systems Technology Management (in 2015)

The courses listed here, plus additional courses in Business, Environmental Science, Management will enable students to complete the degrees and certificates within the specified time frame.

6. Response to Previous Annual Program Plan & Review

List any recommendations for the program and your responses to these recommendations based on previous Annual Program Plan and/or CTE Professional Accreditation report.

The program has not done an annual program plan or had an accreditation report before.

7. Action Plan

Provide your action plan based on the analysis and reflections provided in the previous sections. Note – resource requests should be connected to action plans.

Respond to the following:

- Describe data and assessment results for Program Student Learning Outcomes. Analyze and reflect on assessment results for Program Student Learning Outcomes and other measures of Program performance.
- Analyze and reflect on other evidence described in previous sections. Identify the next steps, including any planned changes to curriculum or pedagogy.
- Identify questions that will serve as a focus of inquiry for next year.

We are currently working with Karen Wong, SLOAC coordinator, on uploading the courses, creating the SLO/PSLO, and ISLO maps, and uploading an assessment method for the courses. We are currently assessing SLOs from the Environmental Science and Technology program, and will have more data to provide here in the future.

Questions we are likely to have for next year's plan include:

* Is the interdisciplinary composition of the degree and certificate programs effective in providing students with skills needed by employers in an efficient and effective manner?

* Are there gaps or redundancies in the programs' curriculum for the kinds of jobs we are targeting and the jobs that students get upon exiting the program?

* Is the field training, capstone curriculum, and Cooperative education components effective at encouraging student hiring in the intended fields?

8. Resource Identification

A. Professional Development needs

Traveling to and attending the following conferences and workshops:

* InterSolar
* SolarTech
* Solar Energy Industry Association (SEIA)
* Solar Energy International
* Affordable Comfort Inc. (ACI)
* Association for the Advancement of Sustainability in Higher Education (AASHE)

Faculty will need CEUs and additional professional training from the following organizations:

* Solar Instructor Training Network (SITN)
* Building Performance Institute (BPI)
* North American Board of Certified Energy Practitioners (NABCEP)

They may also wish to get the programs accredited by the Institute for Sustainable Power Quality (ISPQ)

B. Office of Planning, Research & Institutional Effectiveness requests

Actions:

- List data requests for the Office of Planning, Research & Institutional Effectiveness.
- Explain how the requests will serve the Student/Program/Division/College needs.

Data requests will be standard, ongoing enrollment and completer data such as that required by the annual plan and 6-year review cycle.

Additional strategy planning assistance could include focus groups and surveys of former students. Labor market assistance for interfacing with the Centers of Excellence, EWD, EDD, and additional environmental scanning for reports would be nice. This data would go to inform strategy and answering questions regarding program effectiveness, gaps and redundancies. By offering summaries of market research (former student engagement), and labor market research to program faculty and industry advisors, they can make decisions with the administration about how to move forward.

C. Faculty and Staff hiring, Instructional Equipment and Facilities Requests
Complete the following table:

Annual Program Planning Resource Needs

Program ESTM **Date** 4-1-13

	What are the needs?	How does this request align with your assessment of student outcomes?	How does this request align with your action plan?	What is the estimated cost for facilities and equipment?
Personnel	1. 1 full-time faculty member 2. Supporting adjunct faculty for solar courses 3. Lab assistants (Instructional Aides) for ESTM 402, 410, 425, 426, and 428 and 10 hours for electrical contractor for solar installation lab in ESTM 410.	Again, formal college program and course assessment is in process for several courses previously offered under ENVS. Teaching and lab support need requests are based on 5 years of grant pilot programs and open enrollment for solar programs. Faculty attribute student success directly to low student count for lab activities, split between 2 faculty, or 1 faculty and a lab assistant.	Personnel requests align with staffing and instructional capacity offered in open enrollment and in the past 5 years of pilot programs offered under the grants. Lab courses are required courses for degrees and certificates in the ESTM programs.	N/A
Equipment	1. Calibration for diagnostic tools Replacement tools and equipment for energy assessment 2. Other items are materials and 3. consumables for courses 4. Additional state-of-the-art solar panels and up-to-date inverters requested for solar labs (original equipment purchased and donated in 2008-2009)	See above. Equipment inventory is needed to both replace equipment that was stolen, but also to calibrate and maintain existing equipment for energy assessment and retrofitting, and solar installation labs. Students use the equipment for energy efficiency and solar labs to accomplish the basic requirements and achieve the SLOs in all courses with lab requirements.	Lab courses are required courses for degrees and certificates in the ESTM programs. Faculty operate with a straightforward, no frills set of tools and equipment. At times, faculty have had to use their own professional equipment. In the future, to prepare students for cutting edge technology they are likely to encounter on the job in an emerging field, faculty will make additional requests. These requests will enable offering planned courses in 2013-2014 academic year.	$3650 for calibration of energy efficiency equipment $2500 for materials and equipment for energy efficiency courses and test house upkeep $3250 for state of the art solar equipment to sustain solar programs.
Facilities	1. No major additions planned, 2. however, upkeep and maintenance for solar 3. inverters, solar panels, and test house, and other facilities 4.	Just as with equipment, current facilities will sustin the programs for the 2013-2014 academic year, however, industry advisors talk frequesntly of emerging convergent technology relevent to ESTM including electric vehicle infrastructure and smart grid technology. These needs from industry will likely impact facilities needs for job preparation.	N/A; Current facilities are sufficient for 2013-2014 academic year, but the industry is rapidly evolving, and this could change for 2014-2015.	N/A; See adjacent response.

Course Assessment Report-- Four Column

San Mateo CCCD

SKY Dept - Energy Systems Technology Management

Course Outcomes	Means of Assessment & Success Criteria / Tasks	Results	Action & Follow-Up
SKY Dept - Energy Systems Technology Management - SKY ESTM 400 - Clean Energy Concepts Policies Industries - Basic Concepts - Explain basic concepts of energy production and systems, climate change, built and natural environment, fields of study and concepts of sustainability and environmentalism?including major U.S. historical political and social movements. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 08/19/2013 **Course Outcome Status:** Active	**Assessment Method:** New course - currently being developed **Assessment Method Category:** Other **Success Criterion:** New course - currently being developed	08/28/2013 - Course currently under assessment **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 400 - Clean Energy Concepts Policies Industries - Explain the Tenants - Explain the tenants of the major state and regional environmental and energy policies in California, including major actors and interests, projected economic impacts, and mechanisms for enforcing and incentivizing market transformation (tax credits, rebate incentives, fines, loan guarantees, code enforcement, and innovation subsidies). (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 08/19/2013 **Course Outcome Status:**	**Assessment Method:** New course - currently being developed **Assessment Method Category:** Other **Success Criterion:** New course - currently being developed	08/28/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	

Course Outcomes	Means of Assessment & Success Criteria / Tasks	Results	Action & Follow-Up
Active			
SKY Dept - Energy Systems Technology Management - SKY ESTM 400 - Clean Energy Concepts Policies Industries - Catalog and Understand - Catalog and understand the major industry sectors involved in the clean energy economy, including best practices, industry standards, career pathways?including salary and job outlook--industry credentials, and fields of study. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 08/19/2013 **Course Outcome Status:** Active	**Assessment Method:** New course - currently being developed **Assessment Method Category:** Other **Success Criterion:** New course - currently being developed	08/28/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 402 - Introduction to Residential Construction - Worker & Worksite Safety - Demonstrate knowledge and implementation of worker, worksite and occupant health & safety standards, codes, and best practices. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2013-2014 **Start Date:** 08/19/2013 **Course Outcome Status:** Active	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:** Currently under development	08/28/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 402 - Introduction to Residential Construction - Identification and Classification of Building Materials & Methods - Locate, explain, and diagram the types and functions of individual	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:** Currently under development	08/28/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013	

Course Outcomes	Means of Assessment & Success Criteria / Tasks	Results	Action & Follow-Up
building systems; materials, framing, foundation, plumbing, electrical, HVAC, insulation, thermal boundary. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2013-2014 **Start Date:** 08/19/2013 **Course Outcome Status:** Active		**Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 410 - Introduction to Solar Installation and Integration - Demonstrate Skills - Demonstrate the Skills necessary to install residential solar systems at the junior installer level. (Created By SKY Dept - Environmental Science) **Assessment Cycles:** 2012-2013 **Start Date:** 05/20/2013 **End Date:** 05/20/2016 **Course Outcome Status:** Active	**Assessment Method:** Supervised hands on demonstration of installation skills in the following categories: 1. Mechanical Installation of Solar Components. 2. Electrical Wiring of Installed Components. 3. Testing and Turn up of Installed Components. **Assessment Method Category:** Presentation/Performance **Success Criterion:** 1. 10% of students will pass inspection of their installations with no corrections required as measured to NEC code requirements. 2. 75 % of students will pass inspection of their installations after minor corrections (1 to 3) as measured to NEC code requirements. 3. 15% of students will pass inspection of their installations after major corrections (4-6) as measured to NEC code requirements. 4. Working in a supervised environment. 100% of students will safely test and turn up installed components according to established skill practices.	08/12/2013 - 1. 85% of students passed with minor corrections. 2. 12% of students passed with no corrections. 3. 3% of students passed with major corrections. 4. 100% safely tested and turned up installed components. **Result Type:** Criterion met **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 410 -	**Assessment Method:** Written Evaluation of preparatory knowledge	08/12/2013 - Correct response average was 75%. **Result Type:**	

Course Outcomes	Means of Assessment & Success Criteria / Tasks	Results	Action & Follow-Up
Introduction to Solar Installation and Integration - NABCEP Exam - Successfully complete the Entry Level Certification Examination from the North American Board of Certified Energy Practitioner (NABCEP) (Created By SKY Dept - Environmental Science) **Assessment Cycles:** 2012-2013 **Start Date:** 05/20/2013 **End Date:** 05/20/2016 **Course Outcome Status:** Active	to sit for (NABCEP) exam. Exam questions formulated from focus of knowledge formulated by level of importance on NABCEP website. Questions incorporated into quiz's and final exam. **Assessment Method Category:** Exam **Success Criterion:** Class average will be 70% correct responses to targeted questions.	Criterion met **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** Assessment deemed appropriate to be reviewed again in next SLOAC cycle. No action required at this time.	
SKY Dept - Energy Systems Technology Management - SKY ESTM 411 - Introduction to Solar Photovoltaics (PV) Systems and Markets - Design and Cost - Provide a system design and cost estimation, including electric bill offsets and financial analysis, for a rooftop photovoltaic system in a simulated solar company environment. (Created By SKY Dept - Environmental Science) **Assessment Cycles:** 2012-2013 **Start Date:** 05/20/2013 **End Date:** 05/20/2016 **Course Outcome Status:** Active	**Assessment Method:** 30 points (percent) of overall grade based on completed project materials demonstrating knowledge of photovoltaic theory and system components, solar installation methodologies, the ability to correctly size and design a photovoltaic system as well as the ability to apply basic financial analysis principles to residential solar opportunities. **Assessment Method Category:** Capstone Assignment/Project **Success Criterion:** 75% of students should score = 24 points on this component of the final project.	08/12/2013 - 86% of students scored 24 or higher **Result Type:** Criterion met **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** Assessment deemed appropriate to be reviewed again in next SLOAC cycle. No action required at this time.	
SKY Dept - Energy Systems Technology Management - SKY ESTM 411 - Introduction to Solar Photovoltaics (PV) Systems and Markets - Appropriate Sales Skills - Demonstrate appropriate sales skills, including effectively communicating the benefits of solar photovoltaics to potential customers in a simulated solar company	**Assessment Method:** 10 points (percent) of overall grade based on students demonstrating sales presentation skills in which the contents of the final proprosal are presented verbally and in an interactive format to potential customers in a simulated solar company environment.	08/12/2013 - 84% of students scored 8/10. **Result Type:** Criterion met **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:**	

Course Outcomes	Means of Assessment & Success Criteria / Tasks	Results	Action & Follow-Up
environment. (Created By SKY Dept - Environmental Science) **Assessment Cycles:** 2012-2013 **Start Date:** 05/20/2013 **End Date:** 05/20/2016 **Course Outcome Status:** Active	**Assessment Method Category:** Capstone Assignment/Project **Success Criterion:** 75% of students will score = 8/10.	Assessment deemed appropriate to be reviewed again in next SLOAC cycle. No action required at this time.	
SKY Dept - Energy Systems Technology Management - SKY ESTM 412 - Solar Photovoltaics (PV) Design Fundamentals - Site Survey - Accurately Perform a detailed site survey. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 08/19/2013 **Course Outcome Status:** Active	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:** Currently under development	08/28/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 412 - Solar Photovoltaics (PV) Design Fundamentals - Integration - Describe and explain basic methods and processes of mechanical and electrical integration. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 08/19/2013 **Course Outcome Status:** Active	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:** Currently under development	08/28/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 412 - Solar Photovoltaics (PV) Design Fundamentals - Design and Size - Design and size a PV array to maximize available roof space	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:**	08/28/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013	

Course Outcomes	Means of Assessment & Success Criteria / Tasks	Results	Action & Follow-Up
and/or to offset maximum energy usage. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 08/19/2013 **Course Outcome Status:** Active	Currently under development	**Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 413 - Solar Photovoltaics (PV) Finance and Sales - Project Proposal - Provide a customer project proposal in a simulated solar company environment , including cost estimation, electric bill offsets, appropriate rebates and tax credits, and thorough financial analysis for a rooftop photovoltaic system. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 08/19/2013 **Course Outcome Status:** Active	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:** Currently under development	08/30/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 413 - Solar Photovoltaics (PV) Finance and Sales - Sales and Presentation - Demonstrate appropriate sales and presentation skills to potential customers in a simulated solar company environment. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 08/19/2013 **Course Outcome Status:**	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:** Currently under development	08/30/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	

Course Outcomes	Means of Assessment & Success Criteria / Tasks	Results	Action & Follow-Up
Active			
SKY Dept - Energy Systems Technology Management - SKY ESTM 421 - Principles of Building Science, How Houses Work - Systems Approach - Understand the systems in a building and how they interrelate to one another from a scientific perspective. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2013-2014 **Start Date:** 08/19/2013 **Course Outcome Status:** Active	**Assessment Method:** 100 question final exam **Assessment Method Category:** Exam **Success Criterion:** 90-100=A, 80-90=B, 70-80=C, 60-70=D, 60 or less=F	08/30/2013 - 100% of students are achieving 80 or above **Result Type:** Criterion met **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 425 - Building Performance Assessment - Communications, marketing, and sales strategies - Develop and deliver effective communications, marketing, and sales strategies and tactics to translate technical and financial concepts from measurements, observations, and evaluations into language and concepts that are sellable and understandable to lay people (Created By SKY Dept - Environmental Science) **Assessment Cycles:** 2012-2013 **Start Date:** 01/14/2013 **End Date:** 05/24/2013 **Course Outcome Status:** Active	**Assessment Method:** Using a 4 category qualitative rubric **Assessment Method Category:** Presentation/Performance **Success Criterion:** At least 70% of the students will meet at least 3 of 4 requirements of the rubric for a pass	08/28/2013 - At least 70% of students met at least 3 of 4 requirements **Result Type:** Criterion met **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 425 - Building Performance Assessment - Basic concepts of building science - Comprehend and	**Assessment Method:** Written exam **Assessment Method Category:** Exam	08/28/2013 - Class average was 80% correct responses **Result Type:** Criterion met	

Course Outcomes	Means of Assessment & Success Criteria / Tasks	Results	Action & Follow-Up
articulate/instruct others on the basic concepts of building science and physical properties and processes of buildings and interior and exterior environmental concerns, according to observation, measurements, and assessments conducted in houses (Created By SKY Dept - Environmental Science) **Assessment Cycles:** 2012-2013 **Start Date:** 01/14/2013 **End Date:** 05/24/2013 **Course Outcome Status:** Active	**Success Criterion:** Class average will be 70% correct responses to targeted questions.	**Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 425 - Building Performance Assessment - Gather, analyze, report qualitative and quantitative - Gather, analyze, and report on qualitative and quantitative data using appropriate observation methods, diagnostic equipment, assessment inventories according to codes and professional technical specifications for standards compliance, formulating effective home energy recommendations (Created By SKY Dept - Environmental Science) **Assessment Cycles:** 2012-2013 **Start Date:** 01/14/2013 **End Date:** 05/24/2013 **Course Outcome Status:** Active	**Assessment Method:** Case study data collection report exam **Assessment Method Category:** Exam **Success Criterion:** 75% of students will correctly use diagnostic equipment, collect and report on data for worst case depressurization and combustion safety assessments in real world demonstrations in lab test house.	08/28/2013 - 65% of students correctly used diagnostic equipment **Result Type:** Criterion not met **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 426 - Building Performance Retrofitting - Interpret Assessment - Interpret energy assessment report and develop retrofit work-scope	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:**	08/28/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013	

Course Outcomes	Means of Assessment & Success Criteria / Tasks	Results	Action & Follow-Up
project plan using industry best practices and specifications, performing basic cost estimation and return on investment. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 01/13/2014 **Course Outcome Status:** Active	Currently under development	**Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 426 - Building Performance Retrofitting - Outline and Implement - Outline and implement best practice retrofitting products and methods for building shell, mechanical equipment, appliances, and other components according to industry and state codes and standards, emphasizing worker safety and quality assurance measures. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 01/13/2014 **Course Outcome Status:** Active	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:** Currently under development	08/28/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 426 - Building Performance Retrofitting - Demonstrate Ability - Demonstrate the ability to pass relevant sections of the Building Performance Institute certification exam, the National Renewable Energy Laboratory (NREL)?s Retrofit Installer Technician exam, or other relevant industry-recognized certification. (Created By SKY Dept - Energy Systems Technology Management)	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:** Currently under development	08/28/2013 - Currently under development **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** Currently being assessed	

Course Outcomes	Means of Assessment & Success Criteria / Tasks	Results	Action & Follow-Up
Assessment Cycles: 2012-2013 **Start Date:** 01/13/2014 **Course Outcome Status:** Active			
SKY Dept - Energy Systems Technology Management - SKY ESTM 427 - Introduction to Whole Home HVAC - HVAC System - Understand, outline, and diagram the basic components, materials, and design elements for basic and common residential HVAC system. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 08/19/2013 **Course Outcome Status:** Active	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:** Currently under development	08/28/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 427 - Introduction to Whole Home HVAC - Design System - Create a basic design and appropriately sized space-conditioning system. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2013-2014 **Start Date:** 08/19/2013 **Course Outcome Status:** Active	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:** Currently under development	08/28/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 427 - Introduction to Whole Home HVAC - Troubleshooting Systems - Identify common problems in new and existing HVAC systems	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:**	08/28/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013	

Course Outcomes	Means of Assessment & Success Criteria / Tasks	Results	Action & Follow-Up
that challenge energy efficient design, installation, and operation. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2013-2014 **Start Date:** 08/19/2013 **Course Outcome Status:** Active	Currently under development	**Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 428 - Field Training and Exam Preparation for Energy Efficiency - Gather, Analyze, and Report - Independently gather, analyze, and report on qualitative and quantitative data using appropriate observation methods, diagnostic equipment, assessment inventories according to codes and professional technical standards and specifications. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 08/19/2013 **Course Outcome Status:** Active	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:** Currently under development	08/28/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 428 - Field Training and Exam Preparation for Energy Efficiency - Develop Report - Independently develop and deliver a completed, professional, technical energy assessment report according to industry standard specifications and practices. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:** Currently under development	08/28/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	

Course Outcomes	Means of Assessment & Success Criteria / Tasks	Results	Action & Follow-Up
Start Date: 08/19/2013 **Course Outcome Status:** Active			
SKY Dept - Energy Systems Technology Management - SKY ESTM 428 - Field Training and Exam Preparation for Energy Efficiency - JTA's & KSA's - Master required Job Task Analyses (JTA) and Skills, Knowledge, and Abilities (SKA) for industry recognized credential field exams, especially Building Performance Institute (BPI) and the U.S. National renewable Energy Laboratory (NREL). (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 08/19/2013 **Course Outcome Status:** Active	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:** Currently under development	08/28/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 441 - Solar Thermal Technology and Design - Site and Load Analysis - Perform a complete site and load analysis; generate a site diagram with all relevant information outlined. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 01/13/2014 **Course Outcome Status:** Active	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:** Currently under development	08/29/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 441 - Solar Thermal Technology and Design - Design System - Design a solar heating system	**Assessment Method:** Currently under development **Assessment Method Category:** Other	08/29/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:**	

Course Outcomes	Means of Assessment & Success Criteria / Tasks	Results	Action & Follow-Up
specific to the climate and proposed application for a simulated customer. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 01/13/2014 **Course Outcome Status:** Active	**Success Criterion:** Currently under development	2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 445 - Commercial Solar PV Finance and Sales - Formulate Key Elements - Formulate the key elements to the structuring of solar Power Purchase Agreements for commercial and utility scale projects in a case study or brief proposal. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 01/13/2014 **Course Outcome Status:** Active	**Assessment Method:** Currently under develoment **Assessment Method Category:** Other **Success Criterion:** Currently under develoment	08/29/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 445 - Commercial Solar PV Finance and Sales - Create Case Study - Create a case study or proposal outlining available methods of commercial and utility scale project finance. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 01/13/2014 **Course Outcome Status:** Active	**Assessment Method:** Currently under develoment **Assessment Method Category:** Other **Success Criterion:** Currently under develoment	08/29/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	

Course Outcomes	Means of Assessment & Success Criteria / Tasks	Results	Action & Follow-Up
SKY Dept - Energy Systems Technology Management - SKY ESTM 445 - Commercial Solar PV Finance and Sales - Critique Existing Case - Critique an existing case (or produce a response to) a commercial and utility scale project request for proposal (RFP). (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 01/13/2014 **Course Outcome Status:** Active	**Assessment Method:** Currently under develoment **Assessment Method Category:** Other **Success Criterion:** Currently under develoment	08/29/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 490 - Capstone Project in Energy Systems Technology Management - Develop Portfolio Project - Develop a portfolio project in collaboration with faculty member and employer or client, such as a nonprofit or community-based organization. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013 **Start Date:** 08/19/2013 **Course Outcome Status:** Active	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:** Currently under development	08/29/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	
SKY Dept - Energy Systems Technology Management - SKY ESTM 490 - Capstone Project in Energy Systems Technology Management - Final Presentation - Demonstrate in a final presentation the full breadth of knowledge gained during the certificate or degree program in ESTM. (Created By SKY Dept - Energy Systems Technology Management) **Assessment Cycles:** 2012-2013	**Assessment Method:** Currently under development **Assessment Method Category:** Other **Success Criterion:** Currently under development	08/29/2013 - Currently being assessed **Result Type:** Inconclusive **Reporting Cycle:** 2012 - 2013 **Resources Needed to Implement Action Plan:** none	

Course Outcomes	Means of Assessment & Success Criteria / Tasks	Results	Action & Follow-Up
Start Date: 08/19/2013 **Course Outcome Status:** Active			
SKY Dept - Telecommunications & Network Technology - SKY ELEC 110 - Intro Fundamentals Electronics - Fundamental electrical parameters - Evaluate the fundamental electrical parameters of simple electronic circuits, using Ohm?s Law and other mathematical formulae. (Created By SKY Dept - Electronics Technology)			
SKY Dept - Telecommunications & Network Technology - SKY ELEC 110 - Intro Fundamentals Electronics - Assemble and troubleshoot - Assemble and troubleshoot simple series and parallel circuits, using standard tools and test equipment, while obeying recognized work safety guidelines. (Created By SKY Dept - Electronics Technology)	**Assessment Method:** Final Project **Assessment Method Category:** Capstone Assignment/Project **Success Criterion:** 70% of students will assemble and trouble shoot simple series and parallel circuits completing the project with at least a 2 or better on final project evaluation scale.	12/19/2012 - 83.3% of students score 2+ on the final project evaluation scale **Result Type:** Criterion met **Reporting Cycle:** 2012 - 2013 **Related Documents:** FInal Project Rubric Amplifier Documentation Power Supply Documentation	