

PROGRAM APPROVAL APPLICATION
NEW or SUBSTANTIAL CHANGE or LOCALLY APPROVED
(This application may not exceed 3 pages)

Fill In Form

Associate in Science Degree Energy and Sustainable Technologies

Proposed Program Title

Cypress College

College

North Orange County Community College District

District

Fall 2015

Projected Program Start Date

Dr. Steve Donley

Voting Member

Dean, CTE & Economic Development

Title

714-484-7233

Phone Number

sdonley@cypresscollege.edu

E-mail Address

Goal(s) of Program (Check all that apply):

Career Technical Education (CTE)

Transfer

Other

Type of Program (Check all that apply):

A.S. Degree

A.A. Degree

Certificate of Achievement:

18+ semester (or 27+ quarter) units

12-18 semester (or 18-27 quarter) units

Reason for Approval Request: (Check One)

New Program

Substantial Change

Locally Approved

Program Information

Recommended Taxonomy of Program (TOP) Code **0946.10**

Units for Major-Degree **35**

Total Units for Degree **60**

Required Units-Certificate **N/A**

Written Form

1. Insert the description of the program as it will appear in the catalog.
The following program is designed to prepare students for employment emerging industry of sustainable energy technologies. Training is given in both theory and practical skills. Directed practical work is given in all areas of energy technology maintenance and repair under simulated on-the-job conditions. The sequence in which courses are taken may be modified to meet individual needs. To earn an Associate Degree students must complete: (1) all major course requirements with a minimum grade of "C"; (2) 25 units of General Education Graduation Requirements; (3) any elective courses to complete a minimum of 60 units; and, (4) have a minimum GPA of 2.0. At least 50% of all major course work must be completed at Cypress College.
2. Provide a brief rationale for the program.

This program has been developed to address the emerging career pathways and workforce demand in energy and sustainability. The certificate is one of several that when layered upon another will contribute to completion of an A.S. degree. Courses within this certificate will focus on both theory and practical skills needed for employment in the emerging industry of energy and sustainable technologies. Directed practical work is offered in design, engineering, maintenance and repair under simulated on-the-job conditions. Several Cypress College feeder high schools and local industry support the development of this certificate program.

- List all courses required for program completion, including core requirements, restricted electives and prerequisites. (Push Enter after each entry to begin a new line)

Courses	Course No.	Course Title	Units
Major: Energy and Sustainable Technologies	EST 100 C	Renewable & Sustainable Energy	3
Prerequisites: None	EST 110 C	EST Tools & Safety	2
Core Classes (A.S. Degree):	EST 120 C	EST Digital Controls & Inverters	2
EST 100 C - Renewable & Sustainable Energy	EST 130 C	Solar Photovoltaics-Install	3
EST 110 C - EST Tools & Safety	EST 135 C	Solar Concentrators-Hot Water	3
EST 120 C - EST Digital Controls & Inverters	EST 140 C	Wind Turbine Drive Trains	3
EST 130 C - Solar Photovoltaics-Install	EST 145 C	Wind Turbine Power Generation	3
EST 135 C - Solar Concentrators-Hot Water	EST 150 C	Advanced Geo-Thermal Concepts	3
EST 140 C - Wind Turbine Drive Trains	AC/R 100 C	Prin. Of Therm. Dyn. & Heat Tra.	3
EST 145 C - Wind Turbine Power Generation	AC/R 105 C	Electricity for A/C & Refrig I	3
EST 150 C - Advanced Geo-Thermal Concepts	MATH 100 C	Liberal Arts Mathematics	3
AC/R 100 C - Prin. Of Therm. Dyn. & Heat Tra.	PHYS 130 C	Elementary Physics	4
AC/R 105 C - Electricity for A/C & Refrig I	GEN ED	General Education Requirement	25
MATH 100 C – Liberal Arts Mathematics	ELECTIVES	As needed to complete 60 units	
PHYS 130 C – Elementary Physics			
Electives: As needed to complete 60 units			

- Summarize the Labor Market Information and employment outlook (including citation of the source of the data) for students exiting the program.

EDD LMI for 2012-22 was reviewed, and data provided by Audrey Reille (Center of Excellence), for Heating, Air Conditioning and Refrigeration Mechanics; Solar Photovoltaic Installers; Environmental Engineering Technicians; Wind Turbine Technicians; Environmental Technicians; and Construction & Building Inspectors. The exact LMI data is difficult to extract because the career pathways fall within multiple possibilities, which would also include Electrical & Electronic Equipment Installers; Electro Mechanical Technicians; Electrical Power Transmission Mechanics; Plumbing Installation and Repair; Cost Estimators; Construction Trade Supervisors; Solar Sales Representatives; and others. The annual labor market demand is set forth below:

EDD Labor market Demand and Salaries 2012-2022				
Career Pathway	Annual Openings	% Change	Salaries 10%	Salaries Median
Heating, Air Condition & Refrigeration				
California	970	23%	\$14.47	\$22.20
Los Angeles County	299	23%	\$14.06	\$22.17
Orange County	164	23%	\$15.37	\$22.26
Solar Voltaic Installers				
California	60	28.6%	\$20.44	\$24.43
Los Angeles County	12	10%	\$21.73	\$24.75
Orange County	6	12%	\$17.30	\$23.64
Environmental Engineering Technicians (17-3025)				
California	148	27.8%	\$16.35	\$26.89
Los Angeles County	41	24.1%	\$16.45	\$27.21
Orange County	17	23.5%	\$16.11	\$26.16
Wind Turbine Technicians				
California	Not Available			
Los Angeles County	2		\$15.41	\$20.20
Orange County	1		\$16.11	\$20.47
Environmental Technicians (19-4091)				
California	150	26.3%	Not Available	\$22.43
Los Angeles County	19	30.6%	Not Available	\$21.33
Orange County	10	29.4%	Not Available	\$20.91
Construction & Building Inspectors				

California	220	Not Available	\$37.34
Los Angeles County	44	Not Available	\$40.63
Orange County	10	Not Available	\$36.31
TOTAL Annual Labor Market Demand			
California (Annual)	1,548		
Los Angeles County (Annual)	417		
Orange County (Annual)	208		

The EDD LMI data is consistent with similar three-year EMSI data provided by Audrey Reille, formerly with the COE, and employer surveys. This data is encouraging as the energy and sustainability career pathways are emerging and expected to grow significantly well into the future.

5. List similar programs at other colleges in the Los Angeles and Orange County Region which may be adversely impacted. (Push Enter after each entry to begin a new line). **Each individual in the table below was contacted via email and provided an electronic copy of this application on January 2, 2015.**

College	Program	Who you Contacted	Outcome of Contact
Cerritos College	Advanced Transportation & Energy	Dr. Nick Real, Dean (562) 860-2451, Ext. 2903, yreal@cerritos.edu	• Supports per email 1-5-15 Jannet Malig supports per email 1-5-15
Citrus College	Energy Systems Technology	James Lancaster, Dean (626) 852-6403, jlancaster@citruscollege.edu	• Supports per email 1-7-15
El Camino College	AC/R and Environmental Technology	Stephanie Rodriguez, Dean (310) 660-3600, srodriguez@elcamino.edu	• El Camino indicated - not a problem via email 1/21/15.
Golden West College	Energy Efficiency & Renewable Energy	Angela Allison, Acting Dean (714) 895-8792, aallison@gwc.cccd.edu	• Stated, "no issue" per email 1-7-15
Irvine Valley College	Sustainability & Resource Management	Corine Doughty, Dean (949)282-2730, cdoughty@ivc.edu	• IVC is okay with this application via email 1/21/15
LA Trade-Technical College	Renewable Energy	Nicole Albo-Lopez, Dean (213) 763-7025, albolonm@lattc.edu	• No response as of 1/30/15
LA Valley College	Environmental Studies	Nalepa, Laurie, Dean (818) 947-2498, nalepal@lavc.edu	• Supports per email 1-8-15
Mt. SAC	Air Conditioning & Refrigeration and Building Automation	Jemma Blake-Judd, Dean (909) 594-5611, x3934, JBjudd@mtsac.edu	• No response as of 1/30/15
Orange Coast College	Heating & Air Conditioning	Von Lawson, Director Career Services (714) 432-5575, clawson@occ.cccd.edu	• No response as of 1/30/15 • Supports per Telephone call 1-8-15
Rio Hondo College	Alternative Energy/Electronics	Mike Slavich, Dean (562) 463-7368 mike.slavich@riohondo.edu	
Sector Navigator , AT&RE	Advanced Transportation and Renewable Energy	Peter Davis, AT&RE SN Peter_davis@icloud.com	

6. Include any other information you would like to share.

In developing this program, Cypress College relied on the recommendations of its advisory committee. It also participated in discussions with the HVACR Collaborative which includes, DSN Bruce Noble, and representatives from Rio Hondo College, El Camino College, Mt. SAC, LATTTC, RCC, IVC, Valley College, Southern California Edison and Sempra Energy. This program will contribute to the regional training needs of Southern California that will be addressed in different respects by each of the identified colleges.