

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

Fill In Form

Geothermal Energy Certificate

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 N/A

Total Units for Degree N/A

Required Units-Certificate 16

Written Form

1. Insert the description of the program as it will appear in the catalog.

The Geothermal Energy Certificate provides students with a career path for attaining the communication skills, practical knowledge, and technical training necessary for pursuing a career in geothermal technologies certification. Students completing this certificate will develop an advanced understanding of the technologies involved in the geothermal energy industry. To earn this certificate, complete the required courses as listed with a minimum grade of "C". At least 50% of all major course work must be completed at Cypress College. (This certificate is one in a series of four that students are expected to complete that will contribute to their understanding of energy and sustainability technologies and build to an A.S. Degree in Energy & Sustainable Technologies.)

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.

3. 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 (Certificate):	EST 120 C	EST Digital Controls & Inverters	2
EST 100 C - Renewable & Sustainable Energy	EST 150 C	Advanced Geo-Thermal Concepts	3
EST 110 C - EST Tools & Safety	AC/R 100 C	Prin. Of Therm. Dyn. & Heat Tra.	3
EST 120 C - EST Digital Controls & Inverters	AC/R 105 C	Electricity for A/C & Refrig I	3
EST 150 C - Advanced Geo-Thermal Concepts			
AC/R 100 C - Prin. Of Therm. Dyn. & Heat Tra.			
AC/R 105 C - Electricity for A/C & Refrig I			
Electives: None			

4. Summarize the Labor Market Information and employment outlook (including citation of the source of the data) for students exiting the program. **LMI for 2012-2022 was reviewed, along with 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 and predicated on the following:**

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	<ul style="list-style-type: none"> Supports per email 1-5-15
Citrus College	Energy Systems Technology	James Lancaster, Dean (626) 852-6403, jlancaster@citruscollege.edu	<ul style="list-style-type: none"> Jannet Malig supports per email 1-5-15 Supports per email 1-7-15
El Camino College	AC/R and Environmental Technology	Stephanie Rodriguez, Dean (310) 660-3600, srodriguez@elcamino.edu	<ul style="list-style-type: none"> El Camino indicated - not a problem via email 1/21/15. Stated, "no issue" per email 1-7-15
Golden West College	Energy Efficiency & Renewable Energy	Angela Allison, Acting Dean (714) 895-8792, aallison@gwc.cccd.edu	<ul style="list-style-type: none"> IVC is okay with this application via email 1/21/15
Irvine Valley College	Sustainability & Resource Management	Corine Doughty, Dean (949)282-2730, cdoughty@ivc.edu	<ul style="list-style-type: none"> No response as of 1/30/15
LA Trade-Technical College	Renewable Energy	Nicole Albo-Lopez, Dean (213) 763-7025, albolonm@lattc.edu	<ul style="list-style-type: none"> No response as of 1/30/15
LA Valley College	Environmental Studies	Nalepa, Laurie, Dean (818) 947-2498, nalepal@lavc.edu	<ul style="list-style-type: none"> No response as of 1/30/15
Mt. SAC	Air Conditioning & Refrigeration and Building Automation	Jemma Blake-Judd, Dean (909) 594-5611, x3934, JBjudd@mtsac.edu	<ul style="list-style-type: none"> Supports per email 1-8-15
Orange Coast College	Heating & Air Conditioning	Von Lawson, Director Career Services (714) 432-5575, clawson@occ.cccd.edu	<ul style="list-style-type: none"> No response as of 1/30/15
Rio Hondo College	Alternative Energy/Electronics	Mike Slavich, Dean (562) 463-7368 mike.slavich@riohondo.edu	<ul style="list-style-type: none"> No response as of 1/30/15
Sector Navigator , AT&RE	Advanced Transportation and Renewable Energy	Peter Davis, AT&RE SN Peter_davis@icloud.com	<ul style="list-style-type: none"> No response as of 1/30/15 Supports per Telephone call 1-8-15

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, LATTC, 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.