

# MEMORANDUM

Date: June 19<sup>th</sup> 2009

To: Cheryl Brueggeman, Assistant Dean, Grant Administrator, Raymond Walters College

From: Dr. Dennis N. Ulrich, Executive Director, Workforce Development Center Cincinnati State & Chair of the Green Task Group

Subject: Summary: Region 5 Green Stackable Certificate & Asset Map



## 1.0 Background

In the first quarter of 2008, ODOD Region 5 developed a collaborative of universities, regional campuses, community colleges, adult workforce centers, ABLE centers and other workforce development agencies (Region 5 Workforce Collaborative - R5WC). Presently, nearly 42 member organizations are participating in this collaborative. Subsequently, the groundwork was laid for our “Stackable Certificates” pilot as a collaborative project based on a broad range of activities to capitalize on existing workforce development initiatives; assess current initiatives; and promote new initiatives.

As Southwest Ohio continues to address job losses resulting from automotive, logistics and other industries affected by the economic downturn, the Ohio Skills Bank will focus on college access for adult workers in demand-driven 2-year, 4-year degrees and certificate programs.

One result, was that the R5WC partnership identified the need for a “Green Technologies” stackable certificate that encompasses environmentalism, sustainability, ecology, conservation, and also applies to construction, facilities engineering, integrated design, energy efficiency, renewable energy sources, air quality, conservation, materials abatement and disposal.

Ideally, this stackable certificate and career pathway would provide core competencies that are integral to a variety of programs such as Advanced Manufacturing, Construction, Renewable Energy, Environmental Studies, Logistics, Waste Management and more.

For example, LEED AP certification is becoming an integral requirement in construction project bids. By attaining a “Green Technologies” stackable certificate, construction workers who receive credit for this short-term certificate program may be more inclined to enter a college program in the construction trades, a construction apprenticeship, construction management, etc. at a local college or university.

The R5WC established three primary goals with **Goal 2** to: “...Develop a Green Technologies “stackable certificate” for credit and non-credit across applicable industries.

## 2.0 Green Task Group Charge

A “Green Task Group” was formed with the following members and organizations<sup>1</sup>:

<b>Organization</b>	<b>Member</b>
Allied Construction Industries	Christy Farrow
Butler Tech	Calista Smith
Cincinnati State	Larry Cherveney, Dennis Ulrich (Chair) and Ralph Wells
Great Oaks	Pam Hunt and Bob Scarborough
Greater Cincinnati Workforce Network	Elijah Rudolph, Janice Urbanick, Ross Meyer
Miami University (Regional Campuses)	Patricia McNab, Kathy Weber
Ohio Skills Bank	Harry Snyder
Sinclair Community College	Bob Gilbert, Ray Lepore, Brenda Latanza, Eileen O’Reilly
UC Raymond Walters	Cheryl Brueggeman, Jane Hoge
UC Clermont	Glenda Neff
UC College of Applied Science	Pat Kumpf and Ray Miller
Warren County Career Center	Tom Harris

Cincinnati State has taken the lead on the development of a “Green Technologies” stackable “credit” and “non-credit programming”. That credit/non-credit programming serves as the basis for “stackable certificates” applicable to current postsecondary education programs in Renewable Energy, Advanced Manufacturing, Construction, and other emerging career and technical education programs.

Cincinnati State, UC College of Applied Science, Butler Tech, Great Oaks , Warren County Career Center and Allied Construction Industries group, and others, have identified content critical to new programs in “Green Technologies” based on the needs of Region 5 employers.

Using funding from a DOL grant, Cincinnati State/UC Raymond Walters College will collaborate on the development of “web based” curriculum in order to render the “stackable certificate” more accessible to local employers/employees and beyond.

## 2.1 Green Asset Map<sup>2</sup>

As a first step in this process representatives of High Schools, Career Centers, Community Colleges, University Branch Campuses and Universities were asked to examine their inventory of credit and non-credit programming which could be applied to a green career path and ultimately to a stackable certificate.

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<sup>1</sup>A complete roster with contact information is available.

<sup>2</sup> The completed asset map is attached.

### **“Embedded: Where Are the Jobs?”<sup>3</sup>**

What has made this project complex is the fact that there is no clearly identifiable “green pathway” as green jobs are “embedded” in a wide range of employment fields. There is an abundant and rich list of literature around the green jobs conundrum.<sup>4</sup>

To quote from the Economic Modeling Specialists, Inc. (EMSI) article: “How to Prepare Jobseekers for the Green Economy”:

*“With so much talk about green jobs, you would expect an abundance of available jobs and training for jobseekers to pursue. However, because the green movement is still young and green jobs lack the well-established economic characteristics and relationships found within traditional industry sectors (retail, manufacturing, finance, etc.) training programs, classifications, and actual job descriptions are either not really in place or are perhaps a bit vague and not connected to a job market that is ready to hire. As a result, there is some confusion about green jobs by planners and jobseekers.”<sup>5</sup>*

#### **To Illustrate:**

#### **Green Investments and Jobs<sup>6</sup>**

##### **Strategies for Green Economic Investment**

##### **Representative Jobs**

Building Retrofitting

Electricians, Heating/Air Conditioning Installers, Carpenters, Construction Equipment Operators, Roofers, Insulation Workers, Carpenter Helpers, Industrial Truck Drivers, Construction Managers, Building Inspectors

Mass Transit/Freight Rail

Civil Engineers, Rail Track Layers, Electricians, Welders, Metal Fabricators, Engine Assemblers, Bus Drivers, Dispatchers, Locomotive Engineers, Railroad Conductors

Smart Grid

Computer Software Engineers, Electrical Engineers, Electrical Equipment Assemblers, Electrical Equipment Technicians, Machinists, Team Assemblers, Construction Laborers, Operating Engineers, Electrical Power Line Installers and Repairers

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<sup>3</sup> This complex issue is analyzed and assessed extremely well in the article: Rob Sentz et al “How to Prepare Jobseekers for the Green Economy,” Economic Modeling Specialists, Inc. Green Jobs, Part 5; White Paper (May 2009); See: [www.economicmodeling.com/resources/greenjobs.php](http://www.economicmodeling.com/resources/greenjobs.php)

<sup>4</sup> See for example: Pollin & Wicks-Lim, “Job Opportunities for the Green Economy: A State-By-State Picture of Occupations That Gain from Green Investments,” Political Economy Research Institute, University of Massachusetts, Amherst (June 2008); Pollin, Garrett-Peltier et al. “Green Economic Recovery Program Impact on Ohio,” Center for American Progress, Political Economy Research Institute, University of Massachusetts, Amherst (undated);

<sup>5</sup> Rob Sentz, “How to Prepare Job Seekers....”.

<sup>6</sup> Pollin and Garrett-Peltier, “Impact on Ohio,” p.3.

Wind Power	Environmental Engineers, Iron and Steel Workers, Millwrights, Sheet Metal Workers, Machinists, Electrical Equipment Assemblers, Construction Equipment Operators, Industrial Truck Drivers, Industrial Production Managers, First-Line Production Supervisors
Solar Power	Electrical Engineers, Electricians, Industrial Machinery Mechanics, Welders, Metal Fabricators, Electrical Equipment Assemblers, Construction Equipment Operators, Installation Helpers, Laborers, Construction Managers
Advanced Biofuels	Chemical Engineers, Chemists, Chemical Equipment Operators, Chemical Technicians, Mixing and Blending Machine Operators, Agricultural Workers, Industrial Truck Drivers, Farm Product Purchasers, Agricultural and Forestry Supervisors, Agricultural Inspectors

## 2.2 A Simplified Model

In order to make sense of all of this data and information and to be able to act on it, the Green Task Group considered several models. In assessing job opportunities and aligning them with a range of education levels the task group delineated them into four primary technological areas:

- ✓ Environmental
- ✓ Mechanical
- ✓ Electrical
- ✓ Construction<sup>7</sup>

The group began creating a “job ladder” from entry level to higher level classifications and then aligned education levels with each (see attachment 2). In order to concentrate our efforts, it was decided that a single pathway be selected – the group agreed that green related construction technologies be selected as it crosses a wide swath of job types.<sup>8</sup>

This decision was also based on that fact that there are multiple workforce initiatives in the construction trades occurring in Region 5 that could carry on this initiative beyond this pilot grant. The Greater Cincinnati Workforce Network has chosen construction as one of its three primary career pathways and has hired a director to manage this effort. The Spirit of Construction Foundation Board of Trustees provided financial support for the hiring of a Program Manager for Middle School construction career exploration. This Board also has a workforce sub-committee engaging significant construction businesses on workforce issues.

Clearly these parallel initiatives and significant resources can buttress and support the development and deployment of a green construction technologies pathway in the near future.

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<sup>7</sup> See attached document.

<sup>8</sup> Excellent information, data and benchmarking can be found in the literature from the California Centers of Excellence, Economic and Workforce Development, California Community Colleges Research Preview, 2009 : “*Green Industries & Jobs in California*”; see also: [www.coeccc.net/green](http://www.coeccc.net/green)

### 3.0 Next Steps<sup>9</sup>

#### 3.1 Employer Engagement

Obviously the creation of a green pathway must result in the identification of employers willing to hire properly trained individuals who have gained new learning through participation in a “green pathway” process.

According to the Ohio Skills Bank “How-To Guide”: *“The success of the OSB depends on multiple employers within an industry sector working collaboratively with their regional education and training partners. Together, they will develop innovative and cost effective means to address critical regional occupation and skill shortages in targeted industries.”*

A key issue here lies in the fact that “green businesses” must be identified and their need for effectively trained employees identified. Currently businesses in Region 5 are examining and re-engineering their manufacturing processes in anticipation of producing green related products such as wind turbine components.

The assumption is made that several local organizations such as the Greater Cincinnati USA Regional Chamber of Commerce, and others, have examined and mapped businesses seeking to engage in green business opportunities. In addition, perhaps there is additional information garnered through the ODO’s efforts with Employer Panels.

The alignment of employers and with potential well-trained employees is a critical path issue that needs further consideration and analysis.

#### 3.2 Completion of the Green Construction Technology Pathway and Related Industry Green Pathways.

The Ohio Board of Regents defines a career pathway as a:

*“...term for a particular framework or process by which regions can better align publicly supported systems and programs to build a knowledge workforce. A Career Pathway system is a series of connected educational and training programs and support services that prepares and enables individuals...to secure a job and advance over time to successively higher levels of education and employment in a specific industry or occupational sector.”<sup>10</sup>*

Diploma, certificate and degree programs have been identified as part of the current grant. What remains to be completed is a clearly delineated educational pathway for adults from GED through advanced degrees. If there is additional funding for a Phase II beyond this pilot then this important task can be accomplished through R5WC.

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<sup>9</sup> See: OBOR, “The Ohio Skills Bank How-To Guide,” May 2008

<sup>10</sup> Ibid.

### 3.3 Articulation and Transfer Agreements

The green asset map is a listing (inventory) of green related programs available through the Career Centers, Tech Prep initiatives and institutions of higher learning in Region 5. It may be that there is additional programming not yet identified or listed on the map as well as offerings still in development.

With the extant degrees and programs shown, and as the curricula for new programs is developed, the Region 5 learning organizations need to be committed to creating partnerships by forming articulation and transfer agreements. These are designed to help students make a smooth transition when transferring from one institution to another.<sup>11</sup> This is one of the primary purposes of the stackable certificate process.

#### Observations & Summary

A Career Pathway is defined as: *“...a particular framework or process by which regions can better align publicly supported systems and programs to build a knowledge workforce.”*

Although much work remains to finalize the green technologies career pathway, a simple foundation for this important initiative has been created which can be readily built upon and re-defined.

According to the *How-To Guide*: *“The goals are to increase access, awareness, affordability, resources and alignment for high school students, adult learners, and the incumbent workforce. Further: They are coherent, articulated sequences of rigorous academic and career courses, commencing with the ninth grade and leading to an industry-recognized certificate or licensure, an associate’s degree/or a baccalaureate and beyond.”*

This complex and ever changing pathway situation is aptly described in the EMSI White Paper: *“How to Prepare Jobseekers for the Green Economy”*:

*In the new undefined, green “wild West” scenario the real winners will be those who come up with the best ideas and work the hardest to create useful products and services. As a result, all sorts of education and training, not just engineering, LEED certification, and perhaps environmental science, will be valuable (and green). Jobseekers and young people should also be told there is no specific career path that will serve as the yellow-brick road to the green economy. Because it’s an undefined job market, it’s up to students to apply themselves, learn, read, talk to people/business, and offer new and creative solutions.*

*A helpful step that training providers can take in shortening the distance between learner and the actual job market...is to talk to local employers, learn what their needs are, use data to look at trends, and be familiar with the sorts of things that local companies are spending a lot of time and money on. Such information will help training providers design more meaningful programs, and will help young people know and understand where they can focus their creative talents.”*

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<sup>11</sup> The well established healthcare career pathway is a benchmark that can be modeled.

## Region 5 Workforce Collaboration (R5WC) Green Work Team

### Green Assets by Organization

6.19.09 v. 24 FINAL DU ASSET TRACKING TEMPLATE

Date	Organization	No.	Course/Program/Certificate Description	Contact/Info	Status/Comment
06/09/09	Butler Tech	1	Heating, Ventilation, Air Conditioning and Refrigeration	Calista Smith, 513-645-8339, smithch@butlertech.org	Diploma program with industry credentials (600 hours)
06/09/09	Butler Tech	2	Welding	Calista Smith, 513-645-8339, smithch@butlertech.org	A diploma program with industry credentials (600 hrs) and a short term open enrollment course (56 hrs)
06/09/09	Butler Tech	3	Orientation to Nontraditional Occupations for Women	Calista Smith, 513-645-8339, smithch@butlertech.org	Program for hardest-to-serve women to expose them to construction and industrial trades
06/09/09	Butler Tech	4	Home and Commercial Inspection	Calista Smith, 513-645-8339, smithch@butlertech.org	Open enrollment (30 hours)
06/09/09	Butler Tech	5	Diesel Mechanics (in development)	Calista Smith, 513-645-8339, smithch@butlertech.org	Anticipated Fall 2010 (650 hours)
06/09/09	Butler Tech	6	Diesel Electricity	Calista Smith, 513-645-8339, smithch@butlertech.org	Open enrollment (100 hours)
06/09/09	Butler Tech	7	Diesel Brakes	Calista Smith, 513-645-8339, smithch@butlertech.org	Open Enrollment (108 hours)
06/09/09	Butler Tech	8	Diesel Preventative Maintenance	Calista Smith, 513-645-8339, smithch@butlertech.org	Open Enrollment (108 hours)
06/09/09	Butler Tech	9	OSHA 10 hr and 30 hr Construction	Calista Smith, 513-645-8339, smithch@butlertech.org	Open Enrollment
5/5/2009	Cincinnati State	10	Power Systems Engineering Technology	Larry Morris 513.569.1773 larry.morris@cincinnatiastate.edu	Associate Degree
5/5/2009	Cincinnati State	11	Weatherization/Energy Auditor Training	L. Chervený 513.569.1497 larry.chervený@cincinnatiastate.edu Larry Feist 569.1428 larry.feist@cincinnatiastate.edu	Open Enrollment
5/5/2009	Cincinnati State	12	Environmental Engineering (EVET) Technology	Dr. Ann Gunkel ann.gunkel@cincinnatiastate.edu 513.569.1783	Associate Degree
5/5/2009	Cincinnati State	13	(EVETW) Water and Wastewater (major)	Same As Above	Associate degree - Major
5/5/2009	Cincinnati State	14	Environmental Safety & Security Certificate	Same As Above	Certificate (23 credit hours)

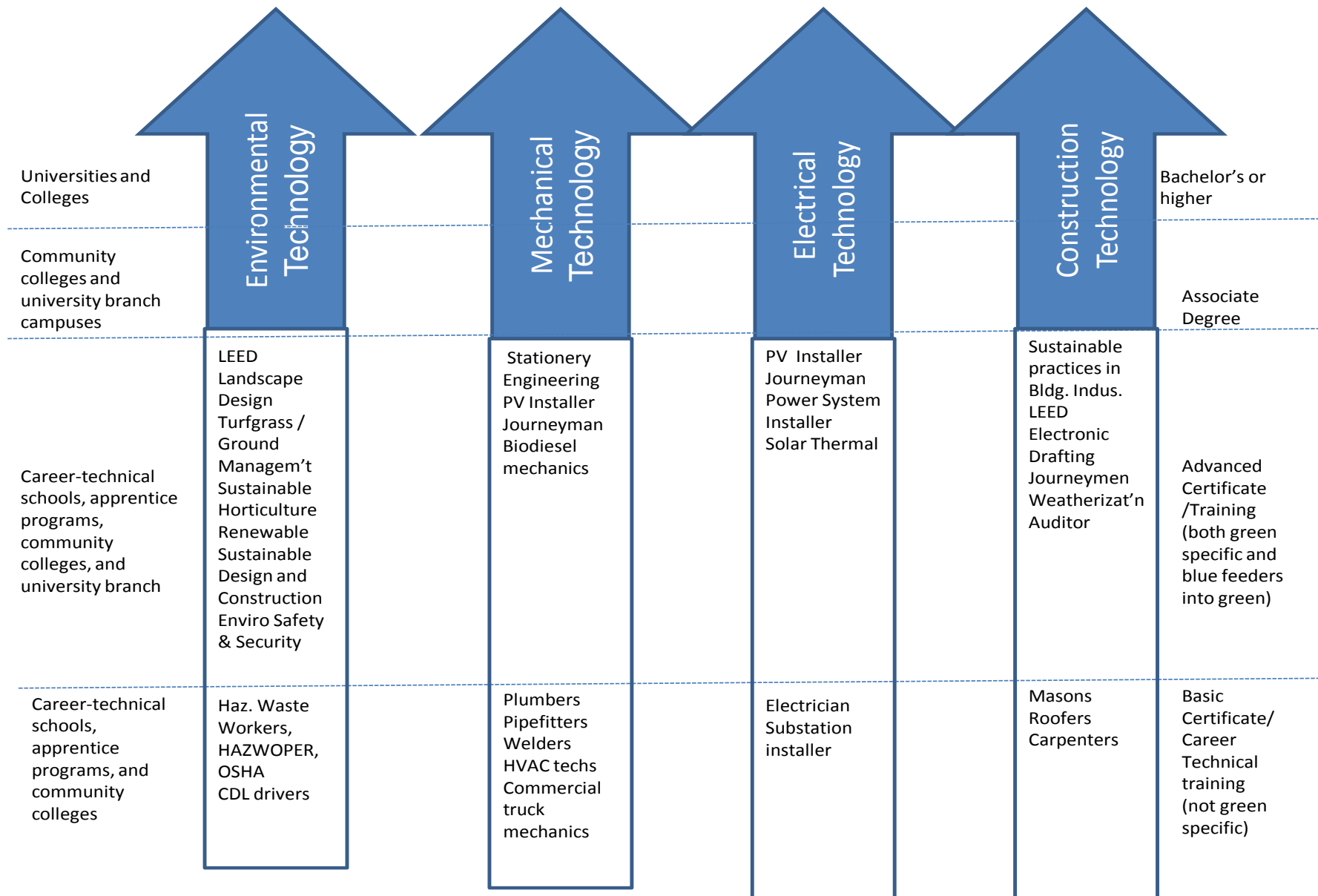
Date	Organization	No.	Course/Program/Certificate Description	Contact/Info	Status/Comment
5/5/2009	Cincinnati State	15	Solar Thermal Training	L. Chervený 513.569.1497 larry.chervený@cincinnatiastate.edu	Open Enrollment
03/05/09	Cincinnati State - Bus. Tech	16	Landscape Horticulture Technologies AAB Degree Program	M. Deacon 513.569.1644 mark.deacon@cincinnatiastate.edu	Open Enrollment
03/05/09	Cincinnati State - Bus. Tech	17	Landscape Design Certificate Program	Same As Above	Open Enrollment
03/05/09	Cincinnati State - Bus. Tech	18	Turfgrass Management Technologies Degree/Certificate Program	Same As Above	Open Enrollment
03/05/09	Cincinnati State - Bus. Tech	19	Proposed: Sustainable Horticulture Certificate Program	Same As Above	Open Enrollment
4/1/2009	Cincinnati State - CIT	20	Certificate in Sustainable Practices for the Building Industry	Ralph Wells 513.569.2988 ralph.wells@cincinnatiastate.edu	13 courses
4/1/2009	Cincinnati State - CIT	21	Electronic Drafting Certificate for Energy	Ralph Wells 513.569.2988 ralph.wells@cincinnatiastate.edu	6 courses
03/05/09	Cincinnati State - WDC	22	Photovoltaic Installer program	L. Chervený 513.569.1497 larry.chervený@cincinnatiastate.edu	Open enrollment ; 40 hrs.
03/05/09	Cincinnati State - WDC	23	Photovoltaic Installer Projects	Same As Above	Open enrollment ; 16 hrs.
03/05/09	Cincinnati State - WDC	24	Photovoltaic Installer NABCEP Exam Review	Same As Above	Open enrollment ; 8 hrs.
03/18/09	Cincinnati State CIT	25	EMT Renewable Energy Major	Larry Feist 513-569-1428, lawrence.feist@cincinnatiastate.edu	Open Enrollment
03/18/09	Cincinnati State CIT	26	EMT Renewable Energy Certificate	Larry Feist 513-569-1428, lawrence.feist@cincinnatiastate.edu	Open Enrollment
03/18/09	Cincinnati State CIT	27	Sustainable Design & Construction 3rd Year Certificate	Ralph Wells 513.569.2988 ralph.wells@cincinnatiastate.edu	Open enrollment with pre-requisites
3/12/2009	College of Applied Science, UC	28	Certificate in Horticulture	Rajiv Soman 513.556.6561 rajiv.soman@uc.edu	Open enrollment, 30 cr. hrs.
3/12/2009	College of Applied Science, UC	29	Certificate in Landscape Design	Rajiv Soman 513.556.6561 rajiv.soman@uc.edu	Open enrollment, 30 cr. hrs.
3/12/2009	College of Applied Science, UC	30	Certificate in Turfgrass & Grounds Management	Rajiv Soman 513.556.6561 rajiv.soman@uc.edu	Open enrollment, 30 cr. hrs.
3/12/2009	College of Applied Science, UC	31	BS degree in Horticulture, Business Track	Rajiv Soman 513.556.6561 rajiv.soman@uc.edu	
3/12/2009	College of Applied Science, UC	32	BS degree in Horticulture, Scientific Track	Rajiv Soman 513.556.6561 rajiv.soman@uc.edu	
3/12/2009	College of Applied Science, UC	33	Landscape Drawing I	Rajiv Soman 513.556.6561 rajiv.soman@uc.edu	two-day workshop

Date	Organization	No.	Course/Program/Certificate Description	Contact/Info	Status/Comment
3/12/2009	College of Applied Science, UC	34	Sustainable C/LEED course	Mousa Gargari 513.556.6553 mousa.gargari@uc.edu	3 cr. hr. course, 30 hours
3/12/2009	College of Applied Science, UC	35	Sustainable C/LEED workshop	Mousa Gargari 513.556.6553 mousa.gargari@uc.edu	
04/07/09	College of Applied Science, UC	36	Stationary Engineering Certificate	Muthar Al-Ubaidi 513-556-6575 muthar.alubaidi@uc.edu	Four course certificate
04/07/09	College of Applied Science, UC	37	BS Degree in Energy	Muthar Al-Ubaidi 513-556-6575 muthar.alubaidi@uc.edu	In development
04/07/09	College of Applied Science, UC	38	AS Degree in Nuclear Power	Muthar Al-Ubaidi 513-556-6575 muthar.alubaidi@uc.edu	In development
04/07/09	College of Applied Science, UC	39	AS Degree in Power Systems Technology	Max Raibee 513-556-6559 rabieem@uc.edu	
04/07/09	College of Applied Science, UC	40	Certificate in Power Systems Technology	Max Raibee 513-556-6559 rabieem@uc.edu	Open Enrollment
04/07/09	College of Applied Science, UC	41	Journeyman Electrician Certificate	Max Raibee 513-556-6559 rabieem@uc.edu	Open Enrollment
04/07/09	College of Applied Science, UC	42	Master Electrician Certificate	Max Raibee 513-556-6559 rabieem@uc.edu	Open Enrollment
06/09/09	Great Oaks	43	Heating, Ventilation, Air Conditioning and Refrigeration	Bob Scarborough, 513-612-5886, scarborb@greatoaks.com	Diploma program and open enrollment courses
06/09/09	Great Oaks	44	Carpentry (Level 1 and 2)	Bob Scarborough, 513-612-5886, scarborb@greatoaks.com	
06/09/09	Great Oaks	45	Electrical Home Repair	Bob Scarborough, 513-612-5886, scarborb@greatoaks.com	
06/09/09	Great Oaks	46	Home Energy Efficiency	Bob Scarborough, 513-612-5886, scarborb@greatoaks.com	
06/09/09	Great Oaks	47	Masonry	Bob Scarborough, 513-612-5886, scarborb@greatoaks.com	
06/09/09	Great Oaks	48	Plumbing	Bob Scarborough, 513-612-5886, scarborb@greatoaks.com	
06/09/09	Great Oaks	49	Solar Energy at Home	Bob Scarborough, 513-612-5886, scarborb@greatoaks.com	
06/09/09	Great Oaks	50	Welding (Level 1 and 2)	Bob Scarborough, 513-612-5886, scarborb@greatoaks.com	

Date	Organization	No.	Course/Program/Certificate Description	Contact/Info	Status/Comment
04/07/09	Greater Cincinnati Tech Prep Consortium	51	Secondary pathway in Environmental Science, Natural Resource Management with CPS at Riverview East High School connecting to postsecondary partners: Cincinnati State CIT and Central State University Water Resource Center	Timothy Nolan Director, 513-569-1784 timothy.nolan@uc.edu	Under development
4/1/2009	Miami University	52	Master of Environmental Science- areas of concentration: Air Quality, Biological Conservation, Energy, Environmental Simulation & Impact analysis, Environmental Tech., Hazardous Substances & Toxicology, International Environmental Affairs, Resource analysis, Water Resources	Dr. Mark Boardman, IES Director & Prof, 513-529-5811, boardmmr@muohio.edu	Credit program
04/01/09	Miami University	53	School of Architecture misc classes: Environmental Futures, Construction Methods, Environmental Systems (levels 1 & II) Principles of Environmental Systems	Dr. Robert Benson, Int. Dean & Prof, 513-529-7273, bensonra@muohio.edu	3 credit hours each
04/01/09	Miami University	54	School of Eng & Applied Science- Paper Science & Technology- Industrial & Environmental Control	Dr. Shashi Lalvani, Dept. Chair & Prof, 513-529-0763, lalvansb@muohio.edu	Credit program
05/05/09	Miami University	55	Bachelor & Masters of Architectural Design	Scott Johnston, Assoc. Prof, Director, Energy & Sustainable Design Studio, 513-529-7041, johnstsa@muohio.edu.	Credit program
05/20/09	Miami University	56	Chemical Engineering - touches biomedical, environmental, energy & fuels, fertilizer, polymers, etc	Dr. Shashi Lalvani, Dept. Chair & Prof, 513-529-0763, lalvansb@muohio.edu	Bachelor's Degree
05/20/09	Miami University	57	Paper & Chemical Engineering	Same As Above	Masters Degree
05/20/09	Miami University	58	Electrical Engineering	Dr. Don Ucci, Chair & Prof, 513-529-0423, uccidr@muohio.edu	Bachelor's Degree
05/20/09	Miami University	59	Engineering (General)	Dr. Osama Ettouney, chair & prof, 513-529-0712, ettounom@muohio.edu	Bachelor's Degree
05/20/09	Miami University	60	Manufacturing Engineering	Dr. Osama Ettouney, chair & prof, 513-529-0712, ettounom@muohio.edu	Bachelor's Degree
05/20/09	Miami University	61	Mechanical Engineering	Same As Above	Bachelor's Degree

Date	Organization	No.	Course/Program/Certificate Description	Contact/Info	Status/Comment
05/20/09	Miami University	62	Environmental Initiative (EI) coordinates and promotes environmental research and education at MU. EI also encourages environmentally sensitive behavior within the university community as well as the world at large.	(researching)	
05/20/09	Miami University	63	Engineering Tech - Electrical & Computer; Mechanical Concentration	Dr. Ayodele Abaton, chair & prof, 513-727-3276, abatanao@muohio.edu	Associate Degree- Regional campuses
05/20/09	Miami University	64	Engineering Tech - Electro-Mechanical; Mechanical Concentration	Same As Above	Bachelor's Degree-Regional campuses
	Miami University	65	Bachelor & Masters of Interior Design	Scott Johnston, Assoc. Prof, Director, Energy & Sustainable Design Studio, 513-529-7041, johnstsa@muohio.edu.	Credit program
3/20/2009	Sinclair Community College - Division of Science, Math & Engineering	66	Alternative and Renewable Energy Sources	Professor Robert Gilbert, robert.gilbert@sinclair.edu 937.512.2317	3 cr. hr. course, 2 lecture and 2 lab hours per week
3/20/2009	Sinclair Community College - Division of Science, Math & Engineering	67	Introduction to Fuel Cells	Don Homan, donald.homan@sinclair.edu, 937.512.2177	
3/20/2009	Sinclair Community College - Division of Science, Math & Engineering	68	Architectural Energy Analysis - CAT 260	Professor Robert Gilbert, robert.gilbert@sinclair.edu 937.512.2317	3 cr. hr. course, 2 lecture and 2 lab hours per week
3/20/2009	Sinclair Community College - Division of Science, Math & Engineering	69	Energy Lab - various projects - energy efficiency, solar thermal, solar PV, biodiesel, ethanol, wind, and hydrogen. The Energy Lab will soon receive their solar thermal equipment, solar PV equipment and a 1KW wind turbine. The solar PV and the wind turbine will be used to power the Energy Education Laboratory with renewable energy	Professor Robert Gilbert, robert.gilbert@sinclair.edu 937.512.2317	Tours available - call 937.512.2183 for more information

Date	Organization	No.	Course/Program/Certificate Description	Contact/Info	Status/Comment
3/20/2009	Sinclair Community College - Division of Science, Math & Engineering	70	LEEDS certification workshop	Professor Robert Gilbert, robert.gilbert@sinclair.edu 937.512.2317	Open Enrollment - 40 hour workshop
06/09/09	Warren Co. Career Center	71	Heating, Ventilation, and Air Conditioning	Tom Harris, 513-932-8145 x5297, tom.harris@mywccc.org	Diploma program, Industry EPA, ICE Certifications. (600 hrs), Several open enrollment classes (30-60 hrs)
06/09/09	Warren Co. Career Center	72	Welding	Tom Harris, 513-932-8145 x5297, tom.harris@mywccc.org	Diploma program AWS Certification. (600 hrs) and open enrollment (100 hrs)
06/09/09	Warren Co. Career Center	73	Heavy Equipment and Site Construction	Tom Harris, 513-932-8145 x5297, tom.harris@mywccc.org	450 hours, Industry and NCCER Certification
06/09/09	Warren Co. Career Center	74	CDL license- Class A	Tom Harris, 513-932-8145 x5297, tom.harris@mywccc.org	In partnership with Clark State and Southern State
06/09/09	Warren Co. Career Center	75	Global Navigational Satellite systems	Tom Harris, 513-932-8145 x5297, tom.harris@mywccc.org	TOPCON Certification (30 hrs)
06/10/09	Warren Co. Career Center	76	Residential Wiring	Tom Harris, 513-932-8145 x5297, tom.harris@mywccc.org	Open enrollment (56 hrs)
06/11/09	Warren Co. Career Center	77	OSHA 10 hr and 30 hr Construction	Tom Harris, 513-932-8145 x5297, tom.harris@mywccc.org	OSHA 10&30 hr certification Open enrollment
06/11/09	Warren County Career Center	78	Electrical Line Mechanic	Tom Harris, 513-932-8145 x5297, tom.harris@mywccc.org	Diploma Program for entry level line utility workers (900 hrs , Line Worker Apprenticeship, OSHA-10 hr, CDL-A, Climbing Certifications



Hazardous Waste Workers- HAZWOPER, OSHA training available at career technical schools

Plumbers- training available at career technical schools, apprenticeship programs, and community colleges

## Construction Technologies

### Pathways

V. 2.0 5.22.09

Universities and colleges	Architects , Civil, Electrical and Environmental Engineers, Construction Management, software engineers,	Bachelors , (LEED AP),
Community Colleges, Universities, branch campuses	Construction superintendents, project and operations managers,	Associate Degree, (NABCEP)
Career-technical schools, apprentice programs, comm. Colleges and university branch campuses	Renewable sustainable design and construction, PV and solar thermal installers, stationary engineers, master electricians and weatherization techs, biodiesel mechanic, drafting, building inspectors,	Advanced certificates/training (green & blue collar feeders into green)
Career-technical schools, apprentice programs, comm. Colleges and university branch campuses	CDL drivers, plumbers, welders, pipefitters, HVAC Techs and installers, truck mechanics, electricians, masons, roofers, carpenters and helpers, laborers, construction equipment operators, energy auditors	Entry-level certifications, career tech training