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BROOKHAVEN NATIONAL LABORATORY DEVELOPING COUNTRIES ENERGY PROGRAM

149
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MASTER

**Directory of
ENERGY-RELATED EDUCATIONAL PROGRAMS**

December 1978

**POLICY ANALYSIS DIVISION
NATIONAL CENTER FOR ANALYSIS OF ENERGY SYSTEMS
BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK 11973**

**Prepared for the
U.S. Department of Energy International Energy Development Program**

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UC-13

[General, Miscellaneous, and
Progress Reports (Nonnuclear) -
TID-4500]

Directory of ENERGY-RELATED EDUCATIONAL PROGRAMS

Prepared by
Noreen S. Wake

December 1978

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The information contained throughout this report was obtained primarily from the catalogues and/or course listings provided by the educational institutions.

Should you desire information concerning the academic requirements, admissions, transfer of credits, foreign student program, program goals, curriculum development, student enrollment and number of graduates, financial aid, joint degrees or employment of graduates, it is suggested that you write directly to the chairperson of the department within the educational institution you are interested.

If you have any comments, recommendations, concerns, or information for inclusion you may write to:

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U.S. Department of Energy
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ABSTRACT

This report presents an inventory of energy-related training programs being offered within United States Educational Institutions that might meet the training needs of less developed countries.

Training programs in the energy area include the areas of energy resources, energy planning and analysis, the development and utilization of different energy technologies including renewable sources, and engineering.

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E N E R G Y E D U C A T I O N

INTRODUCTION

The energy situation in the world has changed rapidly over the past five years. Fossil fuels, once considered cheap and abundant, are now expensive and recognized as having finite lifetimes. This has given new stimulus to the renewable energy resources of the sun, wind and water. At the same time nuclear power has been found to involve problems requiring new approaches to safeguards and management. All of these changes bring with them the need for new skills and capabilities in trained manpower.

In the developing countries, where higher energy costs have had a particularly serious impact, these needs are particularly acute. Indeed, in many recent reviews of programmatic areas for U.S. assistance to developing countries, training is emphasized as being of very high priority.

As background for establishing training programs in energy for developing countries, this report presents a preliminary survey of energy-related educational programs in U.S. institutions. The extensive and varied training needs of developing countries can be fulfilled rapidly and at a high professional level only if these programs and institutions are effectively marshaled to the task.

DEPARTMENT OF ENERGY PROGRAMS

In keeping with the President's National Plan for Energy Research and Development, the Office of Education and Training in the Department of Energy (DOE) provides energy-related supporting activities in the areas of manpower, education and training. The objective of this support is (1) to assist in carrying out skilled and professional training workshops; graduate traineeships; research participation assignments to DOE laboratories, energy centers and contractor facilities; short-term training courses on specific energy-related topics; visiting lecturers; conferences; (2) assist curricula development to supplement and stimulate the normal education process in meeting requirements for appropriately trained personnel; and (3) conduct programs designed to motivate and encourage qualified individuals to choose careers in the energy-related disciplines at both the professional and non-professional levels.¹ Further, DOE will establish and maintain liaison with other federal agencies for the purpose of coordinating energy-related education and training activities. Colleges and universities, aided by industry support and on-the-job training programs, are the main source of trained manpower. The federal government augments those efforts to help shorten the lead times involved in the usual education cycle when a quick response to changing national

¹A National Plan for Energy Research, Development and Demonstration, Volume 2-Program Implementation, ERDA 76-1

priorities is required. A major study to develop a comprehensive non-nuclear education and training program is under way.

OBJECTIVES OF THE STUDY

On the basis of a preliminary assessment of the training needs for less developed countries (LDCs) it was felt that there was a need for a survey of existing energy related educational programs. Such a survey could provide information necessary for establishing educational programs in support of planning, funding and implementation of solutions to the existing energy problems facing LDCs. The information contained in this report is also intended to serve as a resource for policy makers in LDCs. This study will provide them with an awareness of the types of energy-related educational programs available in the United States. This awareness can also be enhanced through the dissemination of information available within the Department of Energy's Office of Education and Training.

METHODOLOGY

Identification and compilation of this information was facilitated through the utilization of various sources, such as educational institutions, private educational organizations, letters of inquiry sent to more than 300 educational institutions offering engineering courses, campus visits, telephone calls and surveys of university catalogues. Assistance from the Office of Education and Training

within the Department of Energy was of great importance. The response from educational institutions was exemplary. Some 270 of the 300 educational institutions contacted submitted responses.

IMPLEMENTATION OF TRAINING PROGRAMS

Training of LDC management personnel can contribute significantly to the overall goals of the U.S. LDC Assistance Program. In some instances, such efforts are a necessity if projects and programs are to succeed. Educational programs could be developed for in-country or regional implementation. Programs for consideration are:

- . Resource Evaluation and Exploration
- . Energy Technology Characteristics and Potential
- . Energy Project Casting, Evaluation and Management
- . Environmental Impact Evaluation and Assessment
- . Energy Economic Planning
- . Social Aspects of Energy Management

Several educational institutions have shown an interest in developing energy-related courses designed to meet the specific training needs of less developed countries, while other institutions have on-going programs that not only meet the needs of LDCs, but take into account the cultural and economic needs of the country.

Non-formal education such as Seminars, Workshops, Symposiums, Certificate Programs, etc. should be developed in order to respond to

the more immediate needs of the LDCs. These types of non-formal educational programs should be provided to train managerial staff in technologies appropriate to the energy needs of their country. The role of the manager is vital in the development and dissemination of various technologies. The inclusion of technical and managerial training would expand the skills and perceptions of the individuals who hold decision-making positions in energy-related areas.

The Institute for Energy Research, State University of New York at Stony Brook in cooperation with Brookhaven National Laboratory conducted an Energy Management Training Program for Developing Countries. The participants in this training program represented 20 LDCs. The program, which lasted 3 months, began in October, 1978. The topics covered dealt with energy analysis techniques, energy data and information bases, alternative energy technologies; and social, economic, fiscal, and institutional factors involved in assessing energy policy options. Sequels to this course will be held in 1979 and 1980.

The University of Pennsylvania has identified ten on-going Energy Management Programs (as of September 1978), which are being offered in various U.S. educational institutions (See Table II). The study also identified seven planned Energy Management Programs (See Table III). An additional area of the study also identified 79 (20 of which are in California) Junior Colleges, Community Colleges and two-year technical schools which offer courses related to energy

management (See Table IV). It is our intention to identify those Junior and Community Colleges that have either developed programs which might meet the needs of the LDCs, or would be interested in exploring the possibility of developing short-term training programs. This information will be provided in an up-dated version of this study.

ASSESSMENT OF DEVELOPING COUNTRY NEEDS

A comprehensive assessment of the future energy problems and needs of developing countries was made in the study "Energy Needs, Uses and Resources of Developing Countries" carried out by Brookhaven National Laboratory for the Agency for International Development (AID).² In this report it is argued that if traditional patterns of development are to continue, oil consumption in the non-OPEC LDCs will grow steadily to become comparable with current U.S. consumption between 2000 and 2020. Attempts to exploit indigenous hydrocarbon resources even in those LDCs with untapped reserves will be limited by shortages of capital and technical manpower. In the absence of major actions to replace noncommercial fuels or to increase the effectiveness with which they are used, a large fraction of the 3-4 billion LDC rural population in the year 2000 will not be able to raise their energy usage above subsistence levels. A committee of the National Academy of Sciences studied rural energy needs in the developing countries. With nuclear energy excluded from

²Palmedo, P. F., R. Nathans, E. Beardsworth, and Samuel Hale, Jr. Energy Needs, Uses and Resources in Developing Countries and the Implications for U.S. Assistance. BNL 50784, Brookhaven National Laboratory, Upton, New York, 11973.

consideration, the technologies considered by the study fell into two categories: direct and indirect use of solar energy. To maximize its usefulness to two distinct audiences, the report was divided into two sections. The first contains a series of nontechnical summaries in which each technology is described and its potential application outlined. This section is directed to the decision maker and planner who must evaluate technical proposals on the basis of a country's needs and prevailing constraints. The second portion of the report--the technical section--is directed to the specialist who may be familiar with the basic principles involved in given technologies but not with local problems, recent development, or available information sources. The panel recognized that their report was but one step toward the adoption of the technologies discussed, and that application of these technologies to rural development will entail many individual efforts.³

The Department of Energy has established Solar Research and Training Centers at eight universities. These are the University of California, State University of New York, Georgia Institute of Technology, Trinity University, Oregon State University, the University of Michigan, the University of Alaska, and the University of Hawaii-Manoa.⁴

GOVERNMENT INVOLVEMENT

The Agency for International Development (AID) has prepared a report

³Energy for Rural Development: Renewable Resources and Alternative Technologies for Developing Countries, Norman L. Brown et al., Ad Hoc Panel of the Advisory Committee on Technology Innovation, National Academy of Sciences, 1978.

⁴Ibid

on training which states that there is a great shortage of training of technical (including economists) personnel, presently available to implement and develop solutions to rural energy problems. AID suggests that in order to assist in the educational area of the less developed countries, the U.S. could participate in the support of indigenous institutions, both universities and technical colleges.

The Department of Energy supports various educational programs. The first federal energy-related training program to emerge, grew out of research and training activities by college students and faculty at National Laboratories which were sponsored by the Atomic Energy Commission, beginning in 1947. Additional training programs being offered which might be of interest to developing countries are: University-Laboratory Cooperative Program, Graduate Fellowship Program, Graduate Training Program, Training and Technology Program, Faculty Development Program, Pre-Freshman and Cooperative Education for Minorities in Engineering Program, and Energy Conservation Training Program. These training programs have received financial support from the Department of Labor, Veteran's Administration, state and local government and other organizations.⁵ The Department of Commerce, Office of Energy has proposed the establishment of a Federal Energy Institute which is viewed as a fundamental need to better educate and orient federal officials to the needs of the developing countries. It has been stated that the value of a well-rounded

⁵ Activities of the Department of Energy in Energy Education, March 1978
DOE/IR-0008

energy education would be reflected both in the manner in which they execute their program and policy responsibilities in their role as representatives of the federal government both in the United States and abroad.

RECOMMENDATIONS

At present, there is no compilation of data covering the broad range of energy education. There have been two surveys performed to date: (1) The University of Pennsylvania's survey on The Status of Energy Management Academic Programs in U.S. Institutions of Higher Learning and Washington Universities' report on The Role of U.S. Universities in Science and Technology For Development: Mechanisms and Policy Options. Therefore, in response to the needs demonstrated in the above-mentioned surveys and in this preliminary study, we propose that there be a continuing survey, compilation and information effort on energy-related training programs relevant to developing countries. This activity could be undertaken jointly by the Less Developed Country Program Office (Department of Energy, International Affairs) and the Office of Education within DOE. Further, a Directory of Energy-Related Training Programs should be prepared with a provision for updating data, which would be distributed to all educational institutions, research institutions, public interest organizations, federal, state and local governments and the general public so that they may become aware of the educational resources available to them and be in a position to make decisions concerning the involvement of the United States in the energy

education of personnel in the less developed countries.

PLANS FOR FURTHER DEVELOPMENT

The time available to prepare this report precluded complete coverage of disciplines. Those of most direct relevance to the energy needs of LDCs were emphasized. In future work additional emphasis will be given to the engineering disciplines, chemical, mechanical and electrical. It is also our intent to expand this report to include other energy-related disciplines such as political science, economics, geography, sociology and anthropology.

Further development will involve the compilation of data on energy education programs being offered in Community and Junior Colleges, National Laboratories, the private sector, as well as educational institutions abroad.

During the course of data collection, there was a tremendous concern expressed over the lack of information on energy education. As mentioned in the University of Pennsylvania's report, "A well-conceived information-sharing network might prove extremely helpful. Through such a network, pertinent data on the status of, and plans for, energy training programs could be updated and disseminated routinely."

DIRECTORY OF

ENERGY - RELATED PROGRAMS

WITHIN

U. S. EDUCATIONAL INSTITUTIONS

AUGUST 1978

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STATE	COLLEGE/UNIVERSITY	ENGINEERING DISCIPLINE - DEGREE PROGRAMS																			
		BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
ALABAMA	ALABAMA, UNIVERSITY OF Birmingham					X	X								X				X	X	X
	Huntsville												X						X		
	University							X									X	X	X		
	Auburn University								X	X					X	X			X	X	X
	Tuskegee Institute								X	X									X		
ALASKA	Alaska, University of						X	X											X		
ARIZONA	Arizona State University					X			X										X	X	X
	College of Architecture												X								
	Arizona, University of		X	X	X		X			X	X								X	X	X
	DeVry Institute of Tech.				X																
	Phoenix College				X																
ARKANSAS	Arkansas, University				X	X													X	X	X
CALIFORNIA	California Institute of Technology						X	X	X		X								X	X	X
	California State Polytechnic University																				
	Kellogg-Voorhis								X										X		
	Pomona										X								X		

STATECOLLEGE/UNIVERSITYENGINEERING DISCIPLINE - DEGREE PROGRAMSCALIFORNIA
(cont'd)

California State Poly. U.
San Luis Obispo
California State Univ.
Chico
Fresno
Long Beach
Los Angeles
Northridge
Sacramento
San Diego
San Jose
California, University of
Berkeley
Davis
Irvine
Los Angeles
Santa Barbara
Santa Clara
Southern Calif.
Cogswell Polytech. Inst.
Grossmont College
Loyola University

BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
				X		X			X								X		
						X			X								X		
						X			X								X		
						X			X								X		
						X											X		
						X			X								X		
						X			X								X		
						X			X								X		
						X			X								X		
						X			X	X							X	X	X
						X			X								X	X	X
						X			X								X	X	X
						X			X								X	X	
						X			X								X	X	
				X													X		
				X													X		
						X			X								X		

STATECOLLEGE/UNIVERSITYENGINEERING DISCIPLINE - DEGREE PROGRAMS

CALIFORNIA Northrop Institute of Tech.
Pacific, University of
San Fernando Valley State
College
San Francisco, City College
Stanford University
U.S. Naval Post Graduate
Colorado School of Mines
Colorado State Univ.
Solar Energy Applications
Laboratory
Colorado, University of
Denver, University of
Solar Energy Res. Inst.
Denver Res. Institute

COLORADO

BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
				X													X		
						X											X		
						X											X		
			X													X	X	X	
			X						X								X		
						X			X								X	X	
						X			X	X							X	X	X
											X								
											X								
									X								X	X	X
								X	X								X		
													X						
						X											X		

STATE	COLLEGE/UNIVERSITY	ENGINEERING DISCIPLINE - DEGREE PROGRAMS																			
		BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
CONNECTICUT	Bridgeport, University of							X			X								X		
	Connecticut, University of							X			X	X							X		
	Hartford, University of							X			X								X		
	Hartford State Tech. Coll.					X					X							X			
	New Haven, University of							X			X								X		
DELAWARE	Norwalk State Tech. College					X												X			
	Waterbury State Tech. Coll.					X						X	X						X		
	Delaware, University of						X	X			X	X				X			X	X	X
	Institute of Energy																				
	Conversion												X								
DISTRICT OF COLUMBIA	Catholic University							X			X	X				X			X	X	
	Dist. of Columbia, U. of							X			X								X		
	Geo. Washington Univ.							X			X										
	Office of Energy Programs						X			X			X						X	X	
	Howard University							X			X								X	X	

STATE

COLLEGE/UNIVERSITY

ENGINEERING DISCIPLINE - DEGREE PROGRAMS

FLORIDA Embry Riddle Aero. Institute
 Florida Inst. of Technology
 Florida, University of
 Solar Energy & Energy Conver-
 sion Laboratory
 Energy Management Center
 Miami, University of
 St. Petersburg Jr. College

GEORGIA Ga. Institute of Technology
 Engineering Experiment Station
 Dept. of Continuing Education
 Georgia, University of
 Southern Tech. Institute
 (A Division of Ga. Tech.)

HAWAII Hawaii, University of

IDAHO Idaho, University of
 Idaho State University
 Ricks College

BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
				X										X			X		
				X													X	X	X
					X	X			X	X							X	X	X
											X								
A	Multidisciplinary																		
						X			X								X		
				X													X	X	
					X	X				X							X	X	X
											X								
				X													X		
				X													X		
						X			X								X		
						X	X		X	X							X	X	X
									X								X		

<u>STATE</u>		<u>COLLEGE/UNIVERSITY</u>	<u>ENGINEERING DISCIPLINE - DEGREE PROGRAMS</u>																			
			BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
ILLINOIS		Bradley University					X		X			X								X		
		DeVry Institute of Tech.					X												X			
		Illinois Inst. of Tech.						X				X	X							X		
		Illinois,University of at Chicago Circle		X							X	X					X			X	X	X
		Illinois, University of at Urbana						X	X					X						X	X	X
		Institute of Drafting & Tech.					X												X			
INDIANA		Northwestern University					X	X	X			X								X	X	X
		Southern Illinois Univ.						XX	X											X	X	X
		Evansville, University of							X			X										
		Indiana University				X							X							X	X	
		Notre Dame, University of					X	X			X									X	X	X
		Purdue University		X		X	X	X			X								X	X	X	X
		Rose-Hulman Inst. of Tech.							X		X								X			
		Tri-State University							X		X									X		
	Valparaiso University							X		X									X			

STATE

COLLEGE/UNIVERSITY

ENGINEERING DISCIPLINE - DEGREE PROGRAMS

		BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
IOWA	Iowa State University				X	X	X	X			X	X							X	X	X
	Iowa, University of						X	X			X	X							X		
KANSAS	Highlands Community Coll.										X							X			
	Kansas State University						X				X	X							X		
	Kansas Technical Inst.										X		X					X			
	Kansas, University of					X	X				X	X						X	X	X	
	Wichita State University										X								X	X	
KENTUCKY	Kentucky, University of				X	X	X				X	X						X	X	X	
	Louisville, University of						X	X			X								X		
	Western Kentucky Univ.				X								X	X					X		
LOUISIANA	Louisiana State Univ.										X	X							X		
	Louisiana Technical Univ.							X			X							X			
	Southern University							X													
	Southwestern La., Univ. of							X			X								X		
	Tulane University					X	X				X								X	X	X

STATECOLLEGE/UNIVERSITYENGINEERING DISCIPLINE - DEGREE PROGRAMS

MAINE
 MARYLAND
 MASSACHUSETTS
 Boston University
 Franklin Inst. of Boston
 Harvard University
 Lowell Technical Inst.
 Lowell, University of
 Mass. Inst. of Tech.
 (Energy Laboratory)
 } Mass., University of {
 } Div. of Continuing Educ {
 Merrimack College
 Northeastern University

BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
						X			X								X		
						X			X								X	X	
						X			X	X	X						X	X	
						X			X								X		
			X	X													X	X	X
			X	X					X								X	X	X
					X		X	X	X	X							X	X	X
					X				X	X							X	X	X
					X	X	X		X		X						X	X	X
						X			X			X					X	X	
						X					X						X		
			X	X		X			X								X		

STATECOLLEGE/UNIVERSITYENGINEERING DISCIPLINE - DEGREE PROGRAMSMASS.
(cont'd)

Lincoln College
 Southeastern Mass. Univ.
 Tufts University
 (The Fletcher School of
 Law and Diplomacy)
 Wentworth Institute
 Western New England Coll.
 Worcester Poly. Inst.
 MICHIGAN Detroit, University of
 Lake Superior State Coll.
 Michigan State Univ.
 Michigan Tech. Univ.
 Michigan, University of
 Chrysler Ctr./No. Campus
 Oakland University
 Wayne State University

BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
				X													X		
						X			X								X	X	
						X			X								X	X	
			X						X								X		
						X			X								X		
						X			X								X		
				X													X		
				X					X								X		
				X	X	X	X		X							X	X	X	X
						X					X						X		
						X			X								X		

STATE	COLLEGE/UNIVERSITY	ENGINEERING DISCIPLINE														- DEGREE PROGRAMS						
		BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)	
MINNESOTA	Minnesota, University of Rochester State Jr. Coll.					X	X	X		X	X		X						X	X	X	
MISS.	Mississippi State Univ. Mississippi, Univ. of							X			X								X			
MISSOURI	Central Inst. of Tech. Florissant Valley Com. Coll. Missouri-Columbia, Univ. of Missouri-Rolla, Univ. of St. Louis University Washington University				X			X	X		X							X	X			
MONTANA	Montana Col. of Mineral, Science & Technology Montana State University				X	X	X				X								X	X	X	
NEBRASKA	Nebraska, University of						X	X			X								X	X	X	

STATECOLLEGE/UNIVERSITYENGINEERING DISCIPLINE - DEGREE PROGRAMS

NEVADA Nevada, University of
 NEW
 HAMPSHIRE Dartmouth College
 New Hampshire Tech. Inst.
 New Hampshire, Univ. of
 NEW JERSEY Fairleigh-Dickinson Univ.
 Middlesex County Coll.
 Monmouth College
 Newark Coll. of Engineer.
 N.J. Inst. of Technology
 Princeton University
 Rutgers, The State Univ.
 Stevens Inst. of Tech.

BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
				X		X	X		X								X	X	
						X											X		
			X													X			
						X			X								X		
						X			X								X		
			X													X			
						X													
						X			X								X		
			X													X			
						X	X	X	X								X	X	
						X			X								X	X	
				X		X										X			

STATECOLLEGE/UNIVERSITYENGINEERING DISCIPLINE - DEGREE PROGRAMS

NEW MEXICO Eastern New Mexico Univ.
N.M. Inst. of Mining and
Technology
N.M. State University
Energy Res. and Develop.
Institute
N.M., University of
Santa Fe, College of
NEW YORK Aeronautics, Academy of
Alfred State University
Brooklyn Poly, Institute
Broome Comm. College
Bronx Comm. College
Clarkson Coll. of Tech.
Columbia University
Cooper Union
Cornell University
CUNY-City College
Erie Comm. College

BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
				X													X		
						X										X			
		X				X			X								X		
											X						X	X	X
						X			X		X						X		
		X															X		
																	X		
			X													X			
			X													X			
					X				X	X						X	X	X	X
						X		X	X	X							X	X	X
						X			X								X	X	
				X												X			

STATECOLLEGE/UNIVERSITYENGINEERING DISCIPLINE - DEGREE PROGRAMS

NEW YORK
(cont'd)

Hofstra University
Hudson Valley Com. College
Manhattan College
Mohawk Valley Com. College
New York University
Pratt Institute
Queensboro Com. College
R.C.A. Institutes
Rensselaer Poly. Inst.
Rochester Inst. of Tech.
Rochester, Univ. of
State Univ. of New York
Buffalo
Canton
Farmingdale
Stony Brook
Syracuse University
Union College
Webb Inst. of Naval Arch.

BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
						X											X	X	
			X													X			
				X	X				X								X	X	X
				X	X				X								X	X	
						X			X								X	X	
			X			X			X								X		
			X												X				
					X	X			X								X	X	
						X			X								X	X	X
					X	X			X										
						X											X	X	
			X														X		
			X														X		
				X			X										X	X	
				X	X				X										
					X				X										
						X													

STATECOLLEGE/UNIVERSITYENGINEERING DISCIPLINE - DEGREE PROGRAMSNORTH
CAROLINA

Almanace, Tech. Inst. of
 Central Piedmont Com. Col.
 Duke University
 Fayetteville Tech, Inst.
 Foroyth Tech. Inst.
 Gaston College
 No. Carolina A & T Univ.
 No. Carolina, Univ. of
 Chapel Hill
 Charlotte
 No. Carolina State Univ.
 Norwalk State Tech. Col.

NORTH
DAKOTA

No. Dakota State Univ.
 No. Dakota, Univ. of

BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
				X												X			
				X												X			
						X			X								X	X	
				X												X			
				X												X			
				X												X			
						X			X										
						X			X								X	X	X
						X			X								X	X	X
					X											X			
						X			X								X		
						X			X								X		

STATECOLLEGE/UNIVERSITYENGINEERING DISCIPLINE - DEGREE PROGRAMS

OHIO

Akron, University of
 Air Force Inst. of Tech.
 Antioch University
 Case Western Reserve U.
 Cincinnati, Univ. of
 Cleveland State. Univ.
 Columbus Laboratories
 (Battelle Mem. Inst.)
 Coumbus Tech. Institute
 Dayton, Univ. of
 Denver, University of

BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
				X		X			X				X				X	X	
						X			X								X	X	
			X	X		X			X	X							X	X	X
					X	X			X	X						X	X	X	X
						X			X								X		
									X										
											X								X
			X													X			
			X			X			X										
						X			X								X		

COLLEGE/UNIVERSITY

ENGINEERING DISCIPLINE - DEGREE PROGRAMS

OHIO
(cont'd)

Ohio Coll. of Applied Sci.
Ohio Inst. of Tech.
Ohio Northern Univ.
Ohio State Univ.
Engineering Short Courses
Ohio University
Sinclair Comm. College
Toledo, University of
Youngstown St. Univ.
Solar Energy Task Group
U.S. Air Force Academy
OKLAHOMA
Oklahoma State Univ.
Oklahoma, Univ. of
Tulsa, University of

[illegible]

STATECOLLEGE/UNIVERSITYENGINEERING DISCIPLINE - DEGREE PROGRAMS

OREGON

Blue Mountain Com. Col.
Oregon Inst. of Tech.
Oregon State University

PENN.

Bucknell University
Carnegie-Mellon Univ.
Drexel University
Gannon University
Lafayette Univ.
Lehigh Univ.
Penn. State University
Penn., Univ. of
Pittsburgh, Univ. of
Spring Garden College
Swarthmore College

BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
				X												X			
					X						X	X					X	X	X
						X			X								X		
					X	X			X	X							X	X	X
						X			X								X		
						X			X								X		
						X			X								X		
					X	X	X		X								X	X	X
					X	X			X								X	X	X
					X	X			X								X	X	X
				X													X		
					X				X								X		

<u>STATE</u>	<u>COLLEGE/UNIVERSITY</u>
PENN. (cont'd)	Temple University Villanova University Widener College
PUERTO RICO	Puerto Rico, Univ. of
RHODE ISLAND	Brown University Rhode Island, Univ. of
SOUTH CAROLINA	Citidel University Clemson University Midlands Tech. College Education Center South Carolina, Univ. of
SOUTH DAKOTA	Augustana University S.D. School of Mines and Technology

ENGINEERING DISCIPLINE - DEGREE PROGRAMS

BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
			X						X								X		
						X			X								X		
						X											X		
									X								X		
								X	X								X		
								X	X								X		
																	X		
			X										X				X		
						X			X								X		
										X							X		
						X	X		X								X		

STATE	COLLEGE/UNIVERSITY	ENGINEERING DISCIPLINE - DEGREE PROGRAMS																				
		BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)	
SOUTH DAKOTA	So. Dakota State Univ.							X			X								X			
	So. Dakota, Univ. of						X	X				X							X	X	X	
TENNESSEE	Chattanooga State Tech.																					
	Comm. College				X							X						X				
	Christian Brothers Coll.							X			X								X			
	Memphis State Tech. Inst.				X																	
	Memphis State Univ.				X			X											X			
	Tenn. Tech. University								X			X		X					X	X		
	Tenn., Univ. of								X			X							X	X		
	Vanderbilt Univ.						X	X				X							X	X	X	
TEXAS	Delmar College			X															X			
	Houston, Univ. of																					
	The Energy Institute				X	X	X				X	X	X						X	X	X	
	Lamar University							X											X			
	Prairie View A&M Coll.							X			X								X			

STATECOLLEGE/UNIVERSITYENGINEERING DISCIPLINE - DEGREE PROGRAMSTEXAS
(cont'd)

Rice University
 Southern Methodist
 Texas A & M
 Texas A & I
 Texas Technical Inst.
 Trinity University
 Texas, University of
 Arlington
 Austin
 Dallas
 El Paso

UTAH

Brigham Young University
 Utah State University
 Utah, University of
 Weber State College

BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
						X			X								X	X	
						X			X								X	X	
						X	X		X								X		
						X											X		
						X			X							X			
						X											X		
				X			X		X								X	X	
						X	X	X	X	X							X	X	X
						X											X	X	X
									X										
								X	X	X							X	X	
				X													X		

STATECOLLEGE/UNIVERSITYENGINEERING DISCIPLINE - DEGREE PROGRAMS

VERMONT
Norwich University
Vermont, University of
Vermont Tech. College

WASHINGTON
Eastern Wash. State Coll.
Joint Ctr. for Grad. Study
Seattle, University of
St. Martins College
Walla Walla College
Washington State Univ.
Washington, Univ. of
Marshall University

WEST VA.
W. Va. Inst. of Tech.
W. Virginia University

BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
						X			X								X	X	
						X			X								X	X	
			X														X		
				X	X				X		X						X	X	X
						X			X								X	X	
						X											X		
						X											X	X	
						X											X	X	X
						X			X								X	X	X
			X			X			X								X	X	X
						X			X								X	X	X

STATE	COLLEGE/UNIVERSITY	ENGINEERING DISCIPLINE - DEGREE PROGRAMS																			
		BIOMASS	CONVERSION	ENERGY AGRIC.	ENERGY SYSTEMS	ENGINEERING TECH.	ENVIRONMENTAL	GENERAL	GEOLOGICAL	MANAGEMENT	MECHANICAL	NUCLEAR	SOLAR	WIND	CO-OP PROGRAMS	SEMINARS/WORKSHOPS	CERTIFICATES	ASSOCIATES	UNDERGRADUATE	GRADUATE	RESEARCH (ENERGY)
VIRGINIA	Old Dominion University					X		X											X		
	Va. Military Inst.							X											X		
	Va. Poly. Inst. & St. Univ.							X			X								X	X	X
	Virginia, University of						X	X			X								X	X	X
WISCONSIN	Marquette University							X			X								X	X	X
	Milwaukee Sch. of Engineer.				X			X			X								X	X	
	Milwaukee, University of																		X		
	Madison						X	X					X						X	X	X
	Milwaukee							X											X		
	Platteville							X											X		
	Wisconsin-Madison, Univ. of	X									X								X	X	X
WYOMING	Wyoming, University of		X					X			X	X	X	X					X		X

PROGRAMS OF SPECIAL INTEREST

Educational Institution

Specialized Programs

Auburn University

Offers workshops on Boiler Efficiency

Florida Institute of Technology

Offers program in Energy Development in cooperation with Mankoura University in Egypt

Georgia Institute of Technology

Office of International Programs has developed custom-designed programs to meet the needs of LDCs

Houston, University of

Offers lectures on Energy Processes

Milwaukee, University of

Conducts workshops which include topics on Applied Technology

North Carolina, University of

Department of Engineering Technology has the ability to develop additional energy-related courses, including the available services of a Foreign Student Affairs Office

Oregon State University

Offers Geothermal Programs

North Carolina State University

Provides short courses for industry (energy-related)

State University of New York
(Stoneybrook)

Conducting 6 month course in Energy Management Training for LDCs

Texas A & M

Conducts seminars on Energy Conversion, Energy and Mineral Resources

Washington University

Conducts seminars on Energy Alternatives

Wyoming, University of

Conducting research in the areas of Waste Water and Shale Oil, Land and Water Review. Recovery of Oil Shale and Retaring Techniques. Coal Conversion and High Wind Energy

ASSOCIATE DEGREE

Alabama University of
Almanance, Technical Institute
Blue Mountain Community College
Broome Community College
Bronx Community College
Central Institute of Technology
Central Piedmont Community College
Chattanooga State Technical College
Cincinnati, University of
Clarkson College of Technology
Columbus Technical Institute
DeVry Institute of Technology
Erie Community College
Fayetteville Technical Institute
Florissant Valley Community College
Forsyth Technical Institute
Gaston Technical Institute
Highlands Community College
Hudson Valley Community College
Institute of Drafting and Technology
Kansas, Technology Institute
Kansas, University of
Louisiana Technical University
Lowell Technical Institution
Michigan Technical University
Michigan, University of
Middlesex Country College
Mohawk Valley Community College
Montana College of Mineral Science
and Technology
New Hampshire Technical Institute
New Jersey Institute of Technology
New Mexico Institute of Mining &
Technical
New York University
Norwalk State Technical College
Ohio Institute of Technology
Purdue University
Queensboro Community College
Ricks College
Rochester Institute of Technology
Rochester State Jr. College
Rose - Hulman Institute of Technology
San Francisco, City College of
Southern Technical Institution (A Division of Georgia Tech)
St. Petersburg Jr. College
State University of New York
(Canton & Farmingdale)
Stevens Institute of Technology
Texas Technical Institute
Wartford State Technical College
Waterbury State Technical College
Worcester Polytechnical Institute

UNDERGRADUATE

Agustana University
Boston University
Bradley University
Bridgeport, University of
Bringham, Young University
Brooklyn Polytechnic Institute
Brown University
California Institute of Technology
California State Polytechnic University
Carnegie - Mellon University
Case Western Reserve University
Catholic University
Christian Brothers College
Citidel University
Cincinnati, University of
Clarkson College of Technology
Clemson University
Cleveland State University
Colorado School on Mines
Colorado State University
Colorado, University of
Columbia University
Connecticut, University of
Cornell University
Cosgwell Polytechnic Institute
CUNY City College
Dartmouth College
Delaware, University of
Delmar College
Denver, University of
 (Solar Res. Institute)
Detroit University of
District of Columbia
Drexel University
Duke University
Eastern N.M. University
Eastern Washington State College
Embry Riddle Aero Institute
Fairliegh - Dickinson University
Florida Institute of Technology
Florida, University of
Franklin Institute of Boston
Gannon University
George Washington University
Georgia Institute of Technology
Georgia Unsiversity of
Grassmont College

Alaska, University of (Erroneously omitted)

UNDERGRADUATE (continued)

Harvard University
Hawaii, University of
Hofstra University
Houston, University of
 (The Energy Institute)
Idaho, State University
Idaho, University of
Illinois Institute of Technology
Illinois University of
 (Chicago Circle)
Illinois, University of
 (Urbana)
Indiana University
Iowa State University
Iowa, University of
Johns Hopkins University
Kansas State University
Kansas University of
Kentucky, University of
Lake Superior State College
Lamar University
Lehigh University
Lincoln College
Louisiana State University
Louisville, University of
Lowell, University of
Loyola University
Maine at Orono, University of
Manhattan College
Marquette University
Marshall University
Maryland, University of
Massachusetts Institute of Technology
Massachusetts, University of
Memphis State College
Merrimack College
Miami, University of
Michigan State University
Michigan Technical University
Michigan, University of
Midlands Technical College
Milwaukee, School of Engineering
Milwaukee, University of
 (Madison, Milwaukee; Platteville)
Minnesota, University of
Mississippi State University
Mississippi, University of
Missouri - Columbia University of
Missouri - Rolla University of
Montana State University

UNDERGRADUATE (continued)

Nebraska, University of
Nevada, University of
Newark College of Engineering
New Hampshire, University of
New Haven, University of
New Mexico State University
 (Energy Resource and Development
 Institute)
New Mexico, University of
New York University
Northeastern University
Northwestern University
North Carolina State University
North Carolina University of
 (Chapel Hill)
 (Charlotte)
North Dakota State University
North Dakota, University of
Northrop Institute of Technology
Notre Dame University of
Norwich College
Oakland University
Ohio College of Applied Science
Ohio Northern University
Ohio State University
 (Engineering Short courses)
Oklahoma State University
Oklahoma University of
Old Dominion University
Oregon State, University of
Pacific, University
Pennsylvania State University
Pennsylvania, University of
Pittsburgh, University of
Prairie View A&M College
Pratt Institute
Princeton University
Puerto Rico, University of
Purdue University
Rensselaer Polytechnic Institute
Rhode Island, University of
Rice University
Rochester, University of
 (Buffalo)
 (Stonybrook)
Rutgers, The State University
San Francisco, City College
San Fernando Valley State College
Santa Fe, College of
Seattle, University of
Springs Garden College
Southern Illinois University

GRADUATE

Air Force Institute of Technology
Arkansas, University of
Akron, University of
Alabama, University of
 (Birmingham University)
Alfred State University
Arizona, University of
Auburn University
Boston University
Brigham Young University
California Institute of Technology
California University of
 (Berkeley, Davis, Los Angeles,
 Santa Barbara, Santa Clara, Southern
 California)
Carnegie-Mellon University
Case Western Reserve University
Catholic University
Clarkson College of Technology
Clemson University
Cincinnati, University of
Colorado School of Mines
Colorado State University
Cornell University
Columbia University
CUNY- City College
Delaware University
Duke University
Eastern Washington State College
Florida Institute of Technology
Florida, University of
Franklin Institute of Boston
Georgia Institute of Technology
George Washington University
 (Office of Programs)
Harvard University
Hofstra University
Houston, University of
 (The Energy Institute)
Howard University
Idaho, University of
Illinois, University
Iowa State University
John Hopkins University
Joint Center for Graduate Study
Kansas, University of
Kentucky, University of
Lowell, University of
Manhattan College
Marquette University

GRADUATE (continued)

Maryland, University of
Massachusetts Institute of Technology
Massachusetts, University of
Michigan Technology University
Michigan, University of
Milwaukee, University of
 (Madison)
Minnesota, University of
Missouri - Columbia University of
Montana State University
Nebraska, University of
Nevada, University of
New Mexico State University
 (Energy Research & Development
 Institute)
New York University
Northwestern University
North Carolina State University
North Carolina, University of
 (Chapel Hill)
 (Charlotte)
Norwick University
Notre Dame, University of
Ohio State University
Oklahoma, University
Pennsylvania State University
Pennsylvania, University of
Princeton University
Pittsburgh, University of
Purdue University of
Rennsselaer Polytechnic Institute
Rice University
Rochester, University of
Rutgers, The State University
San Francisco, City College of
Seattle, University of
Southern Illinois University
Southern Methodist
Southeastern Massachusetts University
South Dakota, University of
State University of New York
 (Buffalo)
 (Stonybrook)
Tennessee Technical University
Tennessee, University of
Texas University of
 (Arlington, Austin, Dallas)
Tufts University
Tulane University

GRADUATE (continued)

Virginia, University of
Washington State University
Washington, University
Washington, University of
West Virginia Institute of Technology
West Virginia University
Wisconsin - Madison, University of
Youngstown State University
Tulsa, University of
Utah, University of
Vanderbilt University
Vermont, University of
Virginia Polytechnic Institute
and State University

Cooperative Programs

Akron, University of
Alabama, University of
Auburn University
Denver University of
 (Solar Research Institute)
Illinois University of
Midlands Technical College

Seminars/Workshops

Auburn University
California, University of
 (Los Angeles)
Catholic University of
Delaware, University of
Embry Riddle Aero Institute

Certificate Programs

California, University of
 (Los Angeles)
 (Santa Barbara)
RCA Institutes

ENGINEERING DISCIPLINE ¹

Biomass

Oklahoma State University

Conversion

Illinois, University of
Georgia, University of
Purdue University
Wyoming, University of

Energy Systems

Aeronautics, Academy of
Arizona, University of
Case Western Reserve University
Delmar College
Franklin Institute of Boston
New Mexico State University
Oklahoma State University

Engineering Technology

Akron, University
Almance Technology Institute
Arkansas University of
Arizona, University of
Blue Mountain Community College
Bradley University
Bronx Community College
Broome Community College
California State Polytechnic University
Case Western Reserve University
Central Institute of Technology
Central Piedmont Community College
Chattanooga State Technology Community College
Columbia Technology Institute
Dayton, University of
DeVry Institute of Technology
Eastern New Mexico University
Embry Riddle Aero Institute
Erie Community College
Fayetteville Technology Institute
Florida Institute of Technology
Florissant Valley Community College
Forsyth Technology Institute
Franklin Institute of Boston

¹ Does Not Include All Disciplines

ENGINEERING TECHNOLOGY (continue)

Gaston Technology Institute
Grossmont College
Hartford State Technology College
Hudson Valley Columbia College
Indiana University
Institute of Drafting and Technology
Iowa Superior State College
Lincoln College
Lowell Technical Institute
Memphis State Technology Institute
Memphis State University
Michigan Technology University
Middlesex Country College
Middlands Technical College
Missouri - Columbia, University of
Nevada, University of
New Hampshire Tech. Institute
Northeastern Technical Institute
Norwalk State College
Ohio College of Applied Science
Ohio Institute of Technology
Oklahoma, University of
Phoenix College
Purdue University
Queensboro Community College
R.C.A. Institute
Ricks College
Rochester State Jr. College
San Francisco, City College of
Sinclair Community College
Spring Garden College
St. Petersburg Jr. College
Stanford University State University
Stevens Institute of Technology
Southern Tech. Institute
Temple University
Toledo, University of
Waterburg State Technical College
Wentworth Institute
Western Kentucky University

GENERAL

Akron University of
Air Force Institute of Technology
Alabama University of
 (Birmingham University)
Alaska University of
Antioch University
Arizona University of
Boston University
Bradley University
Bridgeport University of
Brigham Young University
Brooklyn Polytechnic Institute
Bucknell University
California Institute of Technology
California State Polytechnic University
California State University
Carnegie - Mellon University
Case Western Reserve University
Catholic University
California State University
Case Western Reserve University
Catholic University
Christian Brothers College
Cincinnati, University of
Citidel University
Clemson University
Cleveland State University
Colorado School of Mines
Colorado State University
Colorado, University of
Columbia University
Cooper University of
Connecticut, University
CUNY - City College of New York
Darmouth College
Dayton, University of
Delaware University of
Denver University of
Detroit, University of
District of Columbia, University of
Drexel University
Duke University
Eastern Washington State
Erie Community College
Evansville, University of
Fairleigh - Dickerson University
Florida University
Gannon University
Georgia Institute of Technology
George Washington University

GENERAL (continued)

Hartford, University of
Hawaii, University of
Hofstra, University of
Houston, University of
 (The Energy Institute)
Howard University
John Hopkins University
Idaho University of
Illinois Institute of Technology
Illinois University of
 (Urbana)
Iowa State University
Kansas, University of
Kansas State University
Kentucky, University of
Loyola, University of
Louisville, University of
Louisiana Technical University
Lowell Technical Institute
Lafayette University
Lehigh University
Lamar University
Maine at Orono, University of
Manhattan College
Marquette University
Marshall University
Maryland, University of
Massachusetts Institute of Technology
 (Energy Laboratory)
Massachusetts, University of
Memphis State University
Merrimack College
Miami, University of
Michigan State University
Michigan Technical University
Michigan, University of
Milwaukee, University of
 (Madison Milwaukee,
 Platteville)
Minnesota, University
Mississippi State University
Mississippi, University of
Missouri-Columbia, University of
Missouri-Rolla, University of
Mohawk Valley Community College
Monmouth College

GENERAL (continued)

Montana College of Mineral
Science and Technology
Montana State University
Oklahoma State University
Oklahoma, University of
Ohio Northern University
Ohio State University
Ohio University
Old Dominion University
Rensselaer Polytechnic Institute
Rice University
Rochester Institute of Technology
Rochester, University of
Rose - Hulman Institute of Technology
Rutgers, The State University
San Fernando Valley State College
Seattle, University of
South Carolina, University of
South Dakota School of Mines & Technology
South Dakota state University
Southeastern Massachusetts University
Southern Illinois University
Southern Methodist University
Southern University
Southwestern Massachusetts University
Spring Garden College
St. Louis University
St. Martins College
State University of New York
(Buffalo)
(Stonybrook)
Syracuse University
Tennessee Technical University
Tennessee, University of
Texas A&I
Texas A&M
Texas Technical Institute
Texas University of
(Austin)
Tri-State University
Trinity University
Tufts University
Tulane University
Tulsa, University
Union College
U.S. Air Force Academy
U.S. Navel Post Graduate
Utah, University of
Valparaiso University

GENERAL (continued)

Vanderbilt University
Vermont University of
Villanova University
Virginia Polytechnic Institute & State
University
Virginia, University of
Walla Walla College
Washington State University
Washington University
Washington University of
Wayne State College
Webb Institute of Naval Architecture
West Virginia Institute of Technology
West Virginia University
Widener College
Worcester Polytechnic Institute
Wyoming, University of

ENVIRONMENTAL TECHNOLOGY

Alabama, University of (Birmingham)
Arizona State University
Arkansas, University of
Boston University
Brigham Young University
California Institute of Technology
California, University of (Berkley Davis)
Carnegie - Mellon
Cincinnati, University of
Clarkson College of Technology
Clemson University
Colorado State University
Colorado, University of
Cornell University
Eastern Washington State College -
Embry Riddle Aero Institute
Evansville, University of
Florida Institute of Technology
Hartford State Tech. College
Harvard University
Houston, University of
Illinois, University of
Iowa State University
Iowa, University of
Kansas, University of
Kentucky, University of
Louisville, University of
Lowell, University of
Manhattan College
Massachusetts Institute of Technology
Michigan State University
Michigan Technology
Michigan, University of
Milwaukee School of Engineering
Milwaukee, University of (Madison)
Minnesota, University
North Carolina University of
North Dakota, University of
Northwestern University
Notre Dame, University of
Norwalk State Technical College
Ohio State University
Old Dominion University
Oregon State University

ENVIRONMENTAL TECHNOLOGY (continue)

Pennsylvania State
Pennsylvania, University of
Pittsburgh, University of
Purdue, University
Rennselaer Polytechnical Institute
Ricks College
Rose - Hulman Institute of Technology
Rochester, University of
South Dakota, University of
Southern Illinois University
Southern Technical Institute
St. Petersburg Jr. College
Texas, University of (Arlington)
Texas, University of (Austin Dallas
Tri-State University
Tulane University
Utah State University
Valparaiso University
Vanderbilt University
Vermont Technical College
Virginia, University of
Washington State University
Washington University of
Waterbury State
Weber State College
West Virginia Institute of Technology

GEOLOGICAL

Alaska, University of
Auburn University
Brown University
California Institute of Technology
California State Polytechnic University
 (Kellogg-Voorhis)
Colorado School of Mines
Cornell University
Denver, University
Idaho, University of
Massachusetts Institute of Technology
 (Energy Laboratory)
Michigan Technical University
Mississippi, University of
Nevada, University of
Northwestern University
Oklahoma, University of
Pennsylvania State University
Princeton University
Rhode Island, University of
Southern Illinois University
South Dakota School of Mines & Technology
St. Louis University
Texas A&M
Texas, University of
 (Arlington, Austin, El Paso)
Tusa, University of
Tuskegee Institute
Utah, University of

MANAGEMENT *

Alfred State University
Arizona State University
Auburn University
Columbia University
George Washington University
 (Office of Energy Program)
Minnesota, University of
North Carolina, University of
 (Chapel Hill)
State University of New York ¹
 (Stonybrook)
Tuskegee Institute

* See Table 2 of the Survey performed by the University of Pennsylvania for an updated version of management programs being offered.

1

A 3- month course designed for individuals from developing countries

MECHANICAL ENGINEERING

Akron, University of
Arizona, University of
Bradley University
Bridgeport, University of
Brigham Young University
Brooklyn Polytechnics Institute
Brown University
Bucknell University
California Institute of Technology
California State Polytechnics University
 (San Luis Obispo)
California State Polytechnics University
 (Chico, Fresno, Long Beach, Sacramento,
 San Diego, San Jose)
California, University of
 (Berkeley, Davis, Santa Barbaa,
 Santa Clara, Southern California)
Carnegie - Mellon University
Case Western Reserve University
Catholic University
Christian Brothers College
Cincinnati, University of
Clarkson College of Technology
Clemson University
Cleveland State University
Colorado State University
Colorado, University
Columbia University
Connecticut, University of
Cooper Union (Cornell University)
CUNY - City College of New York
Dayton, University
Delaware, University of
Denver, University of
Detroit, University of
District of Columbia, University of
Drexel, University of
Duke, University of
Eastern Washington State
Erie Community College
Evansville, University of
Fairleigh - Dickenson University
Florida International University
Florida , University of

MECHANICAL ENGINEERING (continued)

Franklin Institute of Boston
Gannon University
George Washington University
Hartford, University of
Hawaii, University of
Highlands Community College
Houston, University of
 (The Energy Institute)
Howard, University
Idaho, University of
Illinois University of
 (Chicago Circle), (Urban)
Iowa State University
Iowa, University
Kansas, State University
Kansas, Technical Institute
Kansas, University of
Kentucky, University of
Lafayette University
Lehigh University
Louisiana State University
Louisiana Technical University
Louisville, University of
Lowell Technical Institute
Lowell, University of
Loyola, University of
Maine at Orono, University of
Manhattan College
Maryland, University of
Marquette University
Massachusetts Institute of Technology
Massachusetts, University of
Maine, University of
Michigan State University
Michigan Technical University
Michigan, University of
Minnesota, University of
Mississippi State University
Mississippi, University of
Missouri - Rolla, University of
Mohawk Valley Community College
Montana State University
Nebraska, University of
Newark College of Engineering
New Hampshire, University of
New Hampshire, University of
New Haven, University of
New Mexico, State University
New Mexico, University of

MECHANICAL ENGINEERING (continued)

Nevada, University of
Northeastern University
Northwestern University
North Carolina A&T University
North Carolina State University
North Carolina, University of
 (Charlotte)
North Dakota, State University
North Dakota, University of
Notre Dame, University of
Norwich University
Ohio Northern University
Ohio State University
Ohio University
Oklahoma State University
Oklahoma, University of
Pennsylvania State University
Pennsylvania, University of
Pittsburg, University of
Prairie View A&M College
Pratt Institute
Princeton University
Puerto Rico, University of
Purdue University
Rensselaer Polytechnic Institute
Rhode Island, University of
Rice University
Rochester Institute of Technology
Rochester, University of
Rose - Hulman Institute of Technology
Rutgers, The State University
Seattle, University of
Southeastern Massachusetts University
Southern Methodist University of
Southwestern La., University of
South Dakota School of Mines & Technology
South Dakota State University
Standord University
State University of New York
 (Buffalo)
Swarthmore College
Sracuse University
Temple University
Temple University
Tennessee, University
Tennessee Technical University
Tennessee, University of
Texas A&M University
Texas, University of
 (Arlington, Austin, El Paso)
Toledo, University of

MECHANICAL ENGINEERING (continued)

Tri-State University
Tufts University
Tulane University
Tulsa, University
Valparaiso University
Vanderbilt University
Vermont, University of
Virginia Polytechnic Institute
& State University
Virginia, University of
Washington University
Washington, University of
Wayne State University
Western New England College
West Virginia Institute of Technology
West Virginia University
Wentworth Institute
Wichita State University
Wisconsin - Madison, University of
Worcester Polytechnic Institute

NUCLEAR

Arizona, University of
Augustana, University
California, University of
 (Berkeley)
Carnegie - Mellon University
Case Western Reserve University
Catholic University
Chattanooga State Technical Community College
Cincinnati, University of
Clarkson College of Technical
Colorado State University
Columbia University
Connecticut, University of
Cooper Union
Cornell University
Delaware, University of
Florida, University of
Georgia Institute of Technology
Houston, University of
Idaho, University of
Idaho State University
Illinois Institute of Technology
Illinois, University of
 (Chicago Circle)
Iowa State University
Kansas State University
Kansas, University of
Kentucky, University of
Louisiana State University
Lowell, Technical Institute
Lowell, University of
Maryland, University of
Michigan, University of
Ohio Northern University
Texas, University of
 (Austin)
Waterbury State Technical College
Wyoming, University of

SOLAR

Alabama, University of
Arizona State University
 (College of Architecture)
California, University of
 (Los Angeles)
Colorado State University
 - (Solar Energy Applications
 Laboratory)
Columbus Laboratories
 (Battle Memorial Institute)
Delaware, University of
 (Institute of Energy Conversion)
Florida, University of
 (Solar Energy & Energy
 Conversion Laboratory)
George Washington University
 (Office of Energy Program)
Georgia Institute of Technology
 (Department of Continuing
 Education)
Houston, University of
 (The Energy Institute)
Illinois, University of
 (Urbana)
Joint Center of Graduate Study
Kansas Technical Institute
Maryland, University of
Massachusetts Institute of Technology
 (Energy Laboratory)
Massachusetts, University of
 (Division of Continuing Education)
Michigan, University of
 (Chrysler Center/North Campus)
Minnesota, University of
New Mexico State University
 (Energy Research and Development
 Institute)
Ohio State University
Oklahoma State University
Oregon State University
Santa Fe. College of
Tennessee Technical University
Waterbury State Technical College
Wester Kentucky University
Wyoming, University of
Youngstown State University
 (Solar Energy Task Group)

WIND

Oklahoma State University
Oregon State University
Western Kentucky University
Wyoming, University of

APPENDICES

TABLE 1:

METHODOLOGY OF STUDY

Table 2: ENERGY MANAGEMENT PROGRAMS AS OF SEPTEMBER, 1978
(Acronyms or abbreviations shown are used in subsequent tables)

Undergraduate Programs

EIU

Eastern Illinois University, Charleston, IL
(School of Business)

Energy Management Program - B.S.

SSC

Sonoma State College, Rohnert Park, CA

Energy Study Plan for B.A. in Environmental Studies

Engineering - Focused Programs

GWU

George Washington University, Washington, D.C.
(School of Engineering and Applied Science)

Program in Energy, Resources, and Environment:

Energy Systems option - M.S., Applied Scientist, D.Sc.

NYU

New York University, New York, NY

Energetics Programs, Department of Applied Science - M.S.

POLY

Polytechnic Institute of New York, Brooklyn, NY

Energy Engineering and Policy Program

- offers certificate alone or in conjunction with

M.S. in management, physics, or 1 of 9 engineering fields

General or Diversified Programs

UC-B

University of California at Berkeley, Berkeley, CA

Energy and Resources Program - M.A., M.S., Ph.D.

U-NM

University of New Mexico, Albuquerque, NM

Public Administration Program with certificate in

Energy Management - M.P.A./Certificate

UP

University of Pennsylvania, Philadelphia, PA

(School of Public and Urban Policy)

Program in Energy Management and Policy - M.S., Ph.D.

PITT

University of Pittsburgh, Pittsburgh, PA

(School of Engineering)

Energy Resources Program - M.E.R.

U-WA

University of Washington, Seattle, WA

Program in Social Management of Technology

- offers courses only; S.M.T. - affiliated degrees may

be earned through various departments

TABLE 3: PLANNED ENERGY MANAGEMENT PROGRAMS

<u>Undergraduate Programs</u>	<u>hoped for starting date</u>
California State College, California, PA (School of Science and Technology) Energy Technology Program - B.S.	1/79
Northwestern Oklahoma State University, Alva, OK Energy Resource Management Program - B.S.	
<u>Graduate-Level Programs</u>	
American Technological University, Killeen, TX Energy Management Science Program M.S.	
The American University, Washington, DC (Center for Technology and Administration) Program in Management of Energy Resources - M.A., Ph.D.	1/79
Sangamon State University, Springfield, IL Program in Energy Management and Policy- M.A.	9/79
University of Denver, Denver, CO (Graduate School of Business and Public Management) Energy Resource Management Program - M.B.A.	
University of Miami, Coral Gables, FL Energy Studies Program - M.A., Ph.D., D.A.	1/79

TABLE 4: COMMUNITY AND JUNIOR COLLEGES OFFERING ENERGY MANAGEMENT-RELATED
COURSES, BY STATE

	<u>Number of Educational Institutions</u>
Alabama	1
Alaska	1
Arizona	3
California	20
Colorado	1
Connecticut	1
Illinois	2
Indiana	1
Iowa	1
Kentucky	1
Louisiana	1
Maryland	1
Massachusetts	5
Michigan	6
Minnesota	2
Mississippi	1
Missouri	1
Montana	1
New Jersey	2
New York	5
North Carolina	6
Ohio	3
Oklahoma	1

TABLE 4: (Cont'd)

Oregon	1
Pennsylvania	1
Texas	1
Virginia	3
Washington	2
West Virginia	1
Wisconsin	3
Total	<hr/> 79

Taken from the University of Pennsylvania Survey

Table 5: Participating Educational Institutions

ALABAMA, UNIVERSITY OF

Huntsville, AL 35805

Department of Mechanical Engineering
University, AL 35486

NOTE: This listing
totals only
104 of the
participating
educational
institutions.

ALASKA, UNIVERSITY OF

Department of Mechanical Engineering
Fairbanks, , Alaska 99701

The updated
version of
this report
will include
the total
270 participants

ALFRED UNIVERSITY

New York State College of Ceramics
at Alfred
Alfred, NY 14802

ARIZONA STATE UNIVERSITY

College of Architecture
Tempe, AZ 85281

Dept. of Mechanical Engineering
Tempe, AZ 85281

Dept. of Mechanical Engineering
Tucson, AZ 85721

ARKANSAS UNIVERSITY

Dept. of Mechanical Engineering
Fayetteville, AR 72701

AUBURN UNIVERSITY

Dept. of Mechanical Engineering
Auburn, AL 36830

BATTELLE MEMORIAL INSTITUTE

Columbus Laboratories
505 King Avenue
Columbus, OH 43201

BOSTON UNIVERSITY

Dept. of
Boston, MA 02215

CALIFORNIA, UNIVERSITY OF

Dept. of Mechanical Engineering
Berkeley, CA 94720

Dept. of Mechanical Engineering
Davis, CA 95616

Dept. of Engineering
Fullerton, CA 92634

Dept. of Mechanical Engineering
Los Angeles, CA 90024

CALIFORNIA INSTITUTE OF TECHNOLOGY

Dept. of Engineering and
Applied Science
Pasadena, CA 91125

Dept. of Environmental Engineering
Pasadena, CA 91125

CARNEGIE-MELLON UNIVERSITY

Dept. of Mechanical Engineering
Pittsburgh, PA 15213

CASE WESTERN RESERVE UNIVERSITY

Dept. of Mechanical Engineering
Cleveland, OH 44106

School of Engineering
Cleveland, OH 44106

CINCINNATI, UNIVERSITY OF

Dept. of Mechanical Engineering
Cincinnati, OH 45221

CITY UNIVERSITY OF NEW YORK

Dept. of Mechanical Engineering
New York, NY 10033

CLARKSON COLLEGE OF TECHNOLOGY

Dept. of Mechanical Engineering
Potsdam, NY 13676

CLEMSON UNIVERSITY

Dept. of Mechanical Engineering
Clemson, SC 29631

COLORADO SCHOOL OF MINES

Dept. of Mechanical Engineering
Golden, CO 80401

COLORADO STATE UNIVERSITY

Dept. of Mechanical Engineering
Fort Collins, CO 80521

Solar Energy Applications Laboratory
Engineering Research Center
Colorado State University
Fort Collins, CO 80523

Dept. of Mechanical Engineering
Boulder, CO 80302

COLUMBIA UNIVERSITY

Dept. of Mechanical Engineering
New York, NY 10027

CONNECTICUT, UNIVERSITY OF

Dept. of Mechanical Engineering
Storrs, CT 06268

CORNELL UNIVERSITY

Dept. of Mechanical Engineering
Ithaca, NY 14850

DELAWARE, UNIVERSITY OF

Dept. of Mechanical Engineering
Newark, Dela. 19711

EASTERN WASHINGTON STATE COLLEGE

Dept. of Mechanical Engineering
Cheney, WA 99004

FLORIDA STATE UNIVERSITY

Dept. of Mechanical Engineering
Tallahassee, FL 32306

FLORIDA STATE UNIVERSITY IDA, UNIVERSITY OF

Dept. of Mechanical Engineering
Gainesville, FL 32611

Dept. of Mechanical Engineering
Moscow, Idaho 83843

Solar Energy and Energy Conversion
Laboratory
Gainesville, FL 32610

ILLINOIS at CHICAGO CIRCLE,
UNIVERSITY OF

GEORGE WASHINGTON UNIVERSITY

Continuing Engineering Education
Program
School of Engineering & Applied
Science
Washington, D. C. 20006

Dept. of Thermomechanical Engineer-
ing & Energy Conversion
Chicago, IL 60680

Department of Mechanical Engineering
Washington, D. C. 20052

Dept. of Mechanical Engineering
Urbana, IL 61801

Medical Center
Urbana, IL 61801

GEORGIA INSTITUTE OF TECHNOLOGY

Dept. of Continuing Education
Atlanta, GA 30332

INDIANA UNIVERSITY - PURDUE UNIVERSITY
at INDIANAPOLIS

Dept. of Mechanical Engineering
Indianapolis, IN 46205

Dept. of Mechanical Engineering
Atlanta, GA 30332

IOWA STATE UNIVERSITY

Dept. of Mechanical Engineering
Ames, Iowa 50010

HARVARD UNIVERSITY

Dept. of Mechanical Engineering
Cambridge, MA 02138

JOINT CENTER FOR GRADUATE STUDY

100 Sprout Road
Richland, WA 99352

Dept. of Engineering Science
Cambridge, MA 02138

KANSAS STATE UNIVERSITY

Dept. of Mechanical Engineering
Manhattan, KS 66506

HAWAII, UNIVERSITY OF

Dept. of Mechanical Engineering
Honolulu, Hawaii 96822

KANSAS-UNIVERSITY OF

Dept. of Mechanical Engineering
Lawrence, KS 66045

HOUSTON, UNIVERSITY OF

Dept. of Mechanical Engineering
Houston, TX 77004

KENTUCKY, UNIVERSITY OF

Dept. of Mechanical Engineering
Lexington, KY 40506

HOWARD UNIVERSITY

Dept. of Mechanical Engineering
Washington, D. C. 20001

LEHIGH UNIVERSITY

Dept. of Mechanical Engineering
Bethlehem, PA 18015

LOUISIANA STATE UNIVERSITY

Dept. of Mechanical Engineering
Baton Rouge, LA 70803

LOWELL, UNIVERSITY OF

Dept. of Mechanical Engineering
Lowell, MA

MAINE AT ORONO, UNIVERSITY OF

Dept. of Mechanical Engineering
Orono, ME 04473

MANHATTAN COLLEGE

Dept. of Mechanical Engineering
Riverdale, NY 10471

MARYLAND, UNIVERSITY OF

College of Engineering
College Park, MD 20742

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Dept. of Mechanical Engineering
Cambridge, MA 02139

MASSACHUSETTS, UNIVERSITY OF

Dept of Mechanical Engineering
Amherst, MA 01002

MICHIGAN STATE UNIVERSITY

Dept. of Mechanical Engineering
East Lansing, Michigan 48823

MICHIGAN TECHNICAL UNIVERSITY

Dept. of Mechanical Engineering
Houghton, Michigan 49931

MICHIGAN, UNIVERSITY OF

College of Engineering
Chrysler Center/North Campus
Ann Arbor, Michigan 48105

Dept. of Mechanical Engineering
Ann Arbor, Michigan 48104

Dept. of Mechanical Engineering
Dearborn, Michigan 48128

MINNESOTA, UNIVERSITY OF

Dept. of Mechanical Engineering
125 Mechanical Engineering Bldg.
Minneapolis, MN 55455

MISSISSIPPI STATE UNIVERSITY

Dept. of Mechanical Engineering
Mississippi State, MS 39762

MISSISSIPPI, UNIVERSITY OF

Dept. of Mechanical Engineering
Columbia, MS 65201

MISSOURI-COLUMBIA, UNIVERSITY OF

Dept. of Mechanical Engineering
Columbia, MO 65201

MISSOURI-ROLLA, UNIVERSITY OF

Dept. of Mechanical Engineering
Rolla, MO 65401

School of Engineering
Rolla, MO 65401

MONTANA STATE UNIVERSITY

Dept. of Mechanical Engineerin
Bozeman, MT 59715

NEBRASKA, UNIVERSITY OF

Dept. of Mechanical Engineering
Lincoln, NE 68588

NEW JERSEY INSTITUTE OF TECHNOLOGY

Dept. of Mechanical Engineering
Newark, NJ 07102

NEW MEXICO, UNIVERSITY OF

Dept. of Mechanical Engineering
Albuquerque, NM 87131

Dept. of Mechanical Engineering
Las Cruces, NM 88001

NEW MEXICO STATE UNIVERSITY

Energy Research & Development
Institute
Las Cruces, NM 88003

NEW YORK UNIVERSITY

Dept. of Mechanical Engineering
New York, NY 10003

NEVADA, UNIVERSITY OF

College of Engineering
Reno, NV 89507

Dept. of Mechanical Engineering
Reno, NV 89507

NORTH CAROLINA STATE UNIVERSITY

Dept. of Mechanical Engineering
Raleigh, NC 27607

NORTH CAROLINA, UNIVERSITY OF

Dept. of Urban & Environmental
Charlotte, NC 28223

NORTH DAKOTA, UNIVERSITY OF

Dept. of Mechanical Engineering
Grand Forks, ND 58201

NORTHWESTERN UNIVERSITY

Dept. of Mechanical Engineering
Evanston, IL 60211

PURDUE UNIVERSITY

Dept. of Mechanical Engineering
West Lafayette, IN 47907

RENSSELAER POLYTECHNIC INSTITUTE

Dept. of Mechanical Engineering
Troy, NY 12181

RHODE ISLAND, UNIVERSITY OF

Dept. of Mechanical Engineering
Kingston, RI 02881

RICE UNIVERSITY

Dept. of Mechanical Engineering
Houston, TX 77001

ROCHESTER, UNIVERSITY OF

Dept. of Mechanical Engineering
Rochester, NY 14627

RUTGERS UNIVERSITY

Dept. of Mechanical Engineering
New Brunswick, NJ 08903

ST. LOUIS UNIVERSITY

Dept. of Mechanical Engineering
St. Louis, MO 63103

SANTA CLARA, UNIVERSITY OF

Dept. of Mechanical Engineering
Santa Clara, CA 95053

SANTA FE, COLLEGE OF

Santa Fe, NM

SOUTH DAKOTA SCHOOL OF MINES AND
TECHNOLOGY

Dept. of Mechanical Engineering
Rapid City, SD 57701

SOUTH DAKOTA, UNIVERSITY OF

Dept. of Mechanical Engineering
Vermillion, SD 57069

SOUTHERN ILLINOIS UNIVERSITY at
CARBONDALE

Dept. of Thermal and Environmental
Carbondale, IL 62901

SOUTHERN METHODIST UNIVERSITY

Dept. of Mechanical Engineering
Dallas, TX 75275

STANFORD UNIVERSITY

Dept. of Mechanical Engineering
Stanford, CA 94305

TENNESSEE TECHNOLOGICAL UNIVERSITY

Dept. of Mechanical Engineering
Cookeville, TN 35801

TENNESSEE, UNIVERSITY OF

Dept. of Mechanical Engineering
Knoxville, TN 37916

TEXAS A & M UNIVERSITY

Dept. of Mechanical Engineering
Kingsville, TX 78363

Dept. of Mechanical Engineering
College Station, TX 77843

TEXAS at ARLINGTON, UNIVERSITY OF

Dept. of Mechanical Engineering
Arlington, TX 76010

TEXAS at AUSTIN, UNIVERSITY OF

Dept. of Mechanical Engineering
Austin, TX 78712

TEXAS at DALLAS, UNIVERSITY OF

Dept. of Mechanical Engineering
Richardson, TX 75080

TEXAS CHRISTIAN UNIVERSITY

Dept. of Mechanical Engineering
Fort Worth, TX 76129

TOLEDO, UNIVERSITY OF

Dept. of Mechanical Engineering
Toledo, OH 43606

TULANE UNIVERSITY

Dept. of Mechanical Engineering
New Orleans, LA 70118

TULSA, UNIVERSITY OF

Dept. of Mechanical Engineering
Tulsa, OK 74104

UTAH STATE UNIVERSITY

Dept. of Mechanical Engineering
Logan UT 84322

UTAH, UNIVERSITY OF

Dept. of Mechanical Engineering
Salt Lake City, UT 84112

VANDERBILT UNIVERSITY

Dept. of Mechanical Engineering
Nashville, TN 37203

VIRGINIA POLYTECHNIC INSTITUTE AND
STATE UNIVERSITY

Dept. of Mechanical Engineering
Blacksburg, VA 24061

VIRGINIA, UNIVERSITY OF

Dept. of Mechanical Engineering
Charlottesville, VA 22901

WASHINGTON STATE UNIVERSITY

Dept. of Mechanical Engineering
Pullman, WA 99163

WASHINGTON UNIVERSITY

Dept. of Mechanical Engineering
St. Louis, MO 63130

WASHINGTON, UNIVERSITY OF

Dept. of Mechanical Engineering
Seattle, WA 98195

WESTERN ONTARIO, UNIVERSITY OF

Engineering Faculty
London, n6A Canada

WISCONSIN, UNIVERSITY OF

Dept. of Mechanical Engineering
Madison, WI 53706

WISCONSIN-MADISON, UNIVERSITY OF

Dept. of Mechanical Engineering
Madison, WI 53706

WORCHESTER POLYTECHNI INSTITUTE

Dept. of Mechanical Engineering
Worcester, MA 01609

WYOMING, UNIVERSITY OF

Dept. of Mechanical Engineering
Laramie, WY 82071

YOUNGSTOWN STATE UNIVERSITY

Dept. of Mechanical Engineering
Youngstown, OH 44503

Solar Energy Task Group
410 Wick Avenue
Youngstown, OH 44503

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