CALIFORNIA COMMUNITY COLLEGES
AND
NORTH ORANGE COUNTY
COMMUNITY COLLEGE DISTRICT

#91-0015
## North Orange County Community College District Environmental Hazardous Materials Technology Curriculum Modules

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<tr>
<th>FISCAL YEAR</th>
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<td>91-0015</td>
<td>Fullerton</td>
<td>North Orange</td>
</tr>
</tbody>
</table>

**PROJECT TITLE**

North Orange County Community College District Environmental Hazardous Materials Technology Curriculum Modules

<table>
<thead>
<tr>
<th>FUNDING CATEGORY &amp; AWARD</th>
<th>ELIGIBLE PROGRAM</th>
<th>PROJECT CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant = $25,000</td>
<td>E --- Improvement of Trad. Instruction Prog</td>
<td>Curriculum Design</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>PROJECT PRODUCT</th>
<th>PROJECT TOPIC #1</th>
<th>PROJECT TOPIC #2</th>
<th>ACADEMIC SUBJECT</th>
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<tbody>
<tr>
<td>Resource Materials</td>
<td>Curriculum Develop</td>
<td>Instructional Modules</td>
<td>Hazardous Materials</td>
</tr>
</tbody>
</table>

**PROJECT DIRECTOR**

Howard Guyer, ED>Net EHMT Consultant

**PROJECT SUPERVISOR**

Ronald Krimper, VP Institutional Adv.

**PROPOSAL DESCRIPTION**

This 'faculty-driven' project produced 15 high-quality, uniform, hazmat oriented instructional modules including clearly defined objectives, a bibliography and test questions and answers. EHMT faculty and curriculum specialists as well as business, industry and public agencies participated in the development of the project in an effort to make this vocational area more relevant and effective in preparing students for employment and providing leadership in the area of economic development.
Environmental Hazardous Materials Technology Curriculum Modules

This proposal will be competing for FII funding under the Large Grants division. Its primary focus is on the Board of Governors 1990-91 Basic Agenda Priorities in the areas of making vocational education programs more relevant and effective in preparing students for employment, and in providing leadership in the area of economic development.

Who among us cannot be concerned about the damage to our earth that has already and is continuing to occur? Today, California is home to nearly thirty million people. As a society, we have placed increasing demands on our legislators to address the environmental issues. They, in turn, have responded by establishing a myriad of federal, state, and local regulations focused primarily on the actions of business and industry. These regulations typically prescribe the manner in which business and industry must handle toxics and mandate employee training.

Recognition of their training dilemma prompted the California Community College's Economic Development Network (ED>Net) to explore its ability to assist. Rather than a series of individual college efforts, they proposed to develop and implement a statewide vocational program as a consortium. It was through the strength provided by this consortium, that the Environmental Hazardous Materials Technology Program was developed in one year's time.

One of ED>Net's next goals in the Hazardous Materials Technology Initiative, is to address the adult learner's short-term and industry/agency specific training needs. This type of training is topic-specific, and will continue the effort to protect individuals and our environment from further assault. Building on the Consortium's success, this project proposes to continue the use of the EHMT curriculum development model to:

- utilize the expertise of the community college's pool of trained EHMT faculty curriculum specialists;
- involve business, industry and public agency participation in the curriculum development process;
- develop 15 hazmat topic-specific modules; and
- use ED>Net's statewide network for distribution of modules.

In summary, this is a "faculty-driven" project that will result in a coordinated, cost efficient method of producing 15 high-quality, uniform, hazmat oriented modules. Each lesson in the module will include clearly defined objectives, suggestions for presentation, a bibliography and
suggested test questions and answers. These modules can be used at any of the State's 107 community colleges to respond to local economic development needs to hazardous materials related issues.
Environmental Hazardous Materials Technology Curriculum Modules

1. Specific Educational Program Being Addressed

Specific Educational Program Addressed:

Love Canal, Stringfellow Acid Pits, Times Beach, McColl Dump,... The list of past environmental disasters sites caused by the improper storage or dumping of hazardous wastes continues to grow. Who among us cannot be concerned about the damage to our environment that has already and is continuing to occur?

In the last 12 years, millions and millions of federal and state dollars have been put into various "superfund" accounts in an attempt to cleanup a number of these sites. Not only have these funds proved insufficient, but the list of new sites discovered continues to grow. We have also begun to realize that hazardous waste production is not limited to "big" business. Small businesses, schools, farms and even our homes have been found to be major contributors to the problem.

As a society, we have placed increasing demands on our legislators to address the environmental issues. They, in turn, have responded by establishing a myriad of federal, state, and local regulations focused primarily at the actions of business and industry. Included in their mandates have often been regulations that specify training responsibilities, as well as the manner in which they must store, use, and dispose of toxic substances.

Using a variety of stopgap tactics, industry attempted to respond to these training mandates. Most of these tactics, in fact, have fallen short of their goals, since most small and medium sized industries had neither the expertise nor resources required. Recognition of their dilemma prompted the California Community College's Economic Development Network (ED>Net) to offer its assistance in providing the necessary training.

As a result of this offer, a group of California community college managers and faculty met in the fall of 1988, to draft a proposal for a new chapter in community college history. New, because for the first time a group of colleges proposed to develop and implement a statewide vocational training program as a consortium. This group recognized that California's
community colleges were in the ideal position. A position that provided both the capability and capacity to respond to the needs of business, industry and public agencies to meet their long-term training needs in the area of environmental compliance.

Funding was acquired, including a FII Grant for $30,800 for design and implementation of new associate degree and certificate programs in Environmental Hazardous Materials Technology (EHMT). The group at once began planning for the technician program. To be of the most value, it would be necessary for this program to provide the technician with the necessary educational and training experiences so they could assist business and industry in the proper handling and disposal of their hazardous substances.

By July 1989, faculty and management representatives from eight community colleges -- Bakersfield, Cosumnes River, Fresno, Fullerton, Merced, Oxnard, San Mateo, and West Los Angeles -formed the Hazardous Materials Technology Sub-Committee of the Taskforce on Applied Competitive Technology of ED>Net. Over the course of the ensuing months, the Consortium faculty proceeded to study the unique requirements associated with delivering EHMT technician training in California. They shaped an agenda that would result in the program design and curriculum development of both EHMT Certificate and AA/S Degree Programs.

A core of faculty completed the UC Extension’s Intensive Summer Institute at UC Davis in Hazardous Materials Management. During the fall of that year, they also participated in 100 hours of on-the-job training activities in a broad range of industries, and evaluated other hazmat curricula. Seven industry advisors joined the faculty in determining the competencies necessary to produce a well-trained technician. The competencies resulting from this process were woven into the current offerings of each college, and have now formed a matrix of programs leading to both certificate and associate degree programs in each of the eight colleges.

A statewide needs assessment and training survey also was conducted by the participating colleges. The combined survey results were completed by the spring of 1990. This survey confirmed that of the nine hundred responding companies over half (50.3%) plan to hire one or more technicians in the next five years. Even more to the point, just the businesses (2.5%) with the largest needs projections anticipate that they will be hiring from 360 - 450 technicians in the next five years! In short, the survey documented that the need for hazmat technicians was already widespread, and it is expected to grow with each passing legislative session.

By that fall all eight of the consortium colleges had received program approval from their local curriculum committees, and had, at a minimum, offered at least the Introductory EHMT class to an educationally and culturally diverse group of students.

During the Spring Semester 1990, an additional six colleges De Anza, Diablo Valley, Foothill, Rio Hondo, Riverside and Southwestern - were added to the consortium. Their faculty have now completed the summer and in-service training activities, and following local curriculum committee approvals are planning for their first EHMT course offerings in 1991.
It would appear that the BOG and Chancellor's Office plan to continue their support of the ED>Net Initiatives. Funding for the expansion of the EHMT Program, up to eight more colleges, has been budgeted for 1991.

Thus far, the results of the Consortium’s efforts have been enthusiastically received by both business and industry. Representatives of the State Academic Senate have given their praise (see Appendix F) for the manner in which this program was developed. This faculty-based process for program and curriculum development is likely to emerge as a model. It has even been suggested, that it should always be used whenever there is a need to produce statewide training materials in a timely and cost effective manner. Simply put, the model is composed of the following steps:

- faculty in-service training,
- on-the-job training,
- program design, and
- curriculum development.

It has now become apparent that existing and additional curriculum materials for this program would be even more responsive to the needs of the adult learner, if it were made available in modules. This proposal would result in those modules.
2. Specific Problems Being Addressed

Specific Problem Being Addressed:

Today, California is home to nearly thirty million people who collectively comprise the world's seventh largest economic force. It is not only the nation's most populous state, but its people, businesses and industries are also the most regulated. These regulations have frequently resulted in training requirements. No matter, if it is a business that needs to comply with Community Right-to-Know training requirements, or a citizen that wants to know how to properly dispose of used motor oil, training is the common dominator. The type of training required is frequently not long-term, but rather topic-specific training that will protect the individual and/or our environment from further assault.

The major training contributions currently being made by California’s higher education segments consist of:
- the University Extension Center’s program which focuses on raising the awareness level of middle and upper level managers, and on providing some training in responding to regulations and preparedness; and
- the California Community College’s response to the long-term training needs in the form of the Environmental Hazardous Materials Technology Program.

It was the ED>Net Subcommittee's whirlwind of activities in the last two years that has resulted in the EHMT Program to address the needs of business and industry for technicians. But the missing link, and a part of the Subcommittee's goal, is to address the short-term and industry/agency specific training needs.

These needs were identified, in part, by analysis of the data from the previously cited EHMT survey, which found that:
- 84.4% of the responding businesses believe that there is a need for local specialized courses dealing with hazardous materials technology;
- 20.9% favored "intensive block" presentations;
- only 8.0% favored weekend seminars; and
- to no one's surprise, evening classes were the favored time of day.

Prior to the development of the EHMT technician program, California's community colleges had done little to provide for either short- or long-term hazmat training. It would appear that once again community colleges are ideally positioned to meet the short-term training needs. The same 1990 survey revealed that:
- only 0.5% of previous hazmat training has come from community colleges; but that
- 71.2% of the businesses responded favorably when asked, "Would your company/agency send current employees to a local community college for hazardous materials technology training?"
A partial solution to this training need can be met by offering many of the six recently developed EHMT semester-length courses in modular form. For some industries, agencies and individuals, 18 weeks represents an excessive amount of time to meet a specific training goal. Offering the course as a series of modules would allow the training to be more topic specific, and shorten the training time to a few days or weeks. An additional benefit resulting from this approach would be realized when attempting to provide a teacher who meets the "minimum quals".

The second part of the solution would be to respond to those citizen, business, industry and public agency needs for specific training by producing other topic-specific modules. AIDS and the increasing use of radioactive sources pose continued and new training requirements for hospital workers. Recent findings about the short- and long-term effects of some pesticides and herbicides have resulted in legislation that has created training requirements for many agricultural workers. Governmental agencies need inspectors trained to oversee such mandates as the replacement of leaking underground storage tanks. Twenty-four and Forty Hour OSHA training requirements are now mandated for many jobs, before actual employment can start. These are only a few examples of the topic-specific training modules that have already been requested, and will be considered for development.

In most of these examples, individuals, agencies and industries cannot wait for and participate in our traditional semester-length courses before starting or continuing their jobs. This project proposes to continue the use of the successful EHMT curriculum development model to:

- further utilize the expertise of the community college's pool of trained EHMT faculty curriculum specialists;
- obtain business, industry and public agency participation in continued curriculum development;
- determine the topic-specific modules of highest need/demand;
- develop detailed topic-specific lesson plans for each module, following the existing statewide EHMT format; and
- use ED>Net's established statewide distribution plan for dissemination of the modules.

In summary, this project will result in a coordinated, systematic, cost efficient method that produces 15 high-quality, uniform hazmat oriented modules that can be used at any of the State's 107 community colleges. Each lesson in the module will include clearly defined objectives, suggestions for effective presentation of the lesson, assignment suggestions, a bibliography and suggested questions and answers sections. In addition, supplemental materials will be provided that can be used in preparation for the lessons and/or photocopied for use by the students. This will make offering short-term topic-specific training modules for any college as easy as...identify the need, obtain the module, add a teacher and present!
3. Population To Be Served

Population Served:
The primary population to be served by this project would be the adult learners in California's business and industry. Several California surveys conducted in the last three years indicate that there is a widespread need in small, medium and large businesses for a variety of both short- and long-term training needs. Clearly, every indication is that this need will continue to expand into the foreseeable future.

A second, unsurveyed, population to be served by these topic-specific modules would be those of the regulatory agencies. Federal and state agencies are empowered to enforce the abundant and often overlapping regulations. They are faced with monumental training tasks, compounded by the "big business" practice of pirating those individuals, once trained. As an aside, during the development of the EHMT Program, a member of the Consortium was approached by the State Water Resources Control Board who wanted the Consortium to train their underground storage tank inspectors -- a request that could not he met at the time!

Community colleges and the Consortium must continue their recruitment of under-represented groups of women and ethnic minorities in this training effort. This group of students constitutes a third population to be served by this proposal.

Finally, topic-specific modules addressing current and general interest topics will be evaluated for possible development. These topics, that the community and college students request, will give factual information and raise the general public awareness about the hazards that threaten our environment and very existence. This would constitute a fourth major population group.
4. Objectives

Proposal Objectives:

Program objectives for this Fund for Instructional Improvement project include:

1. to complete selection of Curriculum Advisory Committee and have it establish project deliverable goals. (8.9% = $4,213)

2. to determine EHMT-based modules to be developed and form writing teams. (21.3% = $10,151)

3. to complete EHMT-based modules for field testing and identify new topic-specific modules for development. (6.3% = $3,011)

4. to complete EHMT-based modules for dissemination and start new module preparation. (39.2% = $18,623)

5. to prepare desktop published modules for each of the new topic-specific modules. (18.3% = $8,700)

6. to prepare and disseminate binders for new topic-specific modules. (6.0% = $2,860)

REVISED Proposal Objectives:

Program objectives for this Fund for Instructional Improvement project include:

1. to complete selection of Curriculum Advisory Committee and have it establish project deliverable goals. (9.2% = $4,194)

2. to determine EHMT-based modules to be developed and form writing teams. (22.2% = $10,142)

3. to complete EHMT-based modules for field testing and identify new topic-specific modules for development. (6.2% = $2,836)

4. to complete EHMT-based modules for dissemination and start new module preparation. (38.4% = $17,573)

5. to prepare desktop published modules for each of the new topic-specific modules. (18.9% = $8,668)

6. to prepare and disseminate binders for new topic-specific modules. (5.1% = $2,340)
5. Workplan Narrative

Work Statement:

Project Management:

Fullerton College, of the North Orange County Community College District, will serve as the fiscal agent and central coordinating site for this proposed project through 1991-1992. The Fullerton College effort is supported, in part, by its Office of Institutional Advancement that includes the Professional Development Institute; and the California Environmental Business Resources Assistance Center and Business Environmental Assistance Center (CEBRAC/BEAC) pilot projects. The Institute and Centers have the combined talents of a number of managers with diverse training and program development experience. The College's Anaheim Higher Education Center is rapidly becoming recognized as a hazmat information and training focal point for Orange County and much of Southern California.

If funded, the project will managed by Howard Guyer and Ann Boyce will act as the curriculum development coordinator. Mr. Guyer and Ms. Boyce have remained active throughout all the developmental phases of the original EHMT project. Mr. Guyer, the faculty member at Fullerton College who coordinates the EHMT program, and now serves as the EHMT Consultant for ED>Net, will be responsible for coordination and fiscal management of the project. Ms. Boyce, who is a faculty member at Bakersfield College and coordinates the EHMT Program will manage the curriculum development activities and desktop publish the modules. Both Mr. Guyer and Ms. Boyce have had considerable experience in curriculum development and coordinated much of the original EHMT Project efforts.

Together, the project manager and coordinator, with the aid of the Advisory Committee, will review the major project goals and objectives. They will also assist in project development, evaluation, and dissemination activities. All elements of project management are provided as an in-kind and matching contribution to the project.
6. Expected Outcomes

Expected Impact and Transferability:
This project assumes the responsibility for a challenging task that addresses one of the issues facing California's economic development, that of providing for the adult learner's short-term and industry or agency topic-specific training. With input from business, industry and agency advisors, the proposed project would establish an action agenda. This agenda would result in a systematic method that would result in a coordinated, uniform set of 15 topic-specific hazmat modules. These modules can be used at any of the State's 107 community colleges and taught by any appropriately prepared faculty member.

The population to be served by the project, adult learners in business, industry, public agencies, and the community at large constitutes a significant effort to address the pressing need for training and for enhanced public awareness leading to positive and constructive action. The potential impact of the proposed project over the course of the next three to five years, and beyond, is extraordinary. No other entity within the state has the wherewithal -- the faculty expertise, the facilities, the industry base -- to attack the problem in this manner.

The EHMT Consortia members, with a current membership of 14 and a planned membership of 32 - 40 colleges, are already deeply involved in hazmat instruction. With the development of topic-specific modules that can be adopted and offered statewide, once again the California community colleges can play a significant role in providing the necessary training for California to maintain its leadership role.
7. Evaluation Plan

Evaluation:
The project's Advisory Committee will assume primary responsibility for formative project evaluation. Each module developed will be reviewed by the faculty curriculum specialists as well as by the business, industry and agency representatives. This dual review assures that the curriculum is both pedagogically sound, and that it truly addresses the various training needs. Data collected from these evaluation components will provide the basis for the final report for the project, however, the true measure of success of each module should be based on its repeated successful offering at the various colleges.
8. Dissemination Plan

Dissemination:
The ED>Net Hazardous Materials Technology Subcommittee has already established several vehicles for promoting and thereby sharing information about its Environmental Hazardous Materials Technology Certificate and AA/S Degree Programs. EHMT faculty members have and will continue to be sought after for speaking engagements at educational and various professional meetings. Through these engagements, visitations to business and industry, and attending of trade shows in the past, California’s community colleges are now known to be the institutions working to meet California’s growing hazmat education and training needs.

The EHMT Consortium colleges will be the major distribution points for the modules, however growing statewide awareness of the EHMT Program has made all California community colleges a potential sources of hazmat training. A second distribution point for the modules throughout Southern California will be through the California Economic Business Resources Assistance Center (CEBRAC). This Center is a focal point for hazmat information and training for small and medium sized businesses situated in the South Coast Air Quality Management District.

A set of these modules will be given to CEBRAC and each of the 30 - 32 (anticipated by 1993) EHMT colleges for immediate implementation. The set or individual modules will be made available to any of California community colleges through the distribution network developed by ED>Net for the EHMT course materials.
Project Budget:

For the completion of this project's goals and objectives, a budget allocation of $26,815 is requested from FII. The following are the planned expenditures by budget category: