

PROJECT DESCRIPTION

A. Potential for advancing the quality of education: Significance of the problem.

1. Identification of educational problems and project impact

Agriculture is an important part of New Mexico's economy, as well as a critical part of the state's culture. The total value of the agriculture sector output from New Mexico farmers and ranchers increased in 2005 to \$2.9 billion, up 3.9% from 2004. However, after deduction for production expenses, hired labor, and other economic factors, the state's net farm income totaled \$759.6 million, down 20% from 2004 (New Mexico Agricultural Statistics, 2005). Farmers and ranchers struggle to make a profit selling products at the elevator or feedlot. Through vertical integration farmers and ranchers are more frequently beginning to sell "food" rather than just commodities. For example, instead of selling onions and chile, they are realizing that they need to sell salsa. The state of New Mexico has recognized that changes in the agricultural industry are necessary for survival, so it is actively working to attract industries that both support agricultural production and those that add value through packaging or processing before going to consumers (Johnson, 1999). In fact, the USDA has indicated that "adding value to various food commodities should be an integral part of overall strategies for expansion of the U.S. agricultural economy, improvement of human health and safety, and development of rural communities (Food Science & Technology, 2006)."

In an effort to facilitate this strategy New Mexico State University (NMSU) has been exploring methods through which it could prepare well educated professionals cross-trained in food science/nutrition and culinary arts. These individuals are highly valued by food manufacturing and processing companies that produce ready-to-eat meals, as well as other

food products. With the large number of ever increasing restaurants competing for a larger share of the dine-out dollar, research and development now includes the expertise necessary to produce restaurant quality foods for restaurants as well as for retail establishments (Cousminer, 1999.) Food safety and nutrition are also a priority with both the federal government and with the food industry.

NMSU's School of Hotel, Restaurant and Tourism Management (HRTM) offers a comprehensive program with a state-of-the-art commercial food production and service laboratory that is funded largely through industry support. NMSU offers the state's only bachelor's degree in hospitality management. Founded in 1988, the program is ranked among the top programs in the country, serving over 360 majors with a diverse, student-centered faculty. Although this program does require food safety, nutrition, and food production management in the curriculum it does not address many of the competencies related to the specific culinary arts and R&D needs of commercial restaurant and food manufacturing companies. Therefore, there is a need to collaborate with other programs where students could get the needed educational preparation in these areas.

NMSU also offers a bachelor's degree in Human Nutrition and Food Science (HNFS) with a food science and technology option in the Department of Family and Consumer Science (FCS). The School of HRTM and the Department of FCS in the College of Agriculture and Home Economics along with Central New Mexico Community College (CNM), formerly TVI, and El Paso Community College (EPCC), which offer Associate of Applied Science degrees in Culinary Arts, propose to bridge the current educational gap by developing an interdisciplinary degree in Culinology® (this term is trademarked by the Research Chefs Association). Through support from this grant the Culinology degree

program will be able to attract and retain Hispanic and other underrepresented students, and will prepare students for careers in food processing, foodservice equipment manufacturing, or corporate chain restaurant product development teams.

This unique collaboration between academic departments and institutions will ultimately increase the number of Hispanic and other underrepresented workers in the region trained in food safety, nutrition, culinary arts, and other areas identified by the federal government as high priorities; increase the educational attainment of Hispanics in ag-related areas; and contribute significantly to meeting immediate workforce needs in this growing industry with significant economic impact for the state and the food industry as a whole.

2. Project Justification

The traditional way of developing products, such as lines of condiments, has been to hire chefs to create the condiments and then have food scientists figure out how to manufacture them in large quantities. The demand for flavorful, more nutritious and safer foods that reach consumers faster has created a growing need for professionals that understand both parts of the product development process (Cornwell, 2005).

The Research Chefs Association (RCA) has defined Culinology as the blending of food science and culinary arts. Professional culinologists have the ability to help the food industry find more efficient and economical ways of manufacturing value-added, ready-to-eat meals, and other food products that actually have the look and taste of food served in a restaurant. Culinology programs prepare students for careers in food processing, foodservice equipment manufacturing, or corporate chain restaurant product development teams (RCA, 2006).

This grant would provide the funding necessary to update the current equipment in the Food Science Laboratories at NMSU as well as purchase additional equipment necessary for conducting chemical, processing, and micro-biological exercises as required for certification from the Research Chefs Association. The upgraded laboratory facilities and partnerships with the School of HRTM, as well as culinary programs located at community colleges in the area, will provide students with the opportunity to develop the competencies necessary to meet the food industry's growing needs for culinologists.

Central New Mexico Community College (CNM) and El Paso Community College (EPCC) both offer an Associate of Applied Science degree in Culinary Arts. By formalizing relationships with CNM and EPCC, NMSU will articulate an innovative and exciting transition program that uses best-practices to support the learning needs of outstanding Hispanic and other underrepresented students. CNM and EPCC (both Hispanic Serving Institutions) have well established culinary programs. These students represent prime candidates for recruitment into a Culinology program culminating in a Bachelor of Science degree.

Most Hispanic students in New Mexico do not complete four-year degrees. New Mexico is a minority-majority state, and the Hispanic population is growing rapidly (US Census Bureau). Significant research documents the attrition of minority students from traditional university programs (Consortium for Student Retention Data Exchange [undated]), yet the need for professionals in research and development in the food industry is increasing. National undergraduate effectiveness research indicates that students respond positively to academic programs when they have access to responsive pedagogy and support structures in four-year degree programs (Mello, 2003).

Surveys indicate that many Hispanic students would pursue an advanced degree if it were accessible, affordable, relevant, and supported (Solis, 1995). The development of a Culinology degree program would provide a direct link between CNM, EPCC and NMSU. Students obtaining an associate degree in culinary arts would be able to transfer to NMSU and complete their bachelor's degree. The proposed degree program would utilize proven strategies and responsive programs that demonstrate that Hispanic and other underrepresented students are able to meet the graduation completion rates of their Anglo counterparts. A degree in Culinology would virtually assure students professional level positions in either the food processing industry or the foodservice industry, with large corporations (e.g. Tyson) or regional companies (e.g. Bueno Foods), and accompanying career growth. Tyson is working closely with NMSU's Food Technology Interest Group to examine opportunities for student internships/scholarships and other projects on which they might partner. Bueno Foods is owned and operated by an NMSU alumni member and has approached NMSU with a similar proposal.

This unique collaboration between academic departments and institutions will ultimately increase the number of Hispanic and other underrepresented workers in the region that will be trained in food science, food safety, and nutrition as well as other areas identified by the federal government as high priorities; increase the educational attainment of Hispanics in ag-related areas; and contribute significantly to meeting immediate workforce needs in this growing industry with significant economic impact for the state and the food industry as a whole.

3. Innovation

This project uses an array of strategies that have demonstrated their capacity for improving educational effectiveness. The strategies are supported by research and have been combined into a unique comprehensive approach to produce Culinary professionals. Each strategy is supported by the NMSU institutional plan and has been selected to specifically increase Hispanic and underrepresented student enrollment and completion in a Culinary program.

a. Target qualified Hispanic and other underrepresented students demonstrating an interest in the food processing or foodservice industry and provide relevant programs and instructional approaches to support their degree completion.

Students attending EPCC or CNM in pursuit of associate degrees in culinary arts, are obvious candidates for recruitment into a Culinary degree program. The Culinary degree program will be designed to meet the needs of these students and enhance their likelihood of success. Research indicates that the attrition of underrepresented minority students decreases when they have programs that connect with professional goals and when they have support structures to assist when they encounter obstacles (Seymour & Hewitt, 2000).

b. Partner with EPCC and CNM to develop an effective degree program that meets the needs of the food processing and foodservice industry and provide a pipeline for Hispanic and other underrepresented students interested in seeking a professional degree.

The Culinary program will create a symbiotic relationship between NMSU, EPCC and CNM, which will result in an efficient use of all the organizations' resources. The partnership will be leveraged to benefit the participating students and program development.

c. Provide internships and meaningful work experiences that prepare students for successful employment.

All students graduating from the Culinary program will be required to complete internships in both culinary arts and food science (research and development) that will prepare them for immediate employment. Faculty members in HRTM and FCS will work closely with students to ensure they have opportunities to interact with employers and other employees prior to graduation, thus gaining insight into workplace demands. These experiences often make students aware of additional skills that may be needed in the workplace while there is still time to develop the appropriate skills. Simultaneously, intern experiences help faculty members ensure that the course content is providing the professional skills and fully preparing the student for employment.

4. Multidisciplinary and/or problem-based focus

The essence of this program will be multidisciplinary in that it incorporates specialized courses along with fundamental coursework in core subjects and the application of that knowledge to a Culinary program. NMSU, EPCC and CNM will collaborate with the Research Chefs Association (RCA) to create a Culinary degree program at NMSU.

The Research Chefs Association has defined Culinary as the blending of culinary arts and food science. The new professional who epitomizes this discipline will be someone who combines the passion, skills and creative talent to prepare and present innovative new food products, together with the scientific and technical knowledge required to provide safe, affordable, healthy and delicious food products commercially (RCA, 2006). The students completing this degree will fill a unique and growing need area for food manufacturers and the foodservice industry.

B. Proposed approach and cooperative linkages

1. Objectives

The main objectives of this project are (a) to develop a degree option in Culinary, (b) to strengthen the capacity of New Mexico State University to attract and retain Hispanic, and other underrepresented students to the Culinary program and ultimately to careers in foodservice/food production and related fields, and (c) to significantly update and improve NMSU's food science laboratory equipment and provide minor enhancements to the equipment used in the culinary teaching laboratories at EPCC and CNM. This project will use a collaborative approach to develop an innovative and resource efficient partnership with EPCC and CNM.

2. Plan of Operation and methodology

All participating entities share responsibility in the development and implementation of the Culinary degree option to ensure that the objectives are met. The project will be lead by Dr. Wes Holley, Associate Dean and Associate Director of Academic Programs, College of Agriculture and Home Economics along with Dr. Priscilla Bloomquist, Associate Professor, The School of Hotel, Restaurant and Tourism Management. Dr. Lisa McKee, Professor, Department of Family and Consumer Sciences will be teaching classes in human nutrition and food science. John Hartley and Frank Cordero, Culinary Professionals and College Assistant Professors, School of Hotel, Restaurant and Tourism Management will be teaching culinary related classes. In addition, Donna Diller, Director, Culinary Arts/Hospitality & Tourism, Central New Mexico Community College, and Rick Wells, Culinary Professional and College Instructor, El Paso Community College will partner in the

implementation of this innovative program. All partners have discussed this proposal and are committed to the success of this exciting initiative.

3. *Timetable*

Objectives and Deadlines	
<p>I. Determine schedule for curriculum development and instructional laboratory facilities enhancement. (HRTM/FCS/EPCC/CNM)</p> <ul style="list-style-type: none"> • Establish meeting schedule and collaborator responsibilities. (Fall '07) • Order and begin replacing instructional laboratory equipment. (Beginning Fall '07) • Collaborate with RCA and begin curriculum development process. (Beginning Fall '07) • Submit proposal for the addition of a degree program in Culinary. (Beginning Fall '07) • Complete articulation and degree completion agreements between NMSU, EPCC and CNM. (Beginning Fall '07) 	<p>Aug 07 – Aug 08</p>
<p>II. Student Recruitment/Retention (HRTM/FCS/EPCC/CNM)</p> <ul style="list-style-type: none"> • Develop recruitment collateral materials (brochure and web-site). (Beginning Fall '07) • Develop scholarship award guidelines and application form. (Fall '07) • Select scholarship recipients. (Spring '08 and Spring '09) • Provide student orientation/transitional assistance. (Fall '08 and Fall '09) • Identify student support structures to ensure student success (e.g., financial advisors, ESL assistance). (Beginning Fall '08) 	<p>Aug 07 – Aug 10</p>
<p>III. Program Evaluation (HRTM)</p> <ul style="list-style-type: none"> • Hold initial meeting of all project personnel to discuss the evaluation process. (Fall '07) • Establish quarterly meetings for program updates. (Beginning Fall '07) • Assist with collecting baseline data. (Beginning Fall '07) • Prepare a manuscript describing the program and its outcomes for submission to industry and academic publications/conferences. (Spring '10) 	<p>Aug 07 – Aug 10</p>

4. *Products, results, and measurable outcomes*

-Development of a Culinary® Degree Option

NMSU will work in collaboration with RCA to develop the curriculum for a Culinary degree option. In order to have a Culinary program RCA must be involved in

the curriculum development. RCA has specific curriculum requirements that must be followed in order to use the name Culinology. NMSU will then work with EPCC and CNM to develop articulation and degree completion agreements.

-Updated Instructional Laboratory Facilities

All three participating institutions will receive monies for the update of teaching facilities. NMSU's food science laboratories are in desperate need of new equipment. The current facilities feature circa 1970 residential ranges and freezer/refrigerator units. A detailed list of requested equipment/supplies is attached.

-Student Recruitment

Students will be actively recruited from EPCC and CNM with the assistance of the faculty and staff of the respective institutions. Additionally, NMSU faculty/staff will visit each community college every semester during the project to continue to cultivate relationships, make presentations and meet with interested students. Targeted brochures and a project website will also assist with this process. Scholarships of \$1,000 per year will be provided to selected incoming Culinology majors. Scholarships will be awarded to 10 high-potential Hispanic or other underrepresented incoming students each year beginning the second year of the grant and are renewable for a second year based on maintaining eligibility.

-Retention Plan

Once students are on-campus, a "cohort" approach, which is known to be one of the most successful strategies for Hispanic and other underrepresented students, will be utilized. NMSU will create a community of Culinology students. Cohort students will not only benefit from targeted scholarships, but will (a) be advised into a Culinology interest group

(CIG) so that they are taking classes together (b) be placed in a dedicated two credit “First Year Experience” course which provides an introduction to the University and its resources, and emphasizes academic and personal skills that enable students to become successful learners, and (c) be provided student academic mentors (SAMS).

The following summarizes overall products, results, and measurable outcomes:

Products	Results	Outcomes
I. New degree in Culinology	Fulfill the unique educational needs of students that have an interest in both the art and science of food production.	Meet the growing needs of the food industry for professionals cross-trained in food science/nutrition and culinary arts.
II.. Articulation and degree completion agreements	Seamless transition from area community colleges to NMSU.	Enhanced ability to attract highly qualified community college transfer students.
III. Updated teaching laboratories	Produce graduates who have experience working with commercial food production and research equipment.	Increased marketability of graduates who will transfer their knowledge of cutting-edge technology from NMSU to industry.
IV. Responsive programs for underrepresented students	Hispanic and other underrepresented students able to transition from high school or community college programs to a degree program to professional positions.	Increased graduation rates for Hispanic and other underrepresented students enrolled in the program.
V. Relevant content and pedagogy	Coursework that addresses cultural and linguistic relevancy.	Students indicate increased satisfaction and success with program of study.
VI. Collaboration between NMSU, EPCC and CNM	Better utilization of resources across organizations.	Model for collaboration and effectiveness.

5. Evaluation Plans

To determine the effectiveness of the “Chef-Scientists” project, NMSU will contract with Dr. Keith McNeil, an experienced educator and evaluator, to conduct a formative and summative program evaluation. The formative evaluation component will focus on the development and implementation of the program, thus allowing the project leadership to assess progress and make adjustments during the project as needed.

The summative evaluation will focus on impact, using an array of instruments and techniques, to determine how effectively the program met the stated goals. In particular, the external evaluation will determine the efficacy of the individual strategies and approaches and their contribution to meeting the collective program goals.

Qualitative techniques, such as focus groups, interviews, and observations will also be used as appropriate. The evaluation will provide critical information on the ability of the program to increase the retention and academic success of the Culinary degree students.

Measuring “Chef-Scientists” Project Outcomes	
Outcomes	Measurements
NMSU will provide 20 Culinary scholarships. (\$1,000 per year, renewable for up to two years based on meeting eligibility requirements.)	<ul style="list-style-type: none"> • Scholarship collateral material developed (brochure, application). • 10 scholarships awarded year two. • Up to 20 scholarships awarded year three.
NMSU will replace current equipment in the food science laboratory.	<ul style="list-style-type: none"> • Equipment will be ordered and installed.
NMSU in collaboration with RCA will establish the curriculum for a Culinary® degree option.	<ul style="list-style-type: none"> • Meetings established to include NMSU, RCA, EPCC and CNM.
NMSU will collaborate with the EPCC and CNM in order to recruit culinary arts students into the Culinary degree option.	<ul style="list-style-type: none"> • NMSU faculty/staff will visit both EPCC and CNM at least twice a year. • Collateral material developed (website, brochures).
NMSU will create and offer a designated "First Year Experience" (FYE) course for cohort members.	<ul style="list-style-type: none"> • Designated FYE course offered fall of 2008 and fall of 2009. • All incoming Culinary students enrolled in the course first semester of attendance.
NMSU will increase collaboration with EPCC and CNM by at least 100%.	<ul style="list-style-type: none"> • Measure number of interactions between NMSU faculty/staff, EPCC and CNM over baseline.
School of HRTM will retain Culinary cohort members at least at a rate comparable to overall NMSU retention rate.	<ul style="list-style-type: none"> • Track cohort students. • Compare rates.

6. Dissemination Plans

The “Chef-Scientists” project has the potential to increase the successful preparation of Hispanic and other underrepresented professionals ready to enter the food manufacturing industry.

Specifically:

- NMSU will target Hispanic and other underrepresented students seeking degrees in foodservice and related industries through EPCC and CNM.
- Other HSI higher education institutions will receive a program summary and results of program effectiveness.
- A website will highlight the program and provide information for potential students, as well as other institutions programs developers.
- Media coverage will be generated through the use of the University Communications Office.

A full evaluation report will be available for interested institutions and individuals, and results will be shared with the New Mexico Commission of Higher Education and legislative study groups working on issues related to improving educational outcomes for Hispanic citizens.

7. Partnerships and collaborative efforts

The “Chef-Scientists” project is a collaborative venture, tapping in the expertise of HRTM faculty, FCS faculty, CNM faculty, EPCC faculty and the Research Chefs Association. This partnership is essential in bringing a unique perspective and the expertise necessary to accomplish the goals of the project. HRTM has one of the top-ranked programs in the country, home to over 370 majors and diverse, student-centered faculty members who advise students. HRTM offers over \$45,000 per year in scholarships and has recently (2005) acquired a \$600,000 state-of-the-art food production and service laboratory. These resources

are unparalleled in New Mexico. RCA is responsible for certifying Culinary degree programs.

C. Institutional capability and capacity building

1. Institutional capability

NMSU is the state’s land grant university, serving the educational needs of New Mexico’s diverse population through comprehensive programs of education, research, extension education and public service. NMSU is committed to the success of the program and will build upon the initiatives of our organization to institute successful programs for Hispanic students. Increasing the enrollment and degree-completion of Hispanic and other underrepresented students is a priority, and is reflected in the strategic goals of NMSU.

NMSU Strategic Goals
To have a high quality, diverse student body.
To serve as an engine for economic, social, educational and community development in New Mexico.
To be an excellent steward of all resources dedicated to achieving the vision of the University.

2. Institutional resources

NMSU has administrative resources to assist students with student support services such as the library, bookstore, and admissions.

3. Continuation plans

After completion of the grant, NMSU will continue to offer the Culinary degree option. The relationships and momentum that will be established with NMSU, EPCC and CNM will continue to be nurtured.

D. Key Personnel

Dr. Wes Holley will coordinate the development of the Culinology degree program from the College of Agriculture and Home Economics. He is the Associate Dean and Associate Director of Academic Programs in the College of Agriculture and Home Economics at NMSU. He has a B.S. in Agriculture Education, a M.S. in Agriculture Education and an Ed.D. in Agriculture Education, all from Oklahoma State University.

Dr. Priscilla Bloomquist will be the co-director of this project. She is an Associate Professor in the School of HRTM at NMSU. She has a B.A. in Economics from the University of Wisconsin-Madison, M.S. in Hospitality and Tourism from the University of Wisconsin-Stout, and Ph.D. in Educational Management from New Mexico State University. She helped establish NMSU's Hospitality and Tourism program, now ranked among the top programs in the country. The recipient of numerous teaching awards, Dr. Bloomquist consults for the New Mexico departments of Tourism, Economic Development, and Parks & Recreation Division. She has published articles and technical reports and has presented her research at statewide, regional, national, and international conferences. She is also a Co-PD on two current HSI Education grants.

Budget and Cost Effectiveness

1. Budget support of program development

The budget for the “Chef-Scientists” project is \$249,525. This budget supports the Culinary program development by funding (a) new equipment for the food science and culinary arts labs, (b) the production of collateral materials, and (c) the hiring of a project assistant to develop collateral materials, work on outreach efforts (with potential students and industry), develop articulation and degree completion programs for EPCC and CNM, as well as teach two dedicated “First Year Experience” courses. Funding will also be targeted to provide financial assistance to outstanding Hispanic and underrepresented students. This budget includes \$14,000 for evaluation.

2. Adequacy of budget

Travel costs are based on current NMSU rates (per diem, and mileage). Scholarships are funded at a level that will cover the cost of textbooks for the academic year. All other costs are based on typical salaries and costs for this region.

3. Project cost effectiveness

This project will create an innovative and synergistic partnership between NMSU, EPCC, CNM resulting in an efficient use of each other’s resources and expertise. Outreach efforts targeting EPCC and CNM culinary arts students will have a long-term, far-reaching impact on foodservice/food production education across the state. All students in the culinary arts programs at the EPCC and CNM, and all students in the Human Nutrition and Food Science programs at NMSU will benefit from having access to state-of-the art laboratory equipment. Scholarship money provided by the grant will be leveraged by targeting students eligible for tuition assistance through other NMSU scholarship programs.

4. Key personnel contribution

Drs. Holley and Bloomquist provide oversight on this project for coordination and administration.

5. Need area addressed

The most representative need area addressed by this project is **(d) Scientific Instrumentation for Teaching**. Approximately 54% (\$135,000) will go to teaching laboratory equipment improvements for NMSU, EPCC and CNM. Other need areas addressed by this project are:

- **(f) Student Recruitment and Retention (including student financial assistance)**.
Approximately 23.2% (\$57,920) is targeted for scholarships, two dedicated First Year Experience courses, the development of articulation and degree completion agreements with EPCC and CNM, as well as travel for outreach.
- **(a) Curricula Design, Materials Development, and Library Resources (including development of courses of study and degree programs)**. Approximately 7% (\$17,700) is targeted for the coordination between RCA, NMSU, EPCC, and CNM.
- The remaining funds are for evaluation 5.6% (\$14,000), overhead 9% (\$22,443), and travel to New Project Directors Meeting 1% (\$2750).

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